Queen Anne's Revenge

Conservation Laboratory Report, October/November 2004

UAB Conservation Laboratory, Greenville
Sarah Watkins-Kenny, *QAR* Project Conservator Eric Nordgren, Project Assistant Conservator
Wendy Welsh, *QAR* Laboratory Manager

2004 Fall Field Season

This year's field season, during the week of October 3 - 8, 2004, was the first investigative excavation since 2000, on the shipwreck site. The project had multiple goals but the primary focus was to evaluate the accuracy of the gradiometer surveys conducted in 1999 and 2001 through test excavations. However as there was also a possibility that some artifacts would be recovered, conservators from the *QAR* Conservation Lab were also part of the field team.
To prevent deterioration of artifacts on recovery the conservation process needs to begin as soon as the object is brought to the surface. The *QAR* Conservation Lab had a conservator onboard at all times during the fall field season. Conservators are responsible for the care of the artifacts from the time of recovery to the time they reach the museum curator's hands.

The first objects to come to the surface were small ballast stones and small pieces of iron concretion recovered from sand covering the site during the dredging process. The dredge is the equivalent of the terrestrial archaeologist's shovel; it pumps the sand to the surface where it is filtered through a screen on the deck of the dive boat, before being returned to the sea. Artifacts recovered in the screen were given a find number and documented as dredge spoil. Once a few layers of sand were removed from the site, artifacts began to appear and were thoroughly documented by archaeologists through drawings, photographs and video.

The decisions to recover an artifact were made based on whether or not they were at risk of damage if left on the site, easily conserved and/or diagnostic. Two lead artifacts, a lead sounding weight with marks and a folded lead sheet with nail holes were recovered due to their vulnerability and the minimal conservation required. A few concretions were recovered; one appears to be a cannon shot and three others resemble bar shot with various objects concreted to it as well. Once the objects were recovered they were given numbers, provenience information was obtained, and placed into containers with seawater. At the end of each day, all the objects recovered for that day were removed from the boat to a secure store. At the end of the week, all the objects recovered were padded and packed safely for their journey to the conservation lab in Greenville. The objects were first put into 50/50 seawater to tap water for about two week to gradually introduce the objects to a less saline environment. The lead was placed into

tap water and the concretions are stored in a 0.5% sodium carbonate solution in tap water to prevent corrosion of some exposed iron.

The 2004 field season has prepared the conservation team for the fieldwork to be done in 2005. As we continue to move objects to the museum, we are making room for more to come.

Artifact Transfer to NCMM

Curator Connie Mason arrived on October 21st, to transfer almost 900 artifacts to the *QAR* Repository at the North Carolina Maritime Museum in Beaufort. Artifacts transferred included approximately 700 nails, a copper alloy sail needle and small pins, numerous lead artifacts, and cannon shot.

Once the objects are conserved, they are placed in a controlled environment and monitored to make sure they are stable.Before artifacts reach the museum they undergo study and thorough documentation. Graduate Assistants, Kim Smith and Kristin Koshgarian helped with taking the final weights, measurements, and sketches as well as marked the objects with their *QAR*numbers. All the artifacts were photographed and the database records were completed with recommendations on storage and display for the curator. These artifacts can be seen on display in Beaufort.

Cannon Dehydration

The last two months have been particularly exciting as Cannons 19 and 21 have finally been removed from their treatment tanks, dried and given protective surface coatings - they are the first cannon from the shipwreck to reach this stage.

Cannon 19 & Cannon 21 have been undergoing electrolytic reduction treatment for almost four years to remove soluble salts (particularly chlorides). If the cannon were allowed to dry out while still retaining high levels of salt in them they would be at great risk of corroding in the future. The concentration of chlorides in the electrolyte (treatment solution of 2.5% sodium carbonate in water) has been regularly checked to monitor progress; the concentration in the solution being taken to be an indicator of the concentration of salts in the object itself. Finally, in September it was determined that the levels of chlorides in the solutions were so low (25ppm) that the process had effectively reached an end. The next step was to remove the cannon from the electrolyte and thoroughly rinse the sodium carbonate (alkaline) from the cannon. Both C19 and C21 were immersed in successive baths of clean (by reverse osmosis) water for about a week each until the

water remained neutral indicating that sodium carbonate had been rinsed away. The cannon were then removed and the surface was brushed with soft toothbrushes and running RO water to remove the loose corrosion products.

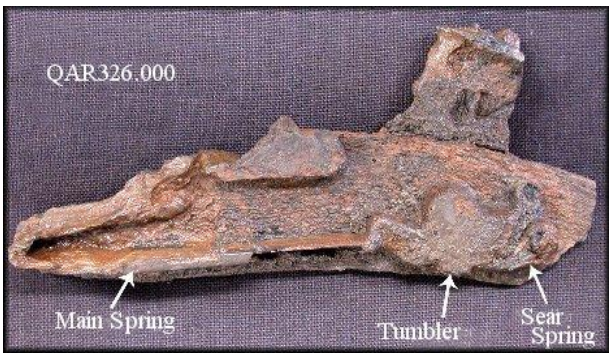
The surfaces of the cannon were patted dry and the first protective coat of 10% tannic acid in RO water was applied with soft toothbrushes to get into all the crevices of the surface. Two more coats were added in the same manner before the end of the day and the cannon were left to dry. Since then the cannon have had three more applications of tannic acid solution.

We are closely monitoring the cannon, constantly on the look out for any signs of corrosion - which would be indicated by spots of orange rust appearing on the surface - So far both have shown no major sign of trouble. The cannon have been moved from our large warehouse Lab (which is unheated) into our Lab in the main building at ECU's West Research Campus (VOA). This is a good time of year to move the cannon into this treatment stage because the humidity is now so low - especially in our heated lab where the relative humidity is about 20% most of time. At higher humidity levels the cannon would be at risk of actively corroding.

The cannon will receive a few more applications of tannic acid solution before being given protective coatings of lacquer and wax. We will then continue to monitor their stability for a few weeks before their transfer to the Museum in Beaufort. We'll keep you posted on the progress of C19 & C21.

ECU Public Relations

Clint Bailey, Director of Marketing for East Carolina University contacted us about their interest in making a short film about the *QAR* Project, to air on the local ECU cable channel 99. The purpose of the film would be to educate students, staff, local community and surrounding areas about activities at the QAR Conservation lab at ECU and about some of the processes the artifacts go through on their journey to the museum. Gary Weathersbee, also of ECU Marketing and the Producer/Director of the short film hired Al'eon Media Inc. out of Cary, NC. Owner/Videographer Scott Schenck and Grip, Andy Poe joined us at the lab on November 18th to film the portion in the conservation laboratory. The film crew had a busy week traveling about eastern North Carolina filming different parts of the story, including Fort Macon near the shipwreck site and at the museum in Beaufort - the final destination of all the *QAR* artifacts.



Gunlock QAR 326.000 Update

In September we reported on howX-raying the concretion around the gunlock*QAR*326.000 showed us numerous lead shot within the concretion. From the shipwreck so far we have approximately 12,000 lead shot and but only one gunlock. To reveal the gunlock it would be necessary to remove the lead shot ridden

concretion around it with an air scribe. Once the concretion and lead shot were cleared away, the main spring, tumbler and part of the sear spring were revealed. The condition of the metal in the main spring and the sear spring was heavily corroded but the tumbler remained solid metal for the most part. When the lock was originally fashioned, all of these pieces would have been removable and separate. With the gunlock parts still attached the artifact was photographed and drawn. The gunlock was placed back into electrolysis to harden the iron and remove more chlorides before the remaining concretion is removed. Progress of this artifact will be posted in the future.