

The Kingstown Harbor Shipwreck: An Interim Report

By

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I. Introduction

During the past holiday season (1997) in Kingstown, St. Vincent, there was an added excitement in the air. Apart from the cheer associated with Christmas and the spirit of good will and optimism as the New Year began, there was a curiosity and a sense of adventure. This was most particularly evident in the vicinity of the New Kingstown Fish Market where, at several times each day, a group of archaeologists with dive gear and underwater equipment arrived at the fisheries wharf. Traveling from their headquarters just down Bay Street, they would take a small, open speedboat out to a wooden platform moored at the southern confine of the harbor. From there, they would dive hundred feet to the sea floor and travel back more than two hundred years in time.



From December 10, 1997, to January 10, 1998, the Institute of Maritime History (IMH) conducted a detailed survey of a historic shipwreck in Kingstown Harbor with the assistance of the Academic Diving Program at Florida State University (FSU). The Organization of American States (OAS) and the government of St. Vincent and the Grenadines supported the expedition to explore and document the archaeological site. This assessment was performed with a number of considerations in mind. The primary intent of IMH's investigation was to document the site in its undisturbed state, and perform a basic analysis of the historical relevance

of the site. Other factors included determining the site's potential for contributing to the development of cultural tourism in St. Vincent. Along these lines, consideration of a more detailed expedition to excavate a portion of the site was undertaken.

This report briefly summarizes the activities of the survey team during the month-long period of examination. During that time, the team collected a significant amount of information regarding the archaeological nature of the site. This data set, which is archived and maintained by IMH, includes measured site and artifact drawings, photographs and video recordings, and detailed notes of surface features.

Detailed analysis and interpretation of this entire set of data is ongoing and final conclusions have yet to be drawn. Pertinent examples of collected information will be presented in this report, as they are relevant. The report includes a brief discussion of discoveries made during the survey and contains a preliminary analysis of the site. This report concludes with recommendations concerning the further examination and management of the shipwreck as a cultural resource of St. Vincent and the Grenadines.

II. Survey

A. *Site Discovery and Previous Investigations*

There are various reports regarding the discovery of the historic shipwreck in Kingstown Harbor. Some reports indicate that the site was first encountered by an enthusiast in marine biology from the neighboring island of Mustique. Dr. Earl Kirby of the Archaeological Museum in Kingstown claimed that Mary Margaret Goodwin discovered the wreck in the 1970s while looking for sharks.

Bill Tewes, owner and operator of Dive St. Vincent in Young Island Harbor, came upon the wreck following the sinking of the steel ships *Seimstrand* and *Nomad* in the mid 1980s. While visiting the modern wrecks as a sport diving attraction, Tewes reports that he began to notice the outlines of anchors and cannons amid the coral reef to the stern of *Seimstrand*. Tewes and his staff examined

the site for several years and led many sport diving tours to the wreck site. He reports that the site of the two modern wrecks and the historical shipwreck were a popular attraction.

Tewes and members of his staff recovered some cultural material from the site during that early time, but reports that removal of artifacts was restricted. For the most part, this was because of his own directive that the site would make a better attraction for dive tours if it were left intact. One artifact that was recovered was a large brown salt-glazed ceramic jug. Tewes photographed this artifact and sent copies of the prints to Mensun Bound, an English archaeologist who had some experience in maritime archaeology. Bound returned Tewes correspondence, suggesting that the artifact appeared to date to the end of the eighteenth century. It appears that Bound was the first person to suggest that the shipwreck could be the remains of an English slaver, *Africa*.

Africa, 80 tons, sank in Kingstown Harbor in 1784 under a captain Thomas Brown, according to the New Lloyd's List. This episode is included in a list of shipwrecks published by Robert F. Marx entitled *Shipwrecks in the Americas* (1987: 286). One of the major visible features of the wreck site is an abundance of large copper cooking vessels, which may suggest that the ship was carrying a large number of persons at the time of its sinking. This would be expected in a ship conducting the business of the slave trade, however, the size of the shipwreck in Kingstown Harbor did not appear to be the remains of an 80 ton ship.

In the mid 1990s, a group from Oakdale, California, the Lost World Trading Company, dived on the wreck working under the assumption that the shipwreck was the remains of the slaver *Africa*. This group, led by Tom Banks, was assembled as an eco-tourism vacation package and was comprised mostly of retired and senior citizens from the United States. The group dived on the site using the equipment and facilities of Dive St. Vincent and resided at the neighboring Umbrella Beach Apartments hotel.

Mr. Banks and his group apparently attempted to implement some form of archaeological control in their activities. IMH divers discovered old tape measures on the sea floor that were probably left from the group. A rough map of the site was produced, and several drawings of artifacts survive in the possession of the OAS. Lost World Trading Company recovered a number of cultural artifacts from the site and stored them in fresh water at the French Restaurant, owned by Jaques Thevenot who is also the proprietor of the Umbrella Apartments. Mr. Thevenot deserves a note of credit and recognition for keeping this collection immersed in fresh water for the past several years. His efforts prevented the complete destruction of the cultural material.

The artifacts that survived in the collection that were recovered by the Lost World Trading Company included a number of specimens of glass, ceramic, encrusted iron and copper artifacts. Records of the original location of these items are not presently known and are assumed not to exist. For the most part, the archaeological value of these artifacts has been lost because of the failure to document and maintain this information. Also, a lack of experience with the stabilization and conservation of these items contributed to the deterioration of their condition in several cases. This should be of no discredit to Thevenot, who was simply not aware of such conditions and the appropriate measures to be taken.

During or shortly after Banks' attempted salvage of the shipwreck, David Moore, then archaeologist of the Mel Fisher Maritime Heritage Society in Key West, Florida visited the site. He was either a guest of Banks or was brought to the island by another group interested in salvaging the site, The Last Galleon group from Jupiter, Florida. Moore, who was the field director of the excavation of *Henrietta Marie*, a British slaver that wrecked in the Florida Keys at the turn of the seventeenth century, recorded some brief impressions of the site. In particular, he noted that the wreck did not appear to be that of a slave ship given its size.

The circumstances are not completely clear to this author how Lost World Trading Company

came to be uninvolved in the shipwreck in Kingstown Harbor. Correspondence from 1995 shows that there was a planned expedition in November of that year, and there was government awareness of the impending project. Apparently there was governmental resistance to the continuance of their activities.

In the fall of 1996, the author of this report was contacted by George Vincent of the OAS via the Nautical Archaeology Program of Texas A&M University. There was concern at the time that the cultural site was in jeopardy of disturbance, as construction was scheduled to begin on a cruiseship dock near to the location of the shipwreck site. The OAS was interested in assessing the historical and cultural potential of the site in regards to its possible contribution to the development of cultural tourism. With the support of the OAS, the author traveled to St. Vincent in October of 1996 for a weekend to dive on and make a cursory assessment of the site. As contracted, the author made a report of those activities and recommendations for a future course of action later in 1996 (Johnson 1996).

In that report, it was stated that the site was indeed historically significant and merited further archaeological attention. Preliminary examination of the site's morphology indicated possible interpretations of either a slaver, although larger than the suggested *Africa*, a privateer or a naval vessel. Cursory analysis of the material recovered by the Lost World Trading Company clearly suggested a tentative date for the shipwreck in the late eighteenth century. The wreck's copper sheathing offered a definite *terminus post quem* of 1763, and the cultural material appeared to be English in origin.

Following the recommendations of that report, a multiple phase approach to the continued investigation and development of the shipwreck site was adopted. The next planned phase was to be a 30-day detailed survey of the site with a small team of marine archaeologists. This survey exercise would literally 'test the waters', that is, collect logistical information for conducting a future large-scale excavation while recording the site in its undisturbed state. In addition to this, it was deemed suitable to recover one of the cannons from the site in the hope of conclusively identifying the date and nationality of the shipwreck.

Planning for this second phase of surveying commenced, and institutions were approached for partnership in the investigation. The primary aegis for the excavation was the Institute of Maritime History, a not-for-profit research institute based in Maine with the purpose of conducting archaeological research to contribute to the understanding of and to preserve maritime heritage. The Academic Diving Program of Florida State University, which had recently created an underwater archaeology program within its Anthropology Department, offered technical assistance. The OAS and Heritage Tourism Project of St. Vincent and the Grenadines provided logistical and financial support.

With the support and approval of the Government of St. Vincent, the work was scheduled to begin in September of 1997. However, logistical complications extended that initial time frame to be pushed back to December of that year. In the interim period, corporate support was solicited from Cagema Industries and American Airlines. Also, a documentary film company, Eco-Nova, Ltd. of Halifax, Nova Scotia, became involved, agreeing to produce a segment of the "Oceans of Mystery" series for the Discovery Channel with the survey as its subject. While the planning for the second phase was underway, a large Internet site that focused on the shipwreck was created at IMH's web site (www.maritimehistory.org). This site attracted a great deal of attention to the project and aided the efforts to raise private and corporate donations. During the survey, the site was updated daily with details and images of the project, which created an instantaneous record of the survey.

B. Logistical Summary

The second phase survey began with the arrival of the survey team on December 10, 1997. The crew was composed of a core staff of 12 nautical and underwater archaeologists and was augmented by a handful of volunteers and visitors who traveled to St. Vincent at their own expense. In

truth, the survey was conducted completely with volunteer labor, as the budget for the survey did not allow for any monetary compensation for staff or crew. Room and board was provided for all that contributed to the survey, and airfare was provided by the project budget for the 12 core staff members.

The project headquarters and lab facility was the former Engine Service Facility of the Department of Fisheries located on Bay Street. This renovated facility proved to be excellent for the purposes of the survey, providing ample space for conservation and data processing work, dive gear maintenance and diving support. The facility also provided housing for some of the project staff. One crewmember was in continual residence and two more resided there when budgetary considerations demanded it.

The lab facility offered regular and reliable water and power, which were two important concerns for the project's needs. Project staff were able to convert the power to run electronic equipment on 110-volt current and were also able to rewire the building's telephone connection for use. Security at the facility was a problem, which was solved by contracting a guard service to watch the building 24 hours a day. Prior to this, several pieces of project equipment were pilfered from the facility.



The lab facility was located proximal to the fisheries wharf where staff would depart to the site several times each day. Boats contracted independently for the project's use provided transportation to the dive site. For the first portion of the survey, Dive St. Vincent provided the boat and driver. Sea Breeze Tours provided water transportation for the second portion of the survey. Boat transportation was a great worry at the onset of the survey project. It was a crucial aspect of the survey's implementation that was difficult to resolve. It is unclear at this point why government boats were unavailable for the project's use, which undoubtedly would have been a more convenient and cost-effective solution.



Moored above the site was a small wooden platform from which dive operations were conducted. The barge was constructed under the supervision of the Coast Guard, and offered a convenient platform after slight modifications for safety. The barge was moored with two anchors with one anchor line being fastened to the stern railing of the modern shipwreck *Seimstrand*. While the barge was adequate for the needs of the survey, it was rather small for continued occupation during the working day. Radio contact between the barge and headquarters was continual.

The majority of underwater and diving equipment was secured for use from the dive locker at Florida State University's Academic Diving Program. This gear was shipped by ocean freight to St. Vincent in advance of the team's arrival, courtesy of Cagema by special arrangement with the OAS. Contracting fees for the use of the equipment were paid by IMH, as was insurance of the gear and maintenance. The equipment in the box ranged from personal dive gear to heavy underwater equipment and included oxygen and compressors for filling tanks and blending air to be breathed at depth. Conservation supplies were also included in the container as well as construction and support gear.

Logistically, the needs of the project were met sufficiently so that the survey could be conducted with reasonable effectiveness and efficiency. When it is taken into account that this was the first major underwater archaeological project ever conducted on the island with no developed cultural manage-



ment infrastructure, the logistical aspect of the survey was executed with spectacular success. As each problem arose, a solution was found and most needs were met through resilience and at times, compromise. Since a major goal of the survey was to acquire this logistical information for the purposes of planning an efficient excavation campaign, this aspect of the project can be considered completely successful. IMH, FSU, OAS and the government of St. Vincent all learned valuable lessons about supporting this type of research in this context.

C. Daily Work and Diving Operations

On the typical day, survey personnel would awaken between 6:30 and 7:00 AM and depart for project headquarters around 7:30 AM. Multiple trips would have to be made in order to transport the entire crew, but the shuttling usually concluded by 8:30AM. At headquarters, tasks to prepare for the morning dives would take the first priority as gear would be prepped and staged for departure to the wharf.

The morning briefing would be conducted at 9:00 AM. Dive teams would go through their specific tasks of the morning and the support teams would outline their responsibilities. The van would take the equipment to the wharf to meet the boat each morning at 9:30 AM. Typically, three to four two-man dive teams would dive each morning to various depths of the shipwreck. Dive teams would descend in rotation, and the first team would return to headquarters following their dive to assist in conservation and recording of artifacts and to process collected data. The other dive team would rotate into safety, support and dive supervision roles.

Compressors ran for the majority of every day, filling the tanks that would be needed for the dives. Two compressors were brought for this purpose, one that ran on diesel fuel and one that ran on gasoline. Approximately 20 tanks were filled for each day's work underwater.

There was continual construction and maintenance work to be done at headquarters. The construction of DC power supplies for electrolytic reduction was a crucial aspect of logistical support. The power supplies were necessary for the conservation of the cannon that was recovered and also the cleaning and stabilization of the copper cauldron. An anode for the electrolysis of the cannon was also fabricated by welding sections of steel cut from 55-gallon steel drums.

Apart from construction and dive support activities, a portion of the staff worked each day in the lab to register, catalog, process, and conserve artifacts. The Lost World Trading Company collection was retrieved from the French Restaurant early on in the survey. This collection was recorded in detail and a significant portion of it was conserved and prepared for display.

The morning dive teams would return to headquarters at midday to join the rest of the staff for lunch. Over lunch, the morning dives would be discussed and plans for the afternoon dives would be finalized. Equipment would be gathered and the dive teams would meet the boat at the wharf at 1:30 PM. The afternoon's work would proceed much in the same way as the morning schedule.

The dive teams returned to headquarters around 5:00 PM. Equipment and gear would be rinsed prior to the afternoon meeting. In this meeting, the staff would discuss the events and finds of the day, talk about tasks to be accomplished or problems that needed to be solved. The trips back to the hotel began around 6:30 PM. The crew would be free in the evenings to take notes, process collected information, or simply relax.

In total, 15 crewmembers logged 267 dives during 25 days of diving. These dives added up to 119 hours of working bottom time. The safety record of the project was perfect and diving operations were executed without incident. Profiles for dives were kept conservative because of the depth of the site (65 to 110 FSW). A primary concern in diving operations was the lack of hyperbaric facilities on the island and the unreliability of emergency evacuation to an off-island facility. Due to increased demand during the holiday season, it was not possible to reserve a charter plane in case of a diving emergency. With this in mind, all dives were conducted within no decompression limits.

In order to increase safety and also extend diving time, the majority of the diving was conducted using hyperoxic air, or Nitrox. Mixed gasses breathed ranged from 30% to 37% oxygen (normal air is 21.9% oxygen), with the average blend being 34%. The use of Nitrox was determined to be a great success. It reduced fatigue associated with repetitive deep diving, shortened surface intervals required between dives and extended the total bottom time allowed. Decompression safety stops where divers breathed 100% oxygen at 15 feet were also used in some cases.

Other types of advanced diving technology were used to facilitate work underwater and to increase safety margins. Wireless underwater communications systems were used at various times that allowed diver-to-diver communication and also communication with the surface. The archaeologists also wore computerized dive watches that recorded each individual dive in depth and time, allowing the precise record of each dive to be tracked via a computer interface and logged into a database. For additional safety, a doppler acoustic monitoring system was used to monitor the accumulation of nitrogen bubbles in the airways and circulatory systems of each diver. This allowed customization of dive profiles for specific cases.

D. Site Activity and Underwater Work

Activity on the shipwreck site can be categorized into three areas: imaging, mapping, and documentation and recovery. Work on the shipwreck was intended to be non-intrusive, that is to say that excavation and recovery of artifacts was not a goal of the survey. The primary intent of the survey was to document the major topographical features of the site and map them accurately. This is considered to be ethical and prudent archaeological practice. Additionally, in the event of surface disturbance from the construction of the cruise ship dock, the nature of the site would be recorded.

The site was imaged using a number of techniques. An acoustic survey was conducted within the first few days of diving. The system used was the MarineSonic SeaScan PC 650 MHz side-scan sonar. Numerous high-resolution images were generated of the historic shipwreck as well as the modern wreck *Seimstrand*. The SeaScan software is a powerful manipulation tool that allows the user, among other things, to measure height and distance of objects directly from the image.



The site was also photographed in a controlled, systematic method in order to collect two-dimensional spatial information and topographic details. 144 overlapping images were taken in four lanes from a uniform height of 20 feet above the wreck. These images will be processed in a computer and assembled into a seamless digital image of the entire wreck site, or photomosaic. Black and white film (ASA 400) was used to provide higher resolution and contrast at depth. The underwater camera used a 15mm wide-angle lens.

In order to accurately map the site, a series of primary and secondary datums were established. A 52 by 14-meter grid delineated the site, which was also divided into three quadrilateral zones. Steel stakes fashioned from concrete re-enforcing bar served as the primary datums and marked the corners of these grids. Additional datums were set in the center and to either side of each zone, with a permanent datum being established at the gudgeon of the steel wreck *Seimstrand*. Using this self-referenced system, the survey crew was able to triangulate 75 features with an average residual of under 3-cm per mapping point. In all, over 750 discrete measurements defined the system and the site's features.

Detailed, annotated and measured field sketches were made of each feature. In addition to scaled drawings, the *in situ* artifacts were all recorded by black and white and color photographs and on underwater video. Such detailed recording at depth takes a great deal of patience and effort, yet produces the most reliable and dependable data. These images and drawings are currently being cataloged and indexed by IMH staff into a database that will be correlated with the excavation notes and site map.

Though a Geometrics 866 proton precision magnetometer was available, it was not used to record the magnetic signature of the site, as it was believed that the magnetic signature of *Seimstrand* would render this data unreliable. A hand-held metal detector was used, in a limited survey at the stern, to determine the extent of scattered wreckage buried by the sand. This was performed merely as a test. Time was not available to perform detailed magnetic and metal-detection surveys. It was decided to allocate resources to the surface mapping techniques already listed above.

The final category of on-site activity was recovery of artifacts. Since a sizable collection of material had already been recovered from the site and was in the archaeologists' possession, recovery of artifacts was not emphasized in the research strategy. Surface collection was limited to a few discrete cases where artifacts were considered to be in immediate peril and were of diagnostic value.



The research design, however, called for the recovery of one significant artifact: one of the large, encrusted cast iron cannons. It was hoped that the cannon would have diagnostic markings that could lead to identification through archival research. Because of the time limitations of the survey, a candidate for lifting was chosen within the first few dives on the site.

The chosen gun (F35) was located at the stern of the wreck, just off the wreckage in the sand on the starboard side. Unlike the other cannons, this one was not concreted to the bottom or the surrounding coral reef. As soon as the

datums were in place, the cannon was recorded and documented *in situ*. Excavation by hand fanning proceeded around the gun. A number of small artifacts were exposed, comprised for the most part of small ballast stones, fastener concretions, and faunal remains (animal bones that were possibly food related). These artifacts were mapped relative to the cannon and recovered before the extraction of the gun. Further excavation around the cannon revealed the remains of frame timbers. The timbers upon which the cannon had come to rest were highly deteriorated, and it was judged that recovery would pose little damage to the wood.



The cannon was lifted from the bottom by a crane on December 22. The crane and lifting personnel were provided by the firm of K.A. Kharafi & Sons, who were engaged in the construction of the nearby cruise ship dock. The cannon was harnessed in heavy nylon webbing, which was further connected to a more than 100-foot cable that terminated at a buoy on the water's surface. The lift was performed easily in two stages, and the extraction damaged neither the gun nor its surroundings.

After the lift, the gun was kept aboard the tugboat that drove the crane barge for the night. This was necessary because of confusion at the Camden container port, which extenuated from changes in plans that were beyond the control of the archaeologists and the logistics coordinators. Regardless, the gun was safe until it was collected the next morning at the construction crew's Kingstown headquarters and transported back to the shipwreck project's headquarters.

E. Conservation of Recovered Artifacts

As already mentioned, a variety of artifacts had already been recovered from the shipwreck prior to the most current project. These are assumed to be objects that were exposed on the surface of the wreckage. Cataloging, recording and stabilizing these artifacts was a major priority in the survey's research design. Since conservation of marine artifacts is generally a long, detailed and careful process, this was not possible for the entire collection. Still a good number of artifacts were ready for display by the end of the month.

Despite the lack of specific provenience for these artifacts, they still provided an extensive representative sample of material culture for comparative analysis and historical interpretation. The extant collection included various specimens of dark-green glass wine bottles, tin-glazed ceramics, red earthenware vessels, a large brown salt-glazed stoneware jug, earthenware brick tiles, lead shot, a large copper cauldron, a piece of copper sheathing, and numerous concretions. All specimens were recorded in detail and stabilized at the project headquarters.

Careful cleaning of the artifacts comprised the majority of conservation activity. This was undertaken so that the artifacts could be recorded and accurate surface detail could be noted. Most cleaning was mechanical in nature, involving delicate removal of marine encrustation with dental picks and special pneumatic tools. In some instances, chemicals were used to remove stains and marine growth. Artifacts that had been completely cleaned and were free of soluble and insoluble salts were dried and sealed with protective coatings.



The other major conservation undertaking was the stabilization of the recovered iron cannon. Before cleaning, the concreted cannon was recorded in detail. The small artifacts that were concreted to the gun's surface were mapped in plan and profile by offsets and recorded as the encrustation was removed. The cleaned gun was stored wet in a concrete tank behind the lab, fitted with a steel anode and hooked up to a regulated power supply. Another power supply and electrolysis process was set up for the large copper cauldron that had been previously recovered.



A number of concretions had been recovered from the excavation around the cannon. Several of these, along with some of the concretions recovered before the present survey, were brought to the Kingstown General Hospital to be x-rayed. The resulting radiographs clearly showed the encrusted artifacts and their hollow molds.

Another directive of the expedition was instruction of local participants in proper maintenance of the collection and also in basic methods of conservation.

Volunteers from the history department at the local college assisted with the conservation and cataloging of artifacts. At the end of the survey, all cultural material was given to the Organization of American States, Heritage Tourism Project, and the Government of St. Vincent, who took responsibility for the continued maintenance of the collection.

III. Discussion of Finds

A. Site Description

The shipwreck (KH1) is situated near the southern boundary of the harbor of Kingstown, the capital of St. Vincent and the Grenadines (Lesser Antilles). The site is situated near rocky cliffs in deep water at an apparent natural anchorage. According to local tradition, two modern steel ships, *Nomad* and *Seimstrand*, were at anchor in the same spot in 1986 when a storm caused them to collide and sink. The two massive hulks now lie mere meters from the historic wreckage, which now makes a spectacular diving site with vast recreational potential. Side-scan sonar sweeps conducted near the site produced images of what could be interpreted as the ballast pile of yet another historical wreck (KH2), indicating the possible proliferation of wreck sites within the confines of the harbor.

The historic shipwreck lies on a roughly east-west slope in a sandy matrix between several fingers of coral reefs. The remains appear to begin at about 65 FSW and extend to a depth of nearly 110 FSW. The exposed wreckage is now covered with a living reef, inhabited by a thriving assemblage of marine life. The major features of the site include three large anchors, at least 10 large cannons, four lead hawse pipes, plentiful copper cookware and both loose and articulated sheets of copper hull sheathing. These surface features suggest this wreck was a large, well-armed ship with either a sizeable crew or a human cargo. Both the overlap of the copper sheathing and the position of the anchors and hawse pipes indicate that the bow of the vessel lies up slope. The majority of the remains lie to the south, suggesting that the ship came to rest on its starboard side.

Approximately 75 artifacts or features were observed and recorded on site during the four weeks of diving. In addition to isolated finds of ceramic sherds, broken bottle pieces, and unidentified concretions scattered across the site, the major identifiable components of the site generally fell into three broad categories: ordnance, galley ware, and rigging accoutrements and hull remains.

B. Ordnance

Including the recovered gun, as many as 10 cannons were identified amid the coral encrusted wreckage. Though many of these were partially obscured by the reef (some barely protruded from the coral), they all seemed to be similar in size to the recovered gun, approximately 2.7 meters in length. The cannons were all positioned on the starboard side of the wreck, scattered primarily at midships and the stern area.

As hoped, the recovered cannon proved to be diagnostic providing clues to nationality and date

of manufacture. The overall length of the gun was 2.67 m, the diameter at the breech was 0.48 m and the diameter of the muzzle was 0.37 m. Using pneumatic tools and a hammer and chisel, the concretion was easily removed in less than a day, and the iron was well preserved. A number of diagnostic markings were observed on the breech ring of the gun. The first of these was "A 1776" which confirmed the hypothesized age of the wreck. In addition, three fleurs-de-lis were situated beneath the touchhole, indicating that the cannon had a French origin. Other inscriptions on the breech ring were the weight of the gun in French pounds, "3236," and the number of the gun, "N 31." The trunnions were marked as well; the left trunnion had the letters "RA" while the right had "RV."



Upon cleaning the gun, archaeologists contacted the French archival historian John de Bry of the Center for Historical Archaeology. De Bry immediately confirmed that this cannon was a French 12-pounder, based on the dimensions of the cannon. De Bry related that the "RV" was actually RU and that it was the standard mark of the Ruelle Foundry, located southeast of Rochefort, France. The foundry of Ruelle was established in 1750 and remained in operation until around 1890. The year this cannon was made, 1776, was the year that Ruelle became property of the crown. Few iron gun foundries at this time were royal property, and the three fleurs-de-lis may emphasize the new status of the foundry (John de Bry 1997: pers. comm.). The marks on this gun are almost identical, except for the different weight and date, to those from a French 32-pounder in the collection of the Royal Armouries housed in the Tower of London (Blackmore 1976: 122). The Kingstown Harbor cannon was cast just before the new gun regulations of 1778, and its weight and dimensions match the earlier French naval 1766 regulations (Boudriot 1993: 314).

C. Galley Ware

In addition to the cauldron previously recovered, an impressive amount of copper cookware was observed on the site. The cauldron recovered by the Lost World Trading Company was manufactured of riveted copper sheets and was 58.6 cm tall with a maximum diameter of 46.2 cm. At least three other cauldrons were observed *in situ* on the shipwreck. Some of these smaller cauldrons had rounded lips, but other details were obscured.

There were also two large, rectangular copper cauldrons. One was in very good condition, though the other was crushed almost beyond recognition. The cauldron that retained its shape was 77 cm long and 56 cm wide. It appeared to be more than 55 cm deep with rounded lips.

In addition, a large three-burner stove was located on its side just forward of the midship area, partially buried in the sand to the starboard side of the wreckage. It appeared to also have been constructed of copper. The stove was 1.05 m long and stood 50 cm tall. The burners were of three different diameters, 15 cm, 26 cm, and 28 cm.

A curious copper artifact was included in the collection of artifacts recovered by Lost World Trading Company. This was a heavily encrusted shallow dish with three legs. The artifact was not cleaned due to its extremely fragile state. A few tile-like bricks (roughly 20.2 x 9 x 2.9 cm), which probably were associated with the galley, were also observed scattered across the site, particularly at amidships.

A number of ceramic and glass artifact types were found in association with the shipwreck. The majority of these types were described and discussed in some detail in the preliminary report of

the shipwreck (Johnson 1996). That initial discussion was amended in some regards by the work of the most recent survey.

The ceramic artifacts collected from the site all appear to date to the later portion of the eighteenth century. These include ceramic pieces such as plates, pitchers and other small vessels. Examples of utilitarian or shipping containers have not been discovered to date.

The most common type of ceramic encountered among the artifacts was tin-glazed earthenware, which continued to be manufactured into the 1780s. Other types of ceramics included unglazed red earthenware, porcelain, and Ellersware, a refined redware with incised decorations.

A vessel that was unavailable for examination during the author's previous trip was contributed to the collection during the most recent expedition. This was the vessel that was recovered and photographed by Bill Tewes and sent to Mensum Bound for identification. From drawings that survived from the Lost World Trading Company's exploration of the site and descriptions, it was thought that this artifact was an example of a highly diagnostic pottery type known as "British Brown." Now that this vessel has been documented, the common consensus among consulted archaeologists is that this vessel is a Rhenish stoneware jug. The eighteenth century date of the vessel remains clear, despite the proper regional identification.



The recovered pieces of green bottle glass were highly vitrified and posed some problems in cleaning and conservation. The poor condition of these artifacts is strong proof of the need for proper and immediate care of cultural material upon its collection from an aquatic site.



Brief comparison of the bottle fragments showed that at least 4 distinct styles of bottles were present on the shipwreck. As may be expected, variances were noted in the bottles' bases, extenuating from differing techniques in blowing the glass. The string rims of the bottles all showed clearly different manufacturing techniques, indicating a variety of sources for the bottles' origins.

In total, 101 entries make up the catalog of recorded artifacts recovered from the Kingstown Harbor Shipwreck (KH1). This includes concre-

tions and marine encrusted artifacts, some of which have yet to be conclusively identified, wood fragments and bone, as well as the many artifacts mentioned above.

D. Rigging and Hull Remains

Four large lead hawse pipes were located, in two pairs, in the forward section of the wreckage. These were very large, about twice the size (though otherwise morphologically similar) as those recovered from the British warship HMS *Pandora* (Peter Gesner 1997: pers. comm.). They were likely fastened to the ship's hull with square nails.



Three anchors were recorded; two were located on the starboard side of the wreckage, and one of which was leaning up against a pile of coral and cultural material, its flukes buried in the sand. The other anchor, situated near the cook stove, was almost entirely buried, with its ring and shank partially exposed. The third anchor was lying flat in the center of the site, perhaps stowed below deck when the ship wrecked. This appears to be the largest of the three anchors, measuring 4.91 m from the crown to the end of the shank, and 3.08 m from fluke to fluke. The encrusted ring was about 0.75 m in diameter.

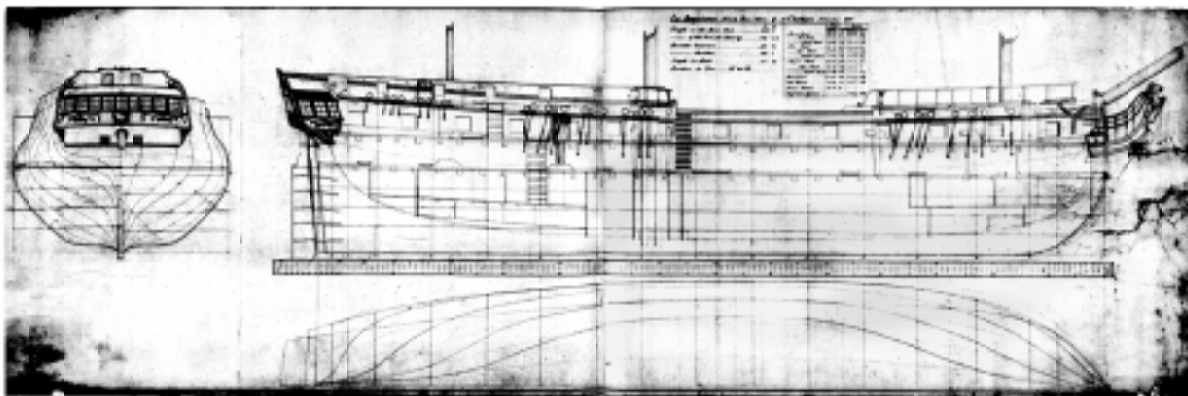
An extensive amount of copper hull sheathing was visible throughout the site. This included many disarticulated sheets concreted into the coral as well as several intact runs of articulated sheathing, with nails still in place. Some of the sheets in the stern appeared to have been cut triangularly to accommodate the sharply rising curve of the hull. Examination of the piece of copper sheathing that had been previously recovered revealed that a copper nail was still associated with it. Oakum or pitch caulking was also noted with the fasteners. The nails were spaced 4-5cm apart, and the sheets were attached to the hull in an overlapping pattern.

A small section of hull remains were exposed during removal of sediment around the cannon at the stern of the vessel. After the recovery of the gun, it was possible to examine them more closely and map the visible remains before reburying them. The remains were extremely deteriorated, but appeared to be several frame timbers running athwartships, with transverse iron fasteners. A number of loose, concreted fasteners were also associated with the hull remains. A wood sample was collected, along with stone ballast and sheathing samples, for analysis and identification.

IV. Preliminary Analysis

It is apparent that the Kingstown Harbor Shipwreck was a large, copper-clad vessel that sank, possibly while at anchor, in the late eighteenth century. All of the diagnostic artifacts appear to predate the nineteenth century, particularly the ceramic types. The date range can be narrowed even further with the consideration of two additional factors: the dated cannon and the presence of copper hull sheathing and iron fasteners below the waterline. These features suggest a date range from 1776 to 1786.

The British military did not use copper sheathing until 1761, though it would not become commonplace in the Royal Navy until the Revolutionary War. It took longer for this technology to become accepted by British merchant ships, and sheathing remained rare in the private sector until the early nineteenth century. The few merchant ships that were copper-clad in the last few decades of the eighteenth century were almost exclusively involved in the East and West Indies trade, usually in the slave trade. A survey of “coppered” vessels from Lloyd’s register of 1786 showed that 45.1 % were slavers (Rees 1971). The French military first began to use copper sheathing shortly after capturing a British Cutter in 1773. After 1785 the French mandated the exclusive use of cuprous fasteners below the waterline (Boudriot 1993: 151, 154). The British Navy Board declared a similar order in 1786 (Staniforth 1985: 25).



Above, *La Magiciene* (1783), a French 32 gun Frigate captured and recorded by the Royal Navy.

This site was brought under consideration initially in the belief that it was the wreck of a British slaver, *Africa*, which sank in 1784. Of course, the large copper cookware associated with wreck could feed a human cargo of hundreds, but it is more likely that the ship was a large military ship. It could also have been used to feed the hundreds of people needed to man a privateer or frigate. Documentary evidence, however, has shown that not only was the *Africa* sheathed in wood, but also she was much too small to have been this wreck.

The most likely identity for the ship, considering that the cannon was property of the French government, would be that of a French frigate. France and England battled over the possession of this island, and the entire Lesser Antilles throughout the entire colonial era. Indeed, several intense naval campaigns took place in the area during the time that this ship wrecked. The ships of the French Admiral D’Estang seized St. Vincent and a number of other British islands in the winter of 1778–1779. Before the island returned to British hands in 1783, however, she was ravaged by the devastating hurricane of October 10, 1780. This storm claimed a number of ships throughout the region. On the windward side of St. Vincent, it was reported that H.M.S. *Experiment*, 50 guns, and the French ship *Juno*, 40 guns were destroyed with a total loss of life (Marx 1987: 286). This shipwreck could represent either of these two ships or another victim of the hurricane. With the present evidence, it cannot be ruled out that this ship was a privateer that, legally or otherwise, came into possession of the royal cannon.

Efforts are currently underway to conduct primary and focused historical and archival research in France. Should these efforts be successful, it is expected that the records of the cannon foundry will make mention of the 31st weapon that was cast in 1776. It is hoped that these records will also note the ship to which the gun was issued, therefore suggesting a more conclusive identity for the ship that is wrecked in Kingstown Harbor.

V. Recommendations

The research and data collected went well beyond the expectations of a traditional 'non-disturbance pilot survey.' This expedition tackled a major portion of an overly ambitious agenda and produced excellent results. It is commonplace among archaeological projects that for every month spent in the field collecting data; a year is required to process that data. The author and other members of the project's staff are undertaking that task at IMH now and will continue to do so.

As the research and analysis proceeds, the results of this survey project will be presented in a number of venues. Articles are planned for several professional journals and also more popular publications. As mentioned earlier, a film project regarding the wreck and the survey is in production currently. Perhaps the most complete document of this phase of the project will be a thesis for a Master of Arts Degree, to be prepared by Chuck Meide of Florida State University. Copies of these documents will be made available and shared between involved parties.

A. Artifacts and Conservation

The ultimate and perpetual responsibility of this project is the care, treatment and preservation of the artifacts that have been recovered from the shipwreck. This includes the artifacts that were reclaimed from private possession as well as the material recovered during the recent survey. A portion of these artifacts are ready for display, but many must continue to be stored in water for their own preservation. Quite a few artifacts still require significant attention and conservation.

The primary example of such an artifact is the iron cannon. Currently, the cannon is stored in a concrete tank behind the former project headquarters, hooked up and ready to begin treatment. This treatment must begin immediately in the best interest of the artifact. The cannon was in remarkable condition when it was recovered. Its condition will only deteriorate as time goes on, increasing the level of difficulty in conserving the gun and raising the eventual expense required. Since detailed instructions were given prior to the survey crew's departure from St. Vincent the procedures and steps will not be outlined here.

Communication between the persons on St. Vincent who have been instructed in these conservation methods and techniques and IMH staff should be continuous and regular throughout these treatments. The electrolysis of the cannon is expected to take 18 to 39 months. It has been recommended that the cannon be checked on a daily basis to make sure that the process has not been tampered with or disturbed and is working properly. The chloride content of the vat should be tested every two to three days, and a brief report on this progress should be made to IMH. IMH personnel will then be able to advise and consult on the appropriate times to change the solution and troubleshoot any other problems or concerns.

Like the cannon, the round copper cauldron also is a primary and immediate concern. It was not possible to complete the final treatment of this artifact during the survey, due to constraints of time. The final steps of rinsing, applying benzotriazole, drying and sealing the artifact should be taken as soon as the artifact has finished its electrolytic reduction and cleaning treatment.

It would not be responsible to proceed with any further research efforts without the guarantee of these objects' stability and treatment. If they are neglected, they will continue to deteriorate at an increasing rate until they are essentially destroyed. The importance of this responsibility cannot be stressed enough.

In the treatment of the remaining artifacts, and assisting with the conservation of the cannon, setting up a schedule of short conservation and research junkets is recommended. These trips should be made every few months and last from 4-7 days. Two archaeologists/conservators would travel to Kingstown to check the cannon and assist with major steps in its treatment. Over the length

of the stay, these individuals would work on other items in the collection, for example, making epoxy casts of concretions or cleaning difficult pieces. Further research on the collection could also be conducted during the trip. Time tables, budgets and agendas for the first of these trips should be worked out in the near future.

In the interest of the collection, funding should be sought to establish an endowment for its continued maintenance. This endowment could include a stipend for a curator of the collection, but it must first be sufficient to meet any expenses associated with the collection's storage and/or display. Various granting sources exist to aid in the maintenance of cultural collections and in the creation of displays and monuments. These could be approached for additional funding, yet basic support of the collection would be expected from internal funding sources.

The collection that has been conserved is ready to be displayed and shared. The design and creation of a museum display centered on the pieces recovered from the wreck is of primary importance to any publication of the wreck. The people of St. Vincent will develop a deeper appreciation and better understanding of their maritime heritage with a thoughtful and well-crafted exhibition, and the quality of the exhibition will only increase its attractiveness to tourists. IMH is currently developing a display of artifacts from its project to excavate the schooner *Annabella* in Cape Neddick, Maine, and could design a similar exhibition for this project.

B. Archaeological Investigation

Now that a complete survey of the site has been conducted, the shipwreck could be excavated. This step cannot be taken lightly. Already, the responsibility in conservation alone from recovering one artifact, the cannon, amounts to at least two years of time and several thousand dollars. The long-term cost of excavation, which is the commitment to the vast collection produced through its course, must be understood prior to beginning a program of scientific recovery.

Facilities with adequate and secure storage will have to be in place to process and handle the artifacts, and a budget will have to be arranged for their conservation. Handling and processing the data collected during the excavation will take years, and conserving the collection will take several more years. This will be a full-time job for several devoted people long after the excavation has ceased.

Given that St. Vincent has no infrastructure or precedent for this type of demanding and involved research, continued caution may be wise in proceeding with the excavation of this shipwreck. According to the original proposed plan, the next investigative phase is a season of test excavations into specific areas of the wreck. Included in the goals of this season was determining those areas that should be focused upon in that test excavation.

As many as 10,000 artifacts could be recovered from the shipwreck during a 3-month excavation. A tightly controlled system of provenience must be established prior to any intrusion below the surface of the site. Preparations for the handling of the artifacts should be made well before then.

It is recommended that excavation be approached with a more relaxed pace than the recent survey expedition. Over the longer period of time, a crew only slightly larger than the survey team could excavate and carefully document three or so test trenches. Test areas located in the center of the wreck, at the bow, and across the sandy stern at the deeper end of the wreck should give a good representative sampling of the cargo of the ship. Digging in the sand to the starboard of the shipwreck will produce a number of artifacts, and exposure of the hull will produce details of the ship's construction. Large concentrations of concreted artifacts are expected and will have to be considered and planned for in the excavation strategy.

During this ground-testing phase, collection of major artifacts such as the anchors or additional

cannons would not be focused on for several reasons. Firstly, the conservation burden is too great, the task of responsibly excavating and recording the surrounding matrix is not estimable, and the logistical complexity of recovering these artifacts is tremendous. The only foreseeable reason to recover these items at this point in the project would be for potential display value.

In establishing a balanced investigation, there are many questions to be answered from an excavation of this wreck. Greater amounts of cultural information will likely be gleaned from smaller finds encountered while working to expose the ship's hull timbers than in the larger utilitarian furnishings. The ship's hull is perhaps the greatest prize, offering to teach us much in terms of ship construction in a period of technological experimentation and growth. However, the perpetual conflict and changing political winds in the history of St. Vincent call attention to the contents of the ship and the secrets they may hold.

C. Survey

Side-scan sonar around the area of the historic shipwreck suggested that another shipwreck might be located a few hundred meters from the KH1 site. Clearly, the confines of the harbor are not the friendliest, and it is more than possible that a number of historic shipwrecks lie in its waters. Certainly, the possibility of locating the lost slaver *Africa* still tantalizes.

A limited area of Kingstown Harbor is accessible via standard SCUBA diving. The majority of the body of water is quite deep due to the volcanic geography of the island. A remote sensing survey of these accessible regions is strongly recommended as a following step in assessing the submerged cultural resources of the island. This survey should be conducted with side-scan sonar and correlated magnetometry.

Encountered shipwrecks would be briefly recorded with photography and videography. Each survey target could then be assessed for its possible data and historic context and origin. In addition to further survey in Kingstown Harbor, the waters surrounding Young Island and also those below Fort Charlotte merit similar attention. Many local fisherman and others who visited the shipwreck project discussed a "cannon wreck" near Young Island in shallow waters.

Documenting this and other wreck sites is clearly a priority that parallels the excavation of the first identified historical wreck (KH1). Building a balanced plan of managing submerged cultural resources begins with survey, is rounded by excavation and is brought to fruition through presentation of the finds. St. Vincent's cautious approach to building this type of program has been excellent thus far, and it is hoped that the current survey has stimulated continued interest in exploration and documentation as well as excavation and recovery.

D. The Shipwreck

The shipwreck is a wonderful find in terms of historical and archaeological research. It is also a spectacular dive site for recreational purposes. The educational value of the shipwreck is wonderful and its pristine and relatively undisturbed state makes it even more attractive to possible tourists.

With appropriate supervision and monitoring of diving activities, there is no reason why the site could not be made available to sport and recreational divers. A very strict "look but don't touch" policy must be adopted and enforced prior to any sport diving, however. Of course, collection of "souvenirs" must be completely forbidden.

It may be necessary to have a government-sanctioned chaperone accompany dive trips in order to guarantee that no cultural material is disturbed or displaced. The presence of this chaperone, perhaps a Coast Guard diver, could be funded through an honorarium paid by the sport divers to

access the site. It may be possible to allow local dive shops to enforce this policy, with intermittent checks as the government sees fit.

VI. Conclusions, Intents and Acknowledgements

At the completion of this survey, it is clear that the historical wreck in Kingstown Harbor, St. Vincent, has much to tell us about the maritime history of the region and the developing global systems of trade, colonialism, and sea power in the late eighteenth century. With the government's continued interest, approval and enthusiasm, it is hoped that further field research and excavation will be conducted on the site. While this logistically complicated survey was an ambitious undertaking, a small team was able to collect a tremendous amount of information in a month's time with the support of an enthusiastic community.

Although a more expensive option, the priority of keeping all cultural material in local hands for conservation produced immediate and tangible appreciation for the precious nature of artifacts from marine contexts. The display of the conserved material in addition to the continued analysis and interpretation of the collected data will not only provide economic benefits through tourism but also enrich the understanding and appreciation of St. Vincent's unexplored, important maritime heritage.

The steps that have led to this point of consideration in this project have displayed a cautious approach. It is recommended that this approach be maintained as St. Vincent develops a balanced policy for managing its submerged cultural resources. As the appropriate time for excavation of this shipwreck draws near, conservation of the recovered artifacts, presentation and display, and also extended survey and documentation must all be considered. As St. Vincent and the Grenadines makes its decisions and plans for the future, IMH will be open to assisting and enthusiastic in developing and realizing these plans, looking forward to the discoveries ahead.

A. Intent

This paper is intended for distribution in the offices of the Organization of American States and the government of the island of St. Vincent and academic institutions of their choosing. It is not meant for publication in print or other media. The opinions and research that they are based upon are the intellectual property of the author, who assumes responsibility for the content of this report. The author agrees to facilitate any further intellectual inquiry concerning the topic of this paper, and is open to any discussion pertaining to future investigation, research and communication of findings as the OAS and government of St. Vincent and the Grenadines see fit.

B. Acknowledgements

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