

May 2010 Expedition Summary

05/05/10-05/06/10

Wendy Welsh, Field Conservator

Despite inclement weather the first part of the week archaeologists were able to work on site for two days. The fall 2009 field summary explains site conditions as the majority of the main ballast pile is covered with sediment at levels never seen since the discovery in 1996. Anchors A1 & A2 are the only discernable artifacts on the pile that are partially exposed; a small section of the shank and the top arm of A1 are visible along with the ring and top portion of the shank of A2. Considering the presence of so much sediment, cathodic protection was limited to objects that were easily accessible.

Sacrificial anodes for iron objects contain metals such as zinc, magnesium or aluminum. Wrought aluminum alloys used to fabricate items such as SCUBA tanks contain iron and copper that passivate the anode; therefore cathodic protection is limited to short term effects until the aluminum surface is covered with sea growth and no longer corrodes. Due to limited resources, the sacrificial anodes deployed during October's expedition were cut SCUBA tanks and they maintained a positive effect on the iron artifacts which was confirmed in corrosion potential readings obtained in December; however they are not suitable for long term cathodic protection. Sacrificial aluminum anodes manufactured specifically for cathodic protection in seawater contain about 5% zinc and a small amount of indium which makes the oxide film formed non-passive and are recommended for long term use. Corrosion engineer, Dave Johnson, of Galvotec Corrosion Services, LLC in Louisiana has been a tremendous help in supporting this endeavor by donating 16 anodes totaling 266 pounds of sacrificial aluminum anodes for artifact protection. Each anode will protect one large iron artifact for over 2 years. This project would not have been possible without the anode donations so the project thanks Dave Johnson and Galvotec Corrosion Services, LLC for their support.



At the end of the two day expedition, four iron artifacts were successfully hooked up to sacrificial anodes, 3 anchors and 1 cannon. The SCUBA tank anodes attached to A1, A3 and C12 were changed out to proper long term anodes; within 24 hours A1 showed signs of moving in the

right direction as corrosion potential readings were obtained before and after the anode was changed. A2 was also attached to a sacrificial anode after archaeologists uncovered a small section on the arm to place the test site. All of these artifacts will be monitored in the coming months and hopefully more cannon will be hooked up in the near future.

Herle Jouon and Loic Houeix, of Grand Angle Productions filmed a documentary for the show *Thalassa*, which has been on French TV for the last 30 years. The film crew spent time at the NC Maritime Museum, one day on the *QAR* site and one day at the *QAR* Lab. The *QAR* episode is set to air sometime in September.

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