

**Safer Alternatives To Copper Antifouling Paint Project**  
**Stakeholder Work Group Meeting Summary**  
**4/14/09**

**I. Introductions & General Information**

There were 24 participants in attendance and 10 participants via conference call.

**II. Hull Painting Update**

As of early April, three boats have been painted and additional boats are scheduled to be hauled out over the next few weeks. In all, six nonbiocides, one organic biocide, and three zinc coatings will be tested. Currently, the assessment and cleaning protocol is under development.

The Project Team met with boat owners on February 9 to discuss participation in the boat hull phase and clarify project requirements, responsibilities and cost sharing. The Project Team also met twice with hull cleaners in February to obtain their professional input and discuss the hull cleaning protocol. Cost share agreements have been formalized between boat owners, boatyards, hull cleaners, and the Port to ensure the application and maintenance costs are covered and invoices can be properly routed.

Welcome packets are being assembled for each boat owner. The packet's materials provide general information about the Port's study, FAQ related to the study, information about the coating, photos of the application process, and contact information for the Project Team, suppliers, and hull cleaner. Forms for tracking the boat use over the course of the project are also included in the welcome packet.

***Comments/Concerns***

An attendee asked if there will be a standard form each boat owner will be required to fill out whenever they use their boat. A standard form was developed and will be used by the boat owner to record when the boat is in use, total hours at sea, total miles, and average speed. The form will be provided to the boater as part of the project welcome packet.

It was requested that the Project Team clarify how non-biocides coatings were selected. Because all five of the top performing non-biocides from the panel tests were silicon based, there was concern that a hard non-biocide coating would not be evaluated, thereby essentially eliminating an entire category of non-biocide coatings. As a result, the Project Team selected a hard epoxy based coating for the boat hull testing phase bringing the overall total to six non-biocides coatings.

An attendee inquired whether the Project Team will be including input from the coating suppliers in the cleaning assessment protocol. The Project Team clarified that the protocol will incorporate input from suppliers on the types of hand cleaning tools and recommended cleaning frequency for their coatings. The

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Project Team also reaffirmed that they will be in constant communication with the coating suppliers throughout the project period. If the Project Team finds the recommendations to not be effective, they will discuss options with the coating supplier prior to further action.

Attendees asked which hull cleaners were going to participate in the project. At the time of the meeting, one hull cleaner (San Diego Diving Services) had officially signed a contract to participate and a contract with a second hull cleaner was pending. The Project Team also reaffirmed that participating hull cleaners were required to meet the following requirements: 1) familiar with local fouling conditions, 2) previous work with alternative coatings, 3) knowledge of hand cleaning methods/tools, and, 4) availability for the entire 2 year study period. It was also encouraged that they be members of CPDA.

### **III. Hull Assessment and Cleaning – Draft Protocol**

The Project Team presented and discussed the hull testing protocol at this meeting. The objective of the hull testing is to evaluate the performance of the test coatings in real world conditions over an extended time period. Evaluating the maintenance requirements and durability will lead to better understanding the efficacy of alternative coatings.

Inspections will be completed every 3 weeks, which is consistent with the industry standard for summer cleanings on copper paints. At every inspection, fouling levels, cleaning effort, and coating condition will be assessed using numeric rating scales. In general, the hull assessment will divide the hull into 6 quadrants to better note variances in fouling or cleaning efforts. A fouling rating (0-5) will be recorded for each quadrant. A coating condition assessment will be recorded for the overall boat hull and photographs will also be taken. .

The Project Team and hull cleaners will use the protocol to determine when fouling levels are sufficient to require cleaning. In general, if the fouling score is rated a “2” or greater, the hull will be cleaned. However, the ultimate decision will be made in consensus between the Project Team and the hull cleaner during the inspection. If cleaning is required, the hull cleaner will begin with the least abrasive hand cleaning tool or supplier recommended hand cleaning tool(s) and gradually increase toward more abrasive tools to remove the fouling.

As part of the QA/QC process, the Project Team enlisted AMEC’s consulting services to periodically accompany the hull cleaners and provide a peer review of their assessment and rating scales. The Project Team also stated other divers were welcome to attend an inspection and observe the hull cleaners assess the hulls.

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*Comments/Concerns*

An attendee asked whether the Project Team would record the boat orientation within the slip, since fouling may vary depending on the boat's orientation to the sun and the dock. The Project Team will record the boat orientation on each inspection date and also measure water temperature alongside each boat.

An attendee inquired how the protocol differentiates the various levels of fouling, such as silting, biofilm, and hard fouling. For the purpose of this project the following definitions apply: 1) Silting is light layer of sediment, 2) biofilm or algal slime is the beginning algae forms, and 3) hard fouling are organisms such as tubeworms, tunicates, barnacles, or bryozoans. Long green or brown algae may also be present as boat hulls become progressively more fouled. The project will test the coatings over a two year period. A complete fouling growth curve will provide valuable information on how the coatings have performed over an extended time frame.

A coating supplier stated that coating color may influence the amount of fouling growth and asked whether the Project Team had taken this into consideration. While this was considered, not all of the suppliers were able to provide their coatings in the same color. Many of the newer coatings only had a very limited color selection. As such, there were no restrictions on colors, however the color of each coating will be noted in the record and in the final report.

#### **IV. Secondary Efforts**

##### **1. Tracking additional boats**

The Project Team discussed plans to develop a database to track other boats with alternative coatings outside of the Port EPA project. This will be done to provide supplemental information on the alternative coatings involved in the Port project. This supplemental information will provide better longevity data, contribute to the assessment of cleaning needs, and may help provide more confidence in the cost assessment.

##### **2. Newport Hornblower**

Hornblower Cruises approached the Port of San Diego with interest to test a subset of EPA project's alternative coatings on the *Newport Hornblower*, a 72' aluminum boat. The coatings needed to be compatible with aluminum hulls and capable of being applied over existing copper coatings as the boat hull was not stripped. As such, 10 of the 21 top performing EPA project coatings, four of which are also EPA project boat hulls selections, were applied to the hull. Knight & Carver boatyard applied the coatings in stripes 24" wide on the starboard side from pontoon with 1" separation between coatings.

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Hornblower also intends to provide education and public outreach regarding alternative antifouling coatings and their use in commercial and recreational industries to the public. The timing of the Hornblower testing coincides well with the EPA project's boat hull testing phase.

While normal maintenance for the Hornblower Cruises typically involves a 6 month cleaning frequency, the Hornblower group agreed to coordinate with the Port to enable inspections to occur congruently with the Port's EPA project. The Port and hull cleaners will assess the Hornblower coatings on a 3 week schedule and clean according to the boat hull assessment protocol. As such, the Newport Hornblower will yield results which will compliment the EPA project and provide data on the performance of these coatings on aluminum boat hulls.

*Comments/Concerns*

A concern was raised about the influence the different types of coatings may have on the other. A workgroup member was concerned that the zinc coatings, which are designed to leach their metals, may influence other nonbiocide stripes due to their close proximity on the Hornblower. There was concern this could influence the results of the performance evaluation. Other workgroup members commented that there should be little to no interaction between coatings on different stripes, as the concentration of the active ingredients in leaching coatings is highly diluted within a very small distance (mm) from the surface. It was noted that the 1" separation between stripes was used as a step to reduce the potential cross contamination.

An audience member expressed concern about the possibility of copper continuing to leach from under the Hornblower's newly applied alternative coatings, since no stripping was involved. Boatyard and supplier representatives in the audience responded by stating that the typical surface preparation techniques used at the boatyard included the use of primers and tie coats prior to applying the top coats. This was thought to effectively seal the boat hull and prevent or eliminate the copper from leaching.

**V. Other Items (Meetings/Deadlines)**

**April - May, 2009:**

- Apply coatings to boat hulls
- Initiate assessments and cleanings

**October, 2009:** First summer evaluation complete

**November, 2009:** Tentative stakeholder meeting for progress update