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

<table>
<thead>
<tr>
<th>UNIT PRICE</th>
<th>BID PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/C</td>
<td></td>
</tr>
<tr>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>$3,000</td>
<td>$3,000</td>
</tr>
<tr>
<td>$122,000</td>
<td>$122,000</td>
</tr>
<tr>
<td>$300,000</td>
<td>$300,000</td>
</tr>
</tbody>
</table>

1.0 GENERAL SERVICES & DRYDOCKING

20 Drydocking - 70 days  
   Blocking & removal of blocks  
   Haul Day (includes divers)  
   Lay Days – 69  
$3,000 00  
$207,500

30 Services  
a Line Handlers pier side only - arrival & departure  
b Crane Service - per hour for owners use  
c Shore Power - 440VAC 60 Hz  
Connect/disconnect - one time  
Supply per day  
13,646  
$300  
$1,347  
$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

  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

_______________________________
TOTALS $ 9,351,980.00

Respectfully submitted,

Joseph Lombardi
Marine Surveyor