STIC Note

Small Boat Wash System

BACKGROUND/PROBLEM

As the Cutter Boat Pooling maintenance depot for the West Coast, the Naval Engineering Detachment (NED) in Alameda is responsible for the maintenance of the 35' Long Range Interceptors (LRI) that are attached to each Alameda WMSL, plus one spare. Due to the size and complexity of these boats, the maintenance requirements associated with the WMSL davits, and all of the other cutter boats on the West Coast, the LRI must frequently moor in the Oakland estuary. Biofouling occurs quickly, which prevents the LRI from meeting its performance requirements. To appropriately clean the hulls of biofouling, the NED requires a wash system that complies with Base Alameda's Zero Run-Off permit and prevents wash water run-off from reaching the estuary.

Figure 1. LRI II underway with a clean hull. Photo: U.S. Coast Guard.

The NED Alameda staff approached the R&D Center in September of 2019 for help with this problem.

METHODS

The STIC staff worked with NED Alameda to understand the scope of the problem and developed a set of functional characteristics for the wash system. An abbreviated list of the characteristics include:

- Diesel powered
- 3000psi pressure washer, 4000psi preferred
- Gross Vehicle Weight Rating (GVWR) less than 15,500lb
- 200°F hot water preferred
- 600cfm vacuum, 1000cfm preferred
- Washable & reusable filtration system
- 500gal spoils tank
- 200gal fresh water tank

NED Alameda staff had recommended a Commercial Off-the-Shelf (COTS) solution consisting of a commercial vacuum trailer. STIC staff conducted market research on a number of vacuum trailers available through GSA and also researched possible Government Off-the-Shelf (GOTS) and custom solutions, such as aircraft and heavy equipment wash systems.

EVALUATION

Due to the unique requirements of the problem, and the desire to find a solution as quickly as possible, the STIC worked on a parallel path for two different solutions. The first (ultimately successful) path was to work with the R&D Center's Contracting Officer to put together a simplified acquisition package and competitively bid a contract with established GSA contracts.

The second path was to work with the Defense Logistics Agency's (DLA) Special Operational Equipment Tailored Logistics Support (TLS) contract to purchase a semi-custom GOTS solution.

Many of the wash systems that were analyzed required a large permanent footprint and some amount of infrastructure such as 440v power. A promising solution was a semi-custom GOTS product (Figure 2), but DLA ultimately determined that this solution was outside of the scope of the TLS contract.

Figure 2. Trailer developed for USAF environmental cleanup. Photo: Riveer Environmental.

One of the two respondents to the GSA RFQ was determined to be technically acceptable. The selected system was the Vermeer LP 573 SDT. This system met all of the desired specification requirements listed previously, excluding the hot water system. The hot water system would have added approximately $10K to the cost and 60 days to the delivery date. The as-delivered cost was approximately $75K.

The Science and Technology Innovation Center (STIC) is a DHS S&T and USCG collaboration.

The system (Figure 3) was delivered to NED Alameda in October 2020 and has been used to remove fouling from two LRIs thus far. The lack of hot water appears to be well compensated by the 4000psi pressure washer system.

Figure 3. Vacuum trailer at Base Alameda with an LRI II in the background. Photo: U.S. Coast Guard.

CONCLUSIONS

Due to lower biofouling during the winter months, the system has yet to be used in the worst case, but the initial results show that system works well to remove all marine growth, including barnacles, and the vacuum collection system collects all water and spoils. The recovered water has been used to water the lawn, while the spoils were easily dumped where appropriate. NED Alameda reports that the entire hull cleaning process takes half the time it took when contracting out the cleaning. When factoring in the time and cost savings associated with administrating the contracts, this solution is even more beneficial.

FUTURE WORK

The STIC will continue to monitor the effectiveness of the solution and work with SFLC's SBPL to determine if other current or future Cutter Boat Pooling locations (such as Base LA/LB) have similar wash water discharge restrictions, and might therefore benefit from this type of solution.