

# Ocean Technical Services, LLC.



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26 April 2019

Mr. Bob Howard  
 Director of Operations  
 Patriots Point Development Authority  
 Patriots Point Naval & Maritime Museum  
 40 Patriots Point Road  
 Mount Pleasant, SC 29404

## BUDGET ESTIMATE FOR WATERTIGHT REPAIRS TO U.S.S. CLAMAGORE

**Discussion: Cost Analysis is designed to do all of the repairs required to be able to tow the submarine to drydock as part of a Maintenance Plan for the preservation of this icon at a 20 year interval.**

**This analysis does not include annual ship's upkeep and maintenance**

	<b>UNIT PRICE</b>	<b>BID PRICE</b>
A. Bundling of utilities and re-installation:	N/C	
B. Remove and re-install both boarding brows:	\$2,000	\$2,000
C. Costs associated with pilot movement of submarine to shipyard for repairs and return.	\$3,000	\$3,000
D. COFR for harbor tow, Harbor tow to/from shipyard, surveys, pilots, additional hull & P & I insurance Costs associated with tug/pilot movement of submarine to/from shipyard for repairs and return.	\$122,000	\$122,000
E. Open marina out/in	\$300,000	\$300,000
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1.0 GENERAL SERVICES & DRYDOCKING		
2.0 Drydocking - 70 days		
Blocking & removal of blocks		\$69,000
Haul Day (includes divers)		\$5,000
Lay Days – 69	\$3,000 00	\$207,500
3.0 Services		
a Line Handlers pier side only - arrival & departure		13,646
b Crane Service - per hour for owners use	\$300	3,000
c Shore Power - 440VAC 60 Hz		
Connect/disconnect - one time		\$1,347
Supply per day	\$1 800 00	\$124,200

d Fire watches - included In hot work items		
e Fire Lines		
Connect/disconnect - one time		\$1,356
Maintain per day	\$75.00	\$5,175
4.0 Fleeting Movement - one time		\$21,108
5.0 Asbestos Abatement		\$250,000
6.0 Tank Cleaning and Gas Freeing Exterior Ballast Water Tanks		\$250,000
Cleaning/defueling on interior pressure fuel tanks contiguous to Water Tanks		\$375,000
7.0 GENERAL		
a. Tank cleaning and gas-freeing - per day		\$106,800
a Disposal @ .60/gallon @ 30,000 gal.		\$18,000
8.0 Chemist		
a Chemist Initial Visit		\$4,000
b additional certificates – each	\$748.00	\$7,480
9.0 Structural, Hull		Information only
10.0 Workmanship		Information only
11.0 Welding		
Shell plate repair.*		
1. Crop out/replace 10,500 sq ft of 3/8" shell plate/install shell		\$2,268,000
2. Ballast Tank frames/bulkhead scantling replacement (20%)		\$907,200
3. Bow/stern structure surrounding torpedo tubes		\$1,800,000



**Down by the head bow structure surrounding forward torpedo tubes 2019.**



**Bow structure surrounding forward torpedo tubes, 2012.  
Notice heavy beard of shellfish growth on bottom necessitating UHP wash of hull bottom.**

4. Repairs to superstructure deck, deck supports & bases of cleats/chocks & towing eyes

\$1,175,000



**Superstructure deck atop pressure hull. This area requires total rebuilding throughout its length.**

- |  |           |
|--|-----------|
| 5. Seal all pressure hull penetrations with ½" plate   | \$10,000  |
| 6. Miscellaneous Repairs   |           |
| a.) Hydro-blast hull bottom (12,500 sq. ft.) below waterline to remove growth & severe rust/scale  | \$25,000  |
| b.) Containment for clean-up & painting  | \$8,000   |
| c.) Re-Pack Tailshafts packing glands  | \$15,000  |
| d.) Repack Rudder, install flax packing  | \$6,288   |
| h.) Repair/replace 32 3/8" x 6" x 6" I-beam transverse frames atop pressure hull and cover tops of frames with 3/8" plating down to side ballast tanks | \$187,000 |



**Transverse I-beams atop pressure hull.**

- |   |           |
|---|-----------|
| i.) Repair/replace superstructure hull fairing bases (60) | \$165,000 |
|---|-----------|



**Superstructure fairing bases on hull**

**12. Coating Systems - AFTER ALL STEEL WORK IS COMPLETED**

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|---|----------|
| a.) UHP Wash keel to rail                                 | \$12,000 |
| b.) Apply owner furnished coatings                        | \$ 9,700 |
| c.) Keel to Berthed WL - 11 000 sq ft 2 coats 300V bottom | \$15,227 |
| d.) Boottop - 1,500 sq ft                                 | N/A      |
| e.) Freeboard 9,100 sq ft.                                | \$12,000 |
| f.) Paint superstructure deck/sail 2 coats 300V           | \$12,000 |

**TOTAL ESTIMATE \$ 8,501,800.00**  
**10% Contingency        850,180.00**

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**TOTALS                    \$ 9,351,980.00**

Respectfully submitted,



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Joseph Lombardi  
Marine Surveyor