MAJOR WORKS

• NEW MAIN GENSETS  CAT 2-C32s  2-3516s  EPA TIER 3
• SIEMENS PROPULSION SOLUTION  AC MOTORS 690V  ALTERNATORS SWITCHBOARDS SWITCHGEAR DRIVES TRANSFORMERS
• ZF AZIMUTHING BOW THRUSTER  SIEMENS AC MOTOR
• MARPOL UPGRADES  OWS - GEA  SEWAGE - EVAC  BWTS - OPTIMARIN
• ACCOMODATION UPGRADES  LIGHTING  OVERHEADS  HVAC  FIRE DETECTION  NAV LIGHTS  PROPULSION CONTROLS  MAST MODS
• PIPING RENEWALS  BALLAST  FIREMAIN  DRAINS
• STRUCTURE  UTM  #6 BW TANKS
• FRESH WATER GENERATION UPGRADES
• OVERHAUL OF Z-DRIVES  5 YR CYCLE
• SCIENCE UPGRADES  EK80  UPGRADED DP SYS  CABLING  SERVER ROOM COMPUTER OLVHS / UPGRADES
TIMELINE

• RFP OUT 20 MAY 2019
• BIDDER CONFERENCE / SHIPCHECK / NEWPORT OR 30 MAY 2019
• BIDS DUE 17 SEPT 2019
• WHOI INTERNAL / ONR REVIEW / FINAL VISITS SEPTEMBER – OCTOBER 2019
• AWARD TARGET 22 NOVEMBER 2019
• TRANSIT PANAMA CANAL EBOUND EARLY JAN 2020
• GULF OPS CAYMAN JAN – MARCH 2020
• SHIPCHK ONBOARD MTG OPPORTUNITIES GULFPORT MS 6,9,21 FEB 2020
• ALVIN OFF FOR 6500 M UPG RD / INITIAL STRIP SHIP 16 MAR – 10 APRIL 2020
• LONG LEAD TIME MATERIALS TARGET DELIVERY AT YARD MAY 2020
• LAST CRUISE DEMOB MAY 31 – 1 JUNE 2020
• OFF-SPOOL TRAWL, .681, .322, ¼ HYDRO WIRE / SCIENCE EQUIP 2-6 JUNE 2020
• DEPART WOODS HOLE APPROX 06-7 JUNE 2020
• ENTER YARD TARGET 17 JUNE 2020 EARLIEST – TBD
• TESTING / SEA TRIALS APRIL / JUNE 2021
• DELIVERY JULY 2021
• ALVIN BACK ONBOARD TARGET AUGUST - SEPT 2021
INITIAL YARDS - RFP SEND OUT

• 1. International Ship Repair – Tampa
• 2. Tampa Ship – Tampa – Chouest
• 3. Gulf Marine – Tampa – Hendry Marine
• 4. VT Halter Marine – Pascagoula
• 5. Detyens – Charleston
• 6. Conrad Shipyard – Morgan City
• 7. Gulf Copper – Houston
• 8. Thoma-Sea Marine Construction – Lockport LA
• 9. Gulf Island Shipyards - Houma, LA – RCRV project
• 11. EPIC – Formally BAE Mobile Alabama DD
• 12. Vigor – Portland, OR
• 13. Bollinger – Lockport, LA - Chouest
• 14. Colonna’s – Norfolk, VA
• 15. Bay Ship – Oakland, CA
• 16. BAE – Jacksonville, FL
• 17. Dakota Creek Industries Inc. – Anacortes, WA
• 18. MARRS – Mobile, Alabama
**REVIEW PROCESS**

- TECHNICAL / MGMT BUSINESS / TERMS AND CONDITIONS
- WHOI INTERNAL TEAM OF 10
- ASSIGNMENTS POSITION BASED, ACCOUNTING, LEGAL, TECH
- TABULATED RESULTS
- COST WAS KEPT OUT OF VIEW UNTIL PROCESS COMPLETED

<table>
<thead>
<tr>
<th>Summary Ratings</th>
<th>Fincantieri Bay Ship</th>
<th>Vigor</th>
<th>Dakota Creek</th>
<th>VT Marine</th>
<th>Gulf Copper</th>
<th>MARRS</th>
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<tbody>
<tr>
<td>1. Admin/Compliance Rating</td>
<td>63</td>
<td>60</td>
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<td>2. Management Rating</td>
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<td><strong>Grand Total</strong></td>
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<td><strong>1232</strong></td>
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<td><strong>1064</strong></td>
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<th>Risk Ratings</th>
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<td>Technical Risk Assessment</td>
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<td>3. Technical Rating</td>
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<td><strong>1,411</strong></td>
<td><strong>1,318</strong></td>
<td><strong>832</strong></td>
<td><strong>758</strong></td>
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</tbody>
</table>
BUDGET MID-LIFE

• OWNER FURNISHED EQUIPMENT  Approx. 10 Mil
• Yard –  Approx. 23 Mil
• Site Team / Crew / Engineering  4 Mil
• Science Grants  1 Mil
• ONR other funding  1 Mil
• MOSA  Z Drives Overhauls, Docking Maintenance items, coatings  3 Mil
MISC ELEMENTS

- REVELLE AND THOMPSON LESSONS LEARNED
- OFE MANAGEMENT
- SPARES
- WARRANTIES
- CREW RETENTION
- CREW TRAINING
- LARS NAVSEA CERTIFICATION
NEW BOW THRUSTER COMPLETE