

SOLICITATION / CONTRACT / ORDER FOR COMMERCIAL ITEMS
OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30

1. REQUISITION NUMBER
 PAGE 1 OF 33

2. CONTRACT NO. DTMA2C07004
 3. AWARD/EFFECTIVE DATE 01/18/2007
 4. ORDER NUMBER
 5. SOLICITATION NUMBER DTMA2R07001/0008
 6. SOLICITATION ISSUE DATE 12/08/2006

7. FOR SOLICITATION INFORMATION CALL:
 a. NAME Glen Spears
 b. TELEPHONE NUMBER (No collect calls) (757) 441-3245 ext.
 8. OFFER DUE DATE/ 12/12/2006 LOCAL TIME 2:30 pm

9. ISSUED BY DOT/Maritime Administration, SAR Acquisition
 Office of Acquisition, MRG-7200
 7737 Hampton Boulevard, Building 4D, Room 211
 Norfolk, VA 23505
 TEL: (757) 441-3245 ext.
 FAX: (757) 441-6080 ext.
 CODE 00092
 10. THIS ACQUISITION IS
 UNRESTRICTED
 SET ASIDE: 0.00% FOR
 SMALL BUSINESS
 HUBZONE SMALL BUSINESS
 8(A)
 NAICS: 336611
 SIZE STANDARD: Over 1,000
 11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED
 SEE SCHEDULE
 12. DISCOUNT TERMS
 10 days %
 20 days %
 30 days %
 days %
 13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)
 13b. RATING
 14. METHOD OF SOLICITATION
 RFQ IFB RFP

15. DELIVER TO DOT/Maritime Administration, South Atlantic Region
 STATE OF MAINE, Maine Maritime Academy
 Castine, ME 04420
 Attn: Joe Poltrack
 CODE 7126
 16. ADMINISTERED BY DOT/Maritime Administration, SAR Acquisition
 Office of Acquisition, MRG-7200, 7737 Hampton Boulevard, Building 4D, Room 211
 Norfolk, VA 23505
 CODE 00092

17a. CONTRACTOR/OFFEROR Technical Marine Service Inc
 6040 N Cutter Circle, Suite 302,
 Portland, OR 97217-3956
 TELEPHONE NO. (503) 285-8947 ext.
 CODE *
 FACILITY CODE
 18a. PAYMENT WILL BE MADE BY DOT/ Enterprise Services Center (ESC) OFO/FAA, Oklahoma City
 MARAD A/P SAR Invoices Branch, AMZ-150 PO Box 25710,
 Oklahoma City, OK 73125
 CODE

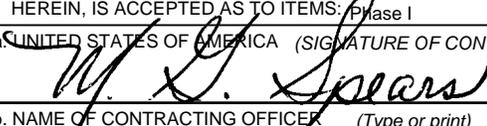
17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN
 OFFER
 18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED
 SEE ADDENDUM

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
(Use Reverse and/or Attach Additional Sheets as Necessary)					

25. ACCOUNTING AND APPROPRIATION DATA - - X1750 - 1 - 07 - 20 - - 7100 - SMB107 - - 2536 - - - - -
 26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$ 564,510.00

27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA ARE ARE NOT ATTACHED
 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA ARE ARE NOT ATTACHED

28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 1 COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN.
 29. AWARD OF CONTRACT: REF. your proposal OFFER
 DATED 11/27/2006 YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS: Phase I

30a. SIGNATURE OF OFFEROR/CONTRACTOR
 31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)

 30b. NAME AND TITLE OF SIGNER (Type or print) Milton G. Spears
 30c. DATE SIGNED
 31b. NAME OF CONTRACTING OFFICER (Type or print) Milton G. Spears
 31c. DATE SIGNED 01/22/2007

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT

32a. QUANTITY IN COLUMN 21 HAS BEEN

RECEIVED INSPECTED ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE
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32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE
	32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE

33. SHIP NUMBER <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	37. CHECK NUMBER
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38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY
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41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT	42a. RECEIVED BY <i>(Print)</i>		
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER	41c. DATE	42b. RECEIVED AT <i>(Location)</i>	
		42c. DATE REC'D <i>(YY/MM/DD)</i>	42d. TOTAL CONTAINERS

Line Item Summary	Document Number DTMA2C07004	Title TSSOM Automation Upgrades	Page 3 of 33
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Total Funding: \$564,510.00

FYs	Fund	Budget Org	Sub	Object Class	Sub	Program	Cost Org	Sub	Proj/Job No.	Sub	Reporting Category
	X1750	1	07	20		7100	SMB107		2536		
Division	Closed FYs	Cancelled Fund									

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0001	Phase I	(01/18/2007 to 07/30/2007)	0.00	N/A	\$.000	\$ 0.00
	Machinery Monitoring and Alarm System, Engineers Watch Call System and Tank Level Indicating System (See Attachment J-1, Statement of Work)					
0001AA	AUTOMATION SYSTEM DESIGN DRAWING AND DOCUMENTATION	(01/18/2007 to 03/30/2007)	1.00	JOB	\$95,040.000	\$ 95,040.00
	(See Attachment J-1, Statement of Work)					
0001AB	AUXILIARY MACHINERY CONTROLS, MACHINERY MONITORING AND ALARM SYSTEM	(01/18/2007 to 03/30/2007)	1.00	JOB	\$359,790.000	\$ 359,790.00
	(See Attachment J-1, Statement of Work)					
0001AC	TANK LEVEL INDICATING SYSTEM - PART I	(07/05/2007 to 07/30/2007)	1.00	JOB	\$56,680.000	\$ 56,680.00
	(See Attachment J-1, Statement of Work)					
0001AD	SUPPLEMENTAL GROWTH REQUIREMENTS - LABOR (OPTION)	(01/18/2007 to 07/30/2007)	400.00	MH	\$95.000	\$ 38,000.00
	The supplemental Labor Rate offered shall be a yardwide composite labor rate and include all management, supervision, overhead, G & A, handling charges, freight, profit, contractor and sub-contractor burden, overtime, quality assurance, delay and disruption, bonding, insurance, etc. The yardwide composite rate offered by the Contractor shall be binding during the entire period of this contract for all supplemental work which cannot be accurately described at this time and is not included in other contract line items. Under this CLIN, the government may order 400 man-hours to be performed by the Contractor at the contract yardwide composite rate for supplemental labor for each CLIN 0001AA, CLIN 0001AB and CLIN 0001AC. Authorization to proceed with supplemental labor work will be issued in writing on individual Delivery Orders at the option of the U.S. Maritime Administration.					

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Total Funding: \$564,510.00

FYs	Fund	Budget Org	Sub	Object Class	Sub	Program	Cost Org	Sub	Proj/Job No.	Sub	Reporting Category
	X1750	1	07	20		7100	SMB107		2536		
Division	Closed FYs	Cancelled Fund									

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
0001AE	SUPPLEMENTAL GROWTH REQUIREMENTS - MATERIAL (OPTION)	(01/18/2007 to 07/30/2007)	1.00	NTE	\$15,000.000	\$ 15,000.00
	THIS IS AN NOT TO EXCEED AMOUNT					
	The allowance for supplemental material is for direct costs only. Any allowance for handling, equipment, profit and overhead is to be included in supplemental growth work.					
	A cost of \$15,000.00 must be used for proposal submission purposes.					
0002	Phase II (OPTION)	(11/30/2007 to 04/30/2008)	0.00	N/A	\$.000	\$ 0.00
	(See Attachment J-1, Statement of Work)					
0002AA	Main Propulsion Control System, Bridge Control Console, Automation System Final Checks	(11/30/2007 to 03/30/2008)	0.00	JOB	\$354,990.000	\$ 0.00
	(See Attachment J-1, Statement of Work)					
0002AB	TANK LEVEL INDICATING SYSTEM - PART II	(11/30/2007 to 03/30/2008)	0.00	JOB	\$103,718.000	\$ 0.00
	(See Attachment J-1, Statement of Work)					
0002AC	SEA TRIALS	(04/01/2008 to 04/30/2008)	0.00	JOB	\$20,790.000	\$ 0.00
	(See Attachment J-1, Statement of Work)					

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Total Funding: \$564,510.00

FYs	Fund	Budget Org	Sub	Object Class	Sub	Program	Cost Org	Sub	Proj/Job No.	Sub	Reporting Category
	X1750	1	07	20		7100	SMB107		2536		
Division	Closed FYs	Cancelled Fund									

Line Item Number	Description	Delivery Date (Start Date to End Date)	Quantity	Unit of Issue	Unit Price	Total Cost (Includes Discounts)
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0002AD	SUPPLEMENTAL GROWTH REQUIREMENTS - LABOR (OPTION)	(11/30/2007 to 04/30/2008)	0.00	MH	\$95.000	\$ 0.00
						OPTION PERIOD

The supplemental Labor Rate offered shall be a yardwide composite labor rate and include all management, supervision, overhead, G & A, handling charges, freight, profit, contractor and sub-contractor burden, overtime, quality assurance, delay and disruption, bonding, insurance, etc. The yardwide composite rate offered by the Contractor shall be binding during the entire period of this contract for all supplemental work which cannot be accurately described at this time and is not included in other contract line items. Under this CLIN, the government may order 400 man-hours to be performed by the Contractor at the contract yardwide composite rate for supplemental labor for each CLIN 0002AA, CLIN 0002AB and CLIN 0002AC. Authorization to proceed with supplemental labor work will be issued in writing on individual Delivery Orders at the option of the U.S. Maritime Administration.

0002AE	SUPPLEMENTAL GROWTH REQUIREMENTS - MATERIAL (OPTION)	(11/30/2007 to 04/30/2008)	0.00	NTE	\$15,000.000	\$ 0.00
						OPTION PERIOD

THIS IS AN NOT TO EXCEED AMOUNT

The allowance for supplemental material is for direct costs only. Any allowance for handling, equipment, profit and overhead is to be included in supplemental growth work.

A cost of \$15,000.00 must be used for proposal submission purposes.

Total Cost: \$564,510.00

**Contract Level
Funding Summary**

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- - X1750 - 1 - 07 - 20 - - 7100 - SMB107 - - 2536 - - - - -

\$564,510.00

Total Funding: \$564,510.00

Address Detail**Title**

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Shipping Addresses

Code	Detail
0001	Org: DOT/Maritime Administration, South Atlantic Region Addr: STATE OF MAINE Maine Maritime Academy Castine ME 04420 Attn: Joe Poltrack Phone: (207) 326-2421 ext. Fax: (207) 326-2131 ext.

Invoice Addresses

Code	Detail	Code	Detail
0001	Org: DOT/Maritime Administration, South Atlantic Region Addr: 7737 Hampton Blvd., Bldg. 4D, Room 211 Norfolk VA 23505 Attn: Jennifer Phillips, Funds Control Officer Phone: (757) 441-3716 ext. Fax: (757) 441-6080 ext.	0002	Org: DOT/Maritime Administration, South Atlantic Region Addr: 7737 Hampton Blvd., Bldg. 4D, Room 211 Norfolk VA 23505 Attn: Jennifer Fallis, Funds Control Officer Phone: (757) 441-3716 ext. Fax: (757) 441-6080 ext.

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COMMERCIAL CLAUSES

1 1252.223-73 SEAT BELT USE POLICIES AND PROGRAMS

SEAT BELT USE POLICIES AND PROGRAMS (APR 2005)

In accordance with Executive Order 13043, Increasing Seat Belt Use in the United States, dated April 16, 1997, the contractor is encouraged to adopt and enforce on-the-job seat belt use policies and programs for its employees when operating company-owned, rented, or personally-owned vehicles. The National Highway Traffic Safety Administration (NHTSA) is responsible for providing leadership and guidance in support of this Presidential initiative. For information on how to implement such a program or for statistics on the potential benefits and cost-savings to your company or organization, please visit the Buckle Up America section of NHTSA's website at www.nhtsa.dot.gov. Additional resources are available from the Network of Employers for Traffic Safety (NETS), a public-private partnership headquartered in the Washington, D.C. metropolitan area, and dedicated to improving the traffic safety practices of employers and employees. NETS is prepared to help with technical assistance, a simple, user friendly program kit, and an award for achieving the President's goal of 90 percent seat belt use. NETS can be contacted at 1-888-221-0045 or visit its website at www.trafficsafety.org.

(End of clause)

2 INVOICE SUBMISSION - MARAD/SAR

INVOICE SUBMISSION - MARAD/SAR

The Contractor may submit invoices in either electronic or paper format. Electronic submission is preferred.

- (1) Electronic invoices shall be addressed to MARADInvoices@faa.gov, with copy to MARADSARInvoices@dot.gov

Electronic invoices shall conform to the following criteria, or be subject to rejection:

- a. Invoice and supporting documentation shall be in Adobe Acrobat (pdf) format.
- b. The e-mail subject shall include the contract/purchase order number and invoice number.
- c. The transmitting e-mail shall include the following information: Name of the Contractor; Invoice date and number; Invoice amount; Contract number and, if applicable, the order or modification number; Terms of any discount for prompt payment offered; Payment instructions (i.e., financial institution, ABA routing #, account #)

- (2) Paper invoices shall be submitted to one of the following addresses. Multiple copies are not required.

MARAD A/P SAR Invoices Branch
AMZ-150
PO Box 25710
Oklahoma City, OK 73125

If a street address is required for delivery (i.e., Federal Express), the following address may be used in lieu of the post office box:

MARAD A/P SAR Invoices Branch
AMZ-150
6500 S MacArthur Blvd.
Oklahoma City, OK 73169

3 52.252-02 CLAUSES INCORPORATED BY REFERENCE

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

[Insert one or more Internet addresses]

Clause	Title	Date
TEXT	PROPOSAL SUBMISSION INSTRUCTIONS	
52.212-01	Instructions to Offerors--Commercial Items	September 2006
52.212-02	Evaluation - Commercial Items	January 1999
TEXT	52.212-03 Offeror Representations & Certifications- Commercial Items	
52.212-03 Alt III	Offeror Representations and Certifications - Commercial Items - Alternate III	February 2002

4 52.212-04 CONTRACT TERMS AND CONDITIONS--COMMERCIAL ITEMS SEPTEMBER 2005

(a) Inspection/Acceptance. The Contractor shall only tender for acceptance those items that conform to the requirements of this contract. The Government reserves the right to inspect or test any supplies or services that have been tendered for acceptance. The Government may require repair or replacement of nonconforming supplies or reperformance of nonconforming services at no increase in contract price. The Government must exercise its post-acceptance rights (1) within a reasonable time after the defect was discovered or should have been discovered; and (2) before any substantial change occurs in the condition of the item, unless the change is due to the defect in the item.

(b) Assignment. The Contractor or its assignee may assign its rights to receive payment due as a result of performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency in accordance with the Assignment of Claims Act (31 U.S.C. 3727). However, when a third party makes payment (e.g., use of the Governmentwide commercial purchase card), the Contractor may not assign its rights to receive payment under this contract.

(c) Changes. Changes in the terms and conditions of this contract may be made only by written agreement of the parties.

(d) Disputes. This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. 601-613). Failure of the parties to this contract to reach agreement on any request for equitable adjustment, claim, appeal or action arising under or relating to this contract shall be a dispute to be resolved in accordance with the clause at FAR 52.233-01, Disputes, which is incorporated herein by reference. The Contractor shall proceed diligently with performance of this contract, pending final resolution of any dispute arising under the contract.

(e) Definitions. The clause at FAR 52.202-01, Definitions, is incorporated herein by reference.

(f) Excusable delays. The Contractor shall be liable for default unless nonperformance is caused by an occurrence beyond the reasonable control of the Contractor and without its fault or negligence such as, acts of God or the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, unusually severe weather, and delays of common carriers. The Contractor shall notify the Contracting Officer in writing as soon as it is reasonably possible after the commencement or any excusable delay, setting forth the full particulars in connection therewith, shall remedy such occurrence with all reasonable dispatch and shall promptly give written notice to the Contracting Officer of the cessation of such occurrence.

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(g) Invoice. (1) The Contractor shall submit an original invoice and three copies (or electronic invoice, if authorized) to the address designated in the contract to receive invoices. An invoice must include-

- (i) Name and address of the Contractor;
- (ii) Invoice date and number;
- (iii) Contract number, contract line item number and, if applicable, the order number;
- (iv) Description, quantity, unit of measure, unit price and extended price of the items delivered;
- (v) Shipping number and date of shipment, including the bill of lading number and weight of shipment if shipped on Government bill of lading;
- (vi) Terms of any discount for prompt payment offered;
- (vii) Name and address of official to whom payment is to be sent;
- (viii) Name, title, and phone number of person to notify in event of defective invoice; and
- (ix) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.
- (x) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision, contract clause (e.g., 52.232-33, Payment by Electronic Funds Transfer-Central Contractor Registration, or 52.232-34, Payment by Electronic Funds Transfer-Other Than Central Contractor Registration), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(2) Invoices will be handled in accordance with the Prompt Payment Act (31 U.S.C. 3903) and Office of Management and Budget (OMB) prompt payment regulations at 5 CFR part 1315.

(h) Patent indemnity. The Contractor shall indemnify the Government and its officers, employees and agents against liability, including costs, for actual or alleged direct or contributory infringement of, or inducement to infringe, any United States or foreign patent, trademark or copyright, arising out of the performance of this contract, provided the Contractor is reasonably notified of such claims and proceedings.

(i) Payment.-(1) Items accepted. Payment shall be made for items accepted by the Government that have been delivered to the delivery destinations set forth in this contract.

(2) Prompt payment. The Government will make payment in accordance with the Prompt Payment Act (31 U.S.C. 3903) and prompt payment regulations at 5 CFR part 1315.

(3) Electronic Funds Transfer (EFT). If the Government makes payment by EFT, see 52.212-5(b) for the appropriate EFT clause.

(4) Discount. In connection with any discount offered for early payment, time shall be computed from the date of the invoice. For the purpose of computing the discount earned, payment shall be considered to have been made on the date which appears on the payment check or the specified payment date if an electronic funds transfer payment is made.

(5) Overpayments. If the Contractor becomes aware of a duplicate contract financing or invoice payment or that the Government has otherwise overpaid on a contract financing or invoice payment, the Contractor shall immediately notify the Contracting Officer and request instructions for disposition of the overpayment.

(j) Risk of loss. Unless the contract specifically provides otherwise, risk of loss or damage to the supplies provided under this contract shall remain with the Contractor until, and shall pass to the Government upon:

(1) Delivery of the supplies to a carrier, if transportation is f.o.b. origin; or

(2) Delivery of the supplies to the Government at the destination specified in the contract, if transportation is f.o.b. destination.

(k) Taxes. The contract price includes all applicable Federal, State, and local taxes and duties.

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(l) Termination for the Government's convenience. The Government reserves the right to terminate this contract, or any part hereof, for its sole convenience. In the event of such termination, the Contractor shall immediately stop all work hereunder and shall immediately cause any and all of its suppliers and subcontractors to cease work. Subject to the terms of this contract, the Contractor shall be paid a percentage of the contract price reflecting the percentage of the work performed prior to the notice of termination, plus reasonable charges the Contractor can demonstrate to the satisfaction of the Government using its standard record keeping system, have resulted from the termination. The Contractor shall not be required to comply with the cost accounting standards or contract cost principles for this purpose. This paragraph does not give the Government any right to audit the Contractor's records. The Contractor shall not be paid for any work performed or costs incurred which reasonably could have been avoided.

(m) Termination for cause. The Government may terminate this contract, or any part hereof, for cause in the event of any default by the Contractor, or if the Contractor fails to comply with any contract terms and conditions, or fails to provide the Government, upon request, with adequate assurances of future performance. In the event of termination for cause, the Government shall not be liable to the Contractor for any amount for supplies or services not accepted, and the Contractor shall be liable to the Government for any and all rights and remedies provided by law. If it is determined that the Government improperly terminated this contract for default, such termination shall be deemed a termination for convenience.

(n) Title. Unless specified elsewhere in this contract, title to items furnished under this contract shall pass to the Government upon acceptance, regardless of when or where the Government takes physical possession.

(o) Warranty. The Contractor warrants and implies that the items delivered hereunder are merchantable and fit for use for the particular purpose described in this contract.

(p) Limitation of liability. Except as otherwise provided by an express warranty, the Contractor will not be liable to the Government for consequential damages resulting from any defect or deficiencies in accepted items.

(q) Other compliances. The Contractor shall comply with all applicable Federal, State and local laws, executive orders, rules and regulations applicable to its performance under this contract.

(r) Compliance with laws unique to Government contracts. The Contractor agrees to comply with 31 U.S.C. 1352 relating to limitations on the use of appropriated funds to influence certain Federal contracts; 18 U.S.C. 431 relating to officials not to benefit; 40 U.S.C. 3701, et seq., Contract Work Hours and Safety Standards Act; 41 U.S.C. 51-58, Anti-Kickback Act of 1986; 41 U.S.C. 265 and 10 U.S.C. 2409 relating to whistleblower protections; 49 U.S.C. 40118, Fly American; and 41 U.S.C. 423 relating to procurement integrity

(s) Order of precedence. Any inconsistencies in this solicitation or contract shall be resolved by giving precedence in the following order: (1) the schedule of supplies/services; (2) the Assignments, Disputes, Payments, Invoice, Other Compliances, and Compliance with Laws Unique to Government Contracts paragraphs of this clause; (3) the clause at 52.212-05; (4) addenda to this solicitation or contract, including any license agreements for computer software; (5) solicitation provisions if this is a solicitation; (6) other paragraphs of this clause; (7) the Standard Form 1449; (8) other documents, exhibits, and attachments; and (9) the specification.

(t) Central Contractor Registration (CCR). (1) Unless exempted by an addendum to this contract, the Contractor is responsible during performance and through final payment of any contract for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(2)(i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in FAR Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of Subpart 42.12; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (t)(2)(i) of this clause, or fails to perform the agreement at paragraph (t)(2)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

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(3) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(4) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at <http://www.ccr.gov> or by calling 1-888-227-2423 or 269-961-5757.

5 52.212-05 **CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS-- COMMERCIAL ITEMS.** **NOVEMBER 2006**

Contract Terms and Conditions Required to Implement Statutes or Executive Orders—Commercial Items (Sept 2006)

(a) The Contractor shall comply with the following Federal Acquisition Regulation (FAR) clauses, which are incorporated in this contract by reference, to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

(1) 52.233-3, Protest After Award (Aug 1996) (31 U.S.C. 3553).

(2) 52.233-4, Applicable Law for Breach of Contract Claim (Oct 2004) (Pub. L. 108-77, 108-78)

(b) The Contractor shall comply with the FAR clauses in this paragraph (b) that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

[Contracting Officer check as appropriate.]

X__ (1) 52.203-6, Restrictions on Subcontractor Sales to the Government (July 1995), with Alternate I (Sept 2006) (41 U.S.C. 253g and 10 U.S.C. 2402).

__ (2) 52.219-3, Notice of Total HUBZone Set-Aside (Jan 1999) (15 U.S.C. 657a).

__ (3) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (July 2005) (if the offeror elects to waive the preference, it shall so indicate in its offer) (15 U.S.C. 657a).

__ (4) [Reserved]

__ (5)(i) 52.219-6, Notice of Total Small Business Set-Aside (June 2003) (15 U.S.C. 644).

__ (ii) Alternate I (Oct 1995) of 52.219-6.

__ (iii) Alternate II (Mar 2004) of 52.219-6.

__ (6)(i) 52.219-7, Notice of Partial Small Business Set-Aside (June 2003) (15 U.S.C. 644).

__ (ii) Alternate I (Oct 1995) of 52.219-7.

__ (iii) Alternate II (Mar 2004) of 52.219-7.

X__ (7) 52.219-8, Utilization of Small Business Concerns (May 2004) (15 U.S.C. 637(d)(2) and (3)).

X__ (8)(i) 52.219-9, Small Business Subcontracting Plan (Sept 2006) (15 U.S.C. 637(d)(4)).

__ (ii) Alternate I (Oct 2001) of 52.219-9.

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X__ (iii) Alternate II (Oct 2001) of 52.219-9.

__ (9) 52.219-14, Limitations on Subcontracting (Dec 1996) (15 U.S.C. 637(a)(14)).

__ (10)(i) 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns (Sept 2005) (10 U.S.C. 2323) (if the offeror elects to waive the adjustment, it shall so indicate in its offer).

__ (ii) Alternate I (June 2003) of 52.219-23.

__ (11) 52.219-25, Small Disadvantaged Business Participation Program—Disadvantaged Status and Reporting (Oct 1999) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).

__ (12) 52.219-26, Small Disadvantaged Business Participation Program—Incentive Subcontracting (Oct 2000) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).

__ (13) 52.219-27, Notice of Total Service-Disabled Veteran-Owned Small Business Set-Aside (May 2004).

X__ (14) 52.222-3, Convict Labor (June 2003) (E.O. 11755).

X__ (15) 52.222-19, Child Labor—Cooperation with Authorities and Remedies (Jan 2006) (E.O. 13126).

X__ (16) 52.222-21, Prohibition of Segregated Facilities (Feb 1999).

X__ (17) 52.222-26, Equal Opportunity (Apr 2002) (E.O. 11246).

X__ (18) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (Sept 2006) (38 U.S.C. 4212).

X__ (19) 52.222-36, Affirmative Action for Workers with Disabilities (Jun 1998) (29 U.S.C. 793).

X__ (20) 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (Sept 2006) (38 U.S.C. 4212).

X__ (21) 52.222-39, Notification of Employee Rights Concerning Payment of Union Dues or Fees (Dec 2004) (E.O. 13201).

__ (22)(i) 52.223-9, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (Aug 2000) (42 U.S.C. 6962(c)(3)(A)(ii)).

__ (ii) Alternate I (Aug 2000) of 52.223-9 (42 U.S.C. 6962(i)(2)(C)).

__ (23) 52.225-1, Buy American Act—Supplies (June 2003) (41 U.S.C. 10a-10d).

__ (24)(i) 52.225-3, Buy American Act—Free Trade Agreements—Israeli Trade Act (June 2006) (41 U.S.C. 10a-10d, 19 U.S.C. 3301 note, 19 U.S.C. 2112 note, Pub. L. 108-77, 108-78, 108-286), and 109-53.

__ (ii) Alternate I (Jan 2004) of 52.225-3.

__ (iii) Alternate II (Jan 2004) of 52.225-3.

X__ (25) 52.225-5, Trade Agreements (June 2006) (19 U.S.C. 2501, et seq., 19 U.S.C. 3301 note).

__ (26) 52.225-13, Restrictions on Certain Foreign Purchases (Feb 2006) (E.o.s, proclamations, and statutes administered by the Office of Foreign Assets Control of the Department of the Treasury).

__ (27) 52.226-4, Notice of Disaster or Emergency Area Set-Aside (42 U.S.C. 5150).

__ (28) 52.226-5, Restrictions on Subcontracting Outside Disaster or Emergency Area (42 U.S.C. 5150).

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__ (29) 52.232-29, Terms for Financing of Purchases of Commercial Items (Feb 2002) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).

__ (30) 52.232-30, Installment Payments for Commercial Items (Oct 1995) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).

X__ (31) 52.232-33, Payment by Electronic Funds Transfer—Central Contractor Registration (Oct 2003) (31 U.S.C. 3332).

__ (32) 52.232-34, Payment by Electronic Funds Transfer—Other than Central Contractor Registration (May 1999) (31 U.S.C. 3332).

__ (33) 52.232-36, Payment by Third Party (May 1999) (31 U.S.C. 3332).

__ (34) 52.239-1, Privacy or Security Safeguards (Aug 1996) (5 U.S.C. 552a).

X__ (35)(i) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (Feb 2006) (46 U.S.C. Appx. 1241(b) and 10 U.S.C. 2631).

__ (ii) Alternate I (Apr 2003) of 52.247-64.

(c) The Contractor shall comply with the FAR clauses in this paragraph (c), applicable to commercial services, that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

[Contracting Officer check as appropriate.]

__ (1) 52.222-41, Service Contract Act of 1965, as Amended (July 2005) (41 U.S.C. 351, et seq.).

__ (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (May 1989) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

__ (3) 52.222-43, Fair Labor Standards Act and Service Contract Act—Price Adjustment (Multiple Year and Option Contracts) (May 1989) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

__ (4) 52.222-44, Fair Labor Standards Act and Service Contract Act—Price Adjustment (Feb 2002) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

(d) Comptroller General Examination of Record. The Contractor shall comply with the provisions of this paragraph (d) if this contract was awarded using other than sealed bid, is in excess of the simplified acquisition threshold, and does not contain the clause at 52.215-2, Audit and Records—Negotiation.

(1) The Comptroller General of the United States, or an authorized representative of the Comptroller General, shall have access to and right to examine any of the Contractor's directly pertinent records involving transactions related to this contract.

(2) The Contractor shall make available at its offices at all reasonable times the records, materials, and other evidence for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in FAR Subpart 4.7, Contractor Records Retention, of the other clauses of this contract. If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement. Records relating to appeals under the disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are finally resolved.

(3) As used in this clause, records include books, documents, accounting procedures and practices, and other data, regardless of type and regardless of form. This does not require the Contractor to create or maintain any record that the Contractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e)(1) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c), and (d) of this clause, the Contractor is not required to flow down any FAR clause, other than those in paragraphs (i) through (vii) of this paragraph in a subcontract for commercial items. Unless otherwise indicated below, the extent of the flow down shall be as required by the clause—

(i) 52.219-8, Utilization of Small Business Concerns (May 2004) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds \$550,000 (\$1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

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(ii) 52.222-26, Equal Opportunity (Apr 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (Sept 2006) (38 U.S.C. 4212).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (June 1998) (29 U.S.C. 793).

(v) 52.222-39, Notification of Employee Rights Concerning Payment of Union Dues or Fees (Dec 2004) (E.O. 13201).

(vi) 52.222-41, Service Contract Act of 1965, as Amended (July 2005), flow down required for all subcontracts subject to the Service Contract Act of 1965 (41 U.S.C. 351, et seq.).

(vii) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (Feb 2006) (46 U.S.C. Appx. 1241(b) and 10 U.S.C. 2631). Flow down required in accordance with paragraph (d) of FAR clause 52.247-64.

(2) While not required, the contractor may include in its subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(End of clause)

6 52.211-06 BRAND NAME OR EQUAL (AUG 1999)

(a) If an item in this solicitation is identified as “brand name or equal,” the purchase description reflects the characteristics and level of quality that will satisfy the Government’s needs. The salient physical, functional, or performance characteristics that “equal” products must meet are specified in the solicitation.

(b) To be considered for award, offers of “equal” products, including “equal” products of the brand name manufacturer, must—

(1) Meet the salient physical, functional, or performance characteristic specified in this solicitation;

(2) Clearly identify the item by—

(i) Brand name, if any; and

(ii) Make or model number;

(3) Include descriptive literature such as illustrations, drawings, or a clear reference to previously furnished descriptive data or information available to the Contracting Officer; and

(4) Clearly describe any modifications the offeror plans to make in a product to make it conform to the solicitation requirements. Mark any descriptive material to clearly show the modifications.

(c) The Contracting Officer will evaluate “equal” products on the basis of information furnished by the offeror or identified in the offer and reasonably available to the Contracting Officer. The Contracting Officer is not responsible for locating or obtaining any information not identified in the offer.

(d) Unless the offeror clearly indicates in its offer that the product being offered is an “equal” product, the offeror shall provide the brand name product referenced in the solicitation.

(End of provision)

7 52.211-08 TIME OF DELIVERY

JUNE 1997

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(a) The Government requires delivery to be made according to the following schedule:

REQUIRED DELIVERY SCHEDULE

CLIN 0001 Notice to Proceed is expected to be given not later than 23 Jan 2007. Work on SubCLINs 0001AA and 0001AB must be completed by 03 Mar 2007. Work on SubCLIN 0001AC is required to be performed concurrent with the vessel's next regulatory drydock period which is scheduled for July 2007. For purposes of preparing proposal, plan for SubCLIN 0001AC to commence 05 Jul 2007 and be completed by 30 Jul 2007 at a U.S. East Coast dry dock location to be determined.

CLIN 0002 option may be exercised at any time from the date of original award through 30 Nov 2007 depending upon the availability of funds. Once the option is exercised, the Contractor shall have until 30 Mar 2008 in which to complete all requirements for SubCLINs 0002AA and 0002AB. The sea trial requirements of SubCLIN 0002AC are to be performed during Apr 2008 subject to scheduling by the COTR and are to be completed by not later than 30 Apr 2008.

8 52.217-04 **EVALUATION OF OPTIONS EXERCISED AT THE TIME OF CONTRACT AWARD** **JUNE 1988**

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate the total price for the basic requirement together with any option(s) exercised at the time of award.

9 52.211-11 **LIQUIDATED DAMAGES--SUPPLIES, SERVICES, OR RESEARCH AND DEVELOPMENT** **SEPTEMBER 2000**

(a) If the Contractor fails to deliver the supplies or perform the services within the time specified in this contract, the Contractor shall, in place of actual damages, pay to the Government liquidated damages of \$15,000 per calendar day of delay.

(b) If the Government terminates this contract in whole or in part under the Default-Fixed-Price Supply and Service clause, the Contractor is liable for liquidated damages accruing until the Government reasonably obtains delivery or performance of similar supplies or services. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(c) The Contractor will not be charged with liquidated damages when the delay in delivery or performance is beyond the control and without the fault or negligence of the Contractor as defined in the Default-Fixed-Price Supply and Service clause in this contract.

(End of clause)

10 1252.217-72 **PERFORMANCE** **OCTOBER 1994**

(a) Upon the award of the contract, the Contractor shall promptly start the work specified and shall diligently prosecute the work to completion. The Contractor shall not start work until the contract has been awarded except in the case of emergency work ordered by the Contracting Officer in writing.

(b) The Government shall deliver the vessel described in the contract at the time and location specified in the contract. Upon completion of the work, the Government shall accept delivery of the vessel at the time and location specified in the contract.

(c) The Contractor shall without charge,--

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- (1) Make available to personnel of the vessel while in dry dock or on a marine railway, sanitary lavatory and similar facilities at the plant acceptable to the Contracting Officer;
 - (2) Supply and maintain suitable brows and gangways from the pier, dry dock, or marine railway to the vessel;
 - (3) Treat salvage, scrap or other ship's material of the Government resulting from performance of the work as items of Government-furnished property, in accordance with the Government Property (Fixed Price Contracts) clause;
 - (4) Perform, or pay the cost of, any repair, reconditioning or replacement made necessary as the result of the use by the Contractor of any of the vessel's machinery, equipment or fittings, including, but not limited to, winches, pumps, rigging, or pipe lines; and
 - (5) Furnish suitable offices, office equipment and telephones at or near the site of the work for the Government's use.
- (d) The contract will state whether dock and sea trials are required to determine whether or not the Contractor has satisfactorily performed the work.
- (1) If dock and sea trials are required, the vessel shall be under the control of the vessel's commander and crew.
 - (2) The Contractor shall not conduct dock and sea trials not specified in the contract without advance approval of the Contracting Officer. Dock and sea trials not specified in the contract shall be at the Contractor's expense and risk.
 - (3) The Contractor shall provide and install all fittings and appliances necessary for dock and sea trials. The Contractor shall be responsible for care, installation, and removal of instruments and apparatus furnished by the Government for use in the trials.

11 52.232-18 AVAILABILITY OF FUNDS.

Funds are not presently available for this contract. The Government's obligation under this contract is contingent upon the availability of appropriated funds from which payment for contract purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the Contracting Officer for this contract and until the Contractor receives notice of such availability, to be confirmed in writing by the Contracting Officer.

12 52.219-19 SMALL BUSINESS CONCERN REPRESENTATION FOR THE SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRAM OCTOBER 2000

(a) Definition. "Emerging small business" as used in this solicitation, means a small business concern whose size is no greater than 50 percent of the numerical size standard applicable to the North American Industry Classification System (NAICS) code assigned to a contracting opportunity.

(b) [Complete only if the Offeror has represented itself under the provision at 52.219-1 as a small business concern under the size standards of this solicitation.] The Offeror [] is, [] is not an emerging small business.

(c) [Complete only if the Offeror is a small business or an emerging small business, indicating its size range.]

Offeror's number of employees for the past 12 months [check this column if size standard stated in solicitation is expressed in terms of number of employees] or Offeror's average annual gross revenue for the last 3 fiscal years [check this column if size standard stated in solicitation is expressed in terms of annual receipts]. [Check one of the following.]

No. of Employees Avg. Annual Gross Revenues

___ 50 or fewer ___ \$1 million or less

___ 51 - 100 ___ \$1,000,001 - \$2 million

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- 101 - 250 \$2,000,001 - \$3.5 million
 251 - 500 \$3,500,001 - \$5 million
 501 - 750 \$5,000,001 - \$10 million
 751 - 1,000 \$10,000,001 - \$17 million
 Over 1,000 Over \$17 million

13 52.219-21 SMALL BUSINESS SIZE REPRESENTATION FOR TARGETED INDUSTRY

Small Business Size Representation for Targeted Industry Categories under the Small Business Competitiveness Demonstration Program (May 1999)

[Complete only if the Offeror has represented itself under the provision at 52.219-1 as a small business concern under the size standards of this solicitation.]

Offeror's number of employees for the past 12 months [check this column if size standard stated in solicitation is expressed in terms of number of employees] or Offeror's average annual gross revenue for the last 3 fiscal years [check this column if size standard stated in solicitation is expressed in terms of annual receipts]. [Check one of the following.]

No. of Employees	Avg. Annual Gross Revenues
<input type="checkbox"/> 50 or fewer	<input type="checkbox"/> \$1 million or less
<input type="checkbox"/> 51-100	<input type="checkbox"/> \$1,000,001-\$2 million
<input type="checkbox"/> 101-250	<input type="checkbox"/> \$2,000,001-\$3.5 million
<input type="checkbox"/> 251-500	<input type="checkbox"/> \$3,500,001-\$5 million
<input type="checkbox"/> 501-750	<input type="checkbox"/> \$5,000,001-\$10 million
<input type="checkbox"/> 751-1,000	<input type="checkbox"/> \$10,000,001-\$17 million
<input type="checkbox"/> Over 1,000	<input type="checkbox"/> Over \$17 million

(End of provision)

14 1252.217- SUBCONTRACTS
74

OCTOBER
1994

(a) Nothing contained in the contract shall be construed as creating any contractual relationship between any subcontractor and the Government. The divisions or sections of the specifications are not intended to control the Contractor in dividing the work among subcontractors or to limit the work performed by any trade.

(b) The Contractor shall be responsible to the Government for acts and omissions of its own employees, and of subcontractors and their employees. The Contractor shall also be responsible for the coordination of the work of the trades, subcontractors, and material men.

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(c) The Contractor shall, without additional expense to the Government, employ specialty subcontractors where required by the specifications.

(d) The Government or its representatives will not undertake to settle any differences between the Contractor and its subcontractors, or between subcontractors.

15 MCL.H-2 SUPPLEMENTAL WORK REQUESTS

AUGUST
2005

(a.) In the complex world of ship repairs, supplemental work often emerges as a result of test, inspection, or discovery of unknown or otherwise differing conditions. The extent and nature of such supplemental work can neither be identified in bid or proposal specifications, and both parties recognize the possibility that such work may arise. Notwithstanding the possibility of the identification of such work, MARAD does not guarantee the award of any supplemental work during contract performance.

(b.) Although MARAD shall be under no obligation to award supplemental work during contract performance, MARAD has provided an estimate for labor (in labor hours) and material (in dollars) for such work in the Schedule B, the applicable supplemental work contract line item. The offeror shall specify an hourly composite billing rate in its proposal for supplemental work labor. The composite labor-billing rate shall be the rate applicable to labor for all supplemental work that MARAD orders under the resulting contract. Any supplies or subcontracts required to complete supplemental work will be charged as a direct cost reimbursable under the applicable supplemental work CLIN; **ADDITIONAL INDIRECT CHARGES FOR MATERIALS AND SUBCONTRACTS WILL NOT BE ALLOWED.**

(c.) During the performance of the contract, when conditions indicate a need for supplemental work, the Contracting Officer's Technical Representative (COTR) is empowered to provide technical direction, negotiate the amount of labor and material, and authorize the contractor to perform supplemental work through the issuance of a written authorization. The COTR will issue authorizations for supplemental work in accordance with the following:

(1.) When conditions make supplemental work appropriate, the COTR shall submit to the contractor a supplemental work request that identifies the work to be accomplished.

(2.) The Contractor shall promptly review each supplemental work request upon receipt and shall, within seventy-two (72) hours of issuance, or sooner, as specified by the COTR, provide the COTR with a proposed price for the supplemental work. Price proposals for all supplemental work must be broken down by labor hours, materials, and subcontracts and allocated to the applicable supplemental work CLIN as appropriate. The contractor shall price the supplemental work to be performed in accordance with the composite labor rate bid or proposed under the supplemental work CLIN in the contract. If necessary, the Contractor shall submit prices for subcontractors, which will be negotiated and treated as direct materials. Once the COTR and contractor agree on the technical direction and price to accomplish the supplemental work, the contractor and COTR shall sign the authorization for supplemental work, which shall be final and binding on the contractor and MARAD. Subject to paragraphs (c.)(3.) through (c.)(6.), if urgent circumstances do not permit waiting for a written authorization, the parties may orally agree and follow up with written confirmation.

(3.) Notwithstanding the preceding, the COTR shall not authorize and the contractor shall not accept individual supplemental work authorizations from the COTR in excess of the price ceiling established by the Contracting Officer pursuant to paragraph (d.)(10.). In addition, the COTR shall not authorize and the contractor shall not accept a supplemental work authorization from the COTR that, when combined with all previously authorized supplemental work under the contract, exceeds the amount of labor hours and materials specified in the applicable supplemental work CLINs.

(4.) If the contractor requests an adjustment to the contract completion date in its proposal for the supplemental work, the COTR must refer the issue to the Contracting Officer for resolution, which could include modifying the performance period of the contract. All supplemental work must be accomplished within the contract performance period. The COTR shall not authorize and the contractor shall not accept supplemental work authorizations from the COTR that cannot be completed within the contract performance period.

(5.) If the COTR and contractor cannot agree upon the price, the time required, or any other term of a supplemental work request, the matter shall be referred to the Contracting Officer who may resolve the issue in accordance with the procedures contained in the Changes clause incorporated in the contract. Specifically, the Contracting Officer shall have the option of (i) directing that the Contractor perform the work at a price and within a time period determined by the Contracting Officer to be reasonable, or (ii)

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withdrawing said supplemental work request. The Contractor's refusal to perform the work as directed by the Contracting Officer shall constitute an event of default under the default clauses of the contract. Disputed issues resulting from supplemental work unilaterally directed by the Contracting Officer may be handled under the disputes clause of the contract.

(6.) If the Contracting Officer directs the Contractor to perform the work at a price and within a time period determined by the Contracting Officer to be reasonable, the Contractor shall maintain and submit to MARAD on a daily basis, report sheets itemizing materials used, the costs and man hours of all labor (direct, indirect, and impact), production schedule activities affected by and/or related thereto, and charges for equipment, whether furnished by the Contractor, subcontractors or others. Material charges shall be substantiated by valid copies of materials and/or suppliers invoices. Such invoices shall be submitted with the daily report sheets or, if not available, as soon as reasonably practicable thereafter. Said daily reports shall also include an indication as to which specific schedule activity(ies) are affected by the order which are the subject of the daily report sheets. To the extent the contractor fails or refuses to submit the aforementioned daily report sheets on a daily basis, such failure or refusal shall constitute a basis for the Contracting Officer to suspend payment for work completed under the supplemental work until appropriate documentation required by the contract is provided.

(d.) The following rules apply to supplemental work authorizations:

(1.) The COTR shall authorize supplemental-work only during the period of performance of the contract.

(2.) All authorizations for supplemental work are subject to the terms and conditions of the contract and must be within the scope of the contract.

(3.) If mailed, an authorization is considered "issued" when MARAD deposits the order in the mail. Authorizations may also be issued orally, or by written communications, that is hand-delivered or sent by facsimile or electronic transmission. Oral orders must be followed up by written confirmation as soon as practicable thereafter.

(4.) Unless otherwise explicitly noted in the authorization for supplemental work, all authorizations for supplemental work are firm fixed price. The agreed upon price shall cover all costs including, but not limited to, direct and indirect labor and material, overhead, delay, acceleration, and disruption caused by the supplemental work. Where the parties are unable to agree that an order establishes mutually agreeable terms, the parties shall note the specific differences that are not agreed upon in the text of the proposed work authorization and refer the matter to the Contracting Officer for resolution pursuant to paragraph (c.)(5.).

(5.) Unless the contractor otherwise explicitly notes in the supplemental work authorization, in consideration of the price of the order, the Contractor remises, releases, and forever discharges MARAD, its officers, agents, employees, and sureties from any and all civil claims and requests for equitable adjustment whatsoever, relating to, arising out of, or connected with said supplemental work authorization. Such release is full and final settlement of all claims and requests for equitable adjustment relating to, arising out of, or connected with the work authorization, as modified, including, but not limited to, all impact claims such as delay, acceleration, disruption, and cumulative effects of the instant and all previously issued supplemental work authorizations. The executed work authorization constitutes a complete and final adjustment of the price and the delivery schedule.

(6.) When MARAD requires supplies or services covered by the contract in an amount less than the total value of the contract, MARAD is not obligated to award supplemental work for the balance of the price bid or proposed for supplemental work. The Contractor is not obligated to honor additional supplemental work in excess of the estimated labor hours identified in the Schedule. This subparagraph does not affect or change the Contracting Officer's authority under the changes clause of the contract.

(7.) Except for limitations of labor hours estimated in the Schedule, there is no limit to the number of supplemental work authorizations that may be issued. MARAD may issue supplemental work authorizations requiring delivery or performance in multiple locations, if the contract contemplates multiple locations.

(8.) In the event a supplemental work authorization covers a series of related procedures, the Contracting Officer may request the Contractor to furnish separate prices for each item of the work.

(9.) If not otherwise provided, the Contracting Officer may request at any time during performance of supplemental work a list of subcontractors performing work covered by the supplemental work, the dollar value of the respective subcontracts, and a description of the subcontracted work, and the contractor shall promptly provide the requested information.

(10.) The COTR shall not issue and the contractor shall not accept supplemental work authorizations from the COTR that exceeds \$10,000.

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16 MCL.H-3 INDEMNITY AND INSURANCE

AUGUST
2005

The Contractor shall indemnify and save and keep harmless the Government against any or all loss, cost, damage, claim, expense or liability whatsoever because of accident or injury to persons or property of others occurring in connection with the operations under this contract. The Contractor shall secure, pay the premiums for and keep in force until the expiration of this contract, and any renewal thereof, adequate insurance. Such insurance to specifically include liability assumed by the Contractor under this contract.

Each policy of insurance shall contain an endorsement that any cancellation or material change in the coverage adversely affecting the Government's interest shall not be effective unless the insurer or the Contractor gives written notice of cancellation or change as required to the Contracting Officer. When the coverage is provided by self-insurance, the Contractor shall not change or decrease the coverage without the Administrative Contracting Officer's prior approval.

A certificate of each policy of insurance shall be furnished to the Contracting Officer prior to Notice to Proceed certifying, among other things, that the policy contains the aforesaid endorsement. The insurance companies providing the above insurance shall be satisfactory to the Government. Notices of policy changes shall be furnished to the Contracting Officer.

The contractor shall provide at the Contractor's expense, within five days of request from the MARAD contracting officer, a copy of all original insurance policies. These may be sent by mail or facsimile machine.

The contractor's policy shall include the language "Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will mail 30 days written notice to the certificate holder named to the left." In addition the following shall be included: "The United States of America is named as an additional insured as respects the SRLL/CGL and Pollution coverages. The policies contain a no recourse clause against the United States for premium payment."

17 MCL.H-4 INDEMNITY AND INSURANCE (ADDITIONAL)

AUGUST
2005

(a) INDEMNITY

(1) The Contractor shall exercise reasonable care and use its best efforts to prevent accidents, injury or damage to all employees, persons and property in and about the work, and to the vessel or portion thereof upon which work is done.

(2) Except as provided elsewhere in this contract, including any guarantee clause, the MARAD assumes the risk of physical loss or damage to any part of the vessel, its machinery, equipment, stores, and other property including cargo if owned by the Government except to the extent that such loss or damage is caused by the negligence, fault, error, act or omission of the Contractor, its subcontractors, agents, or employees. The burden of proving freedom from fault shall be borne by the Contractor. Unless the loss or damage was caused by the willful misconduct of the Contractor, its executive officers, or superintendents the Contractor's liability under this Contract shall not exceed total damage to the ship or ships including total loss up to \$5,000,000 per accident or occurrence per vessel, and shall not exceed in the aggregate per accident or occurrence the sum of total damage to the ship or ships including total loss up to \$5,000,000 multiplied by the number of MARAD's vessels in the care, custody or control of the Contractor at the location and at the time of the accident or occurrence giving to the loss or damage.

(3) As to third parties, including, but not limited to, agents, employees or servants of the Contractor, or any subcontractor, the Contractor will defend, indemnify and hold harmless the Government, the vessel, its owners and charterers, from all claims, actions, suits, costs, demands and expense of all descriptions arising out of disease, illness, personal injury, death or property damage to any third party in any way related to or arising out of the performance of work under this contract except to the extent caused by the fault, error, act or omission, or negligence of the Government, its agencies or employees. The burden of proving fault of the Government, its agencies or employees shall be borne by the Contractor.

(4) As to loss and damage which are the responsibility of the Government, the Government shall be subrogated to any claim, demand, or course of action against third parties which exists in favor of the Contractor, and the Contractor shall, if required, execute a formal assignment or transfer of such claim, demand, or course of action, and shall aid in securing information, evidence, obtaining of witnesses, and cooperate with MARAD in all matters MARAD may deem necessary in defense of any claim, or suit or appeal from any judgment or in effecting indemnity, provided, further, that nothing contained in this paragraph shall create or give rise to any right, privilege or power in any person except the Contractor, nor shall any person (except the Contractor) be or become entitled

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thereby to proceed directly against the Government, its agencies or instrumentalities, or to join the Government, its agencies or instrumentalities, as a codefendant in any action against the Contractor brought to determine the Contractor's liability or for any other purpose.

(b) TYPES OF INSURANCE AND MINIMUM COVERAGE. The Contractor shall at its own expense, provide and maintain the following insurances during the entire performance of this contract.

(1) Workmen's Compensation, including Longshoremen & Harbor Worker's Act coverage - Covering all agents, servants, borrowed servants, statutory employees of Contractor for all compensation and other benefits required by applicable state and federal law or by governmental authority on account of injury, death, sickness or disease - Statutory - no minimum.

(2) Employers Liability - to cover both injury and death resulting from accident, sickness or disease - \$5 million bodily injury by accident, each accident - \$5 million bodily injury by disease each accident - \$5 million bodily injury by disease in the aggregate.

(3) Maritime Employers Liability (Jones Act) to cover both injury and death resulting from accident, sickness or disease - \$5 million for each person per occurrence and \$5 million in the aggregate.

(4) Comprehensive General Liability to include coverage for (but not limited to) products and completed operations liability, property damage liability and contractual liability - \$5 million combined single per occurrence limit for bodily injury and property damage and \$5 million in the aggregate.

(5) Ship Repairers Legal Liability - coverage to be provided under the standard London or American Institute forms or their equivalent \$5 million per vessel, per occurrence or such other amount as may be requested.

(6) Pollution - sudden and accidental liability - \$5 Million per occurrence.

(c) All such insurance shall be subject to the approval of the Division of Marine Insurance and will contain thirty (30) calendar days advance notice of cancellation or of any non-renewal which is the option of the insurer, said notice to be provided to the U.S. Department of Transportation, Division of Marine Insurance, MAR-575, Room 8117, 400 Seventh Street, S.W., Washington, DC 20590.

(d) FORM OF CONFIRMATION

(1) The pollution insurance may be a separate policy or part of the Comprehensive General Liability policy, but the coverage must be specifically shown on the required confirmation of insurance. Excess liability and umbrella liability policies may be used in the excess of primary policies to meet the minimum limit requirements. The United States of America shall be an additional assured in the Ship Repairs Legal Liability policy, Comprehensive General Liability Policy and Pollution Policy. Such policies shall contain a clause statement that there is no recourse against the United States of America for payment of premium. All such insurance shall be subject to the approval of the Division of Marine Insurance and must contain thirty (30) calendar days advance notice of cancellation (without disclaimer) or of any non-renewal which is the option of the insurer, said notice to be provided to the U.S. Department of Transportation, Division of Marine Insurance, MAR-575, Room 8117, 400 Seventh Street, S.W., Washington, DC 20590.

(2) The Contractor shall have its insurance broker provide a detailed certificate of insurance, cover note or policy confirming the above required coverage. The confirmation shall name the Contractor and United States of America as assureds and confirm the types of coverage, policy forms, policy periods, deductibles (if any) and underwriters with their percentage of participation. The N.Y. Suable Clause or Service of Suit USA Clause must be confirmed for any Foreign underwriter placements. The policy amounts, terms and conditions, deductibles and underwriters shall at all times be satisfactory to the Maritime Administration.

(e) The contractor shall insert the substance of this clause in subcontracts under this contract that require work on a Government installation.

18 52.233-02 SERVICE OF PROTEST

SEPTEMBER 2006

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer, Milton G. Spears,

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by obtaining written and dated acknowledgment of receipt from U.S Department of Transportation, Maritime Administration - South Atlantic Region, Bldg. 4D, Room 211, Norfolk, VA 23505.

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

19 MCL.L-2 AGENCY PROTESTS

AUGUST
2005

(a) Prior to submission of an agency protest, all parties shall use their best efforts to resolve concerns raised by an interested party at the Contracting Officer level through open and frank discussions. At any time the Contracting Officer and Protestor are encouraged to employ the use of alternative dispute resolution techniques to resolve the protest. When this cannot be accomplished interested parties may submit an agency protest to the Contracting Officer set forth in the Service of Protest provision of this solicitation.

(b) Protests based on alleged apparent improprieties in a solicitation shall be filed before bid opening or the closing date for receipt of proposals. In all other cases, protests shall be filed no later than 10 days after the basis of protest is known or should have been known, whichever is earlier.

(c) Protests shall include the following information. Failure to substantially include any of the following may be grounds for dismissal of the protest.

- (i) Name, address, and fax and telephone numbers of the protester.
- (ii) Solicitation or contract number.
- (iii) Detailed statement of the legal and factual grounds for the protest, to include a description of resulting prejudice to the protester.
- (iv) Copies of relevant documents.
- (v) Request for a ruling by the agency.
- (vi) Statement as to the form of relief requested.
- (vii) All information establishing that the protester is an interested party for the purpose of filing a protest.
- (viii) All information establishing the timeliness of the protest.

(d) Upon receipt and review of the protest to determine that adequate information is contained therein, the Contracting Officer will acknowledge receipt of the protest and inform the protester of the expected decision date. The Contracting Officer shall render a decision on the protest within 30 calendar days or notify the protestor of an extended decision date.

(e) Upon receipt of the Contracting Officer's decision, the protestor may appeal the decision within 15 calendar days of decision receipt. The appeal will result in an independent review of the protest by the Head of the Contracting Activity, the Associate Administrator for Administration. The Head of the Contracting Activity will impartially review the protest as presented, taking into consideration all of the available information, and render a decision. To the extent permitted by law and regulation, the Head of the Contracting Activity shall request relevant information from both parties. The Head of the Contracting Activity will render a decision on the appeal within 15 calendar days of receipt. Agency appellate review of the Contracting Officer's decision on the protest will not extend GAO's timeliness requirements. Therefore, any subsequent protest to the GAO must be filed within 10 days of knowledge of initial adverse agency action (4 CFR 21.2(a)(3)).

(f) Upon receipt of a protest, the Contracting Officer shall follow the procedures set forth in the FAR Subpart 33.103 (f) with regard to contract award and continued performance.

20 1252.242-
73 CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE

OCTOBER
1994

(a) The Contracting Officer may designate Government personnel to act as the Contracting Officer's Technical Representative (COTR) to perform functions under the contract such as review and/or inspection and acceptance of supplies, services, including construction, and other functions of a technical nature. The Contracting Officer will provide a written notice of such designation to the Contractor within five working days after contract award or for construction, not less than five working days prior to giving the contractor the notice to proceed. The designation letter will set forth the authorities and limitations of the COTR under the contract.

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(b) The Contracting Officer cannot authorize the COTR or any other representative to sign documents (i.e., contracts, contract modifications, etc.) that require the signature of the Contracting Officer.

21 MCL.H-11 DISPOSITION OF REMOVED EQUIPMENT AND SCRAP

AUGUST
2005

Any ship's equipment, fuel, lube oil, supplies, stores, furniture, fixtures, salvage, scrap and other movable property, removed from the vessel shall be and become the property of the Government and any ship's equipment, fuel, supplies, lube oil, stores, furniture, fixtures, salvage, scrap and other movable property so removed shall be disposed of in such manner as the Contracting Officer may direct, provided such direction is given to the Contractor within sixty (60) days from the date of the completion of the work. During said sixty (60) calendar days period such ship's equipment, fuel, lube oil, supplies, stores, furniture, fixtures, salvage, scrap and other moveable property shall be stored and protected by the Contractor without charge to the Government. If within sixty (60) calendar days such direction is not given to the Contractor, it shall, after said sixty (60) calendar days, store and protect the same in the Contractor's facility or outside of the Contractor's facility, at the Contractor's election, for the additional period directed by the Government. Such direction shall be covered by a change order, and the increased contract price for such additional storage shall be determined as provided in the changes provisions of this contract.

22 MCL.H-12 MARITIME LIENS, NO AUTHORITY TO INCUR

AUGUST
2005

(a) The Contractor is an independent contractor and does not act as an agent for the Government, its agents, its vessels, servants, or employees.

(b) The Contractor, its agents, servants, and employees, and all persons acting by, at the direction of, or on behalf of the Contractor (including, without limitation any subcontractors) have no right, power, or authority whatsoever to create, incur, or permit to be placed or imposed (i) any lien or (ii) any right in remedy of any kind, upon or against any vessel upon which work is being performed under this Agreement or against the United States of America or its agents, vessels, servants, or employees. This contractual provision governs notwithstanding any other provision of this contract.

(c) The Contractor, on behalf of itself, its agents, servants, and employees, and all persons acting by, at the direction of, or on behalf of the Contractor (including, without limitation any subcontractors) hereby waives its right to any maritime lien as well as any right in remedy of any kind based upon a maritime lien theory, upon or against any vessel upon which work has been, is being, or will be performed under this contract or against the United States of America or its agents, servants, or employees, whether known or unknown. The foregoing clause shall not prevent the Contractor's rights to proceed on this contract under the Contract Disputes Act.

(d) The Contractor shall pay when due all costs and expenses incident to the work performed by it or for its account. Neither the Contractor, nor its agents, servants, and employees, nor persons acting by, at the direction of, or on behalf of the Contractor (including, without limitation, any subcontractors) shall have the power to incur any lien of any kind maritime or otherwise. Such entities shall not (i) create, incur, suffer, or permit to be placed or imposed upon any vessel (or portion thereof), any maritime lien or other lien or encumbrance or charge in any way arising from any act or omission or (ii) incur or allow their subcontractors to incur any debts, obligations, or charges upon the credit of the vessel or against the United States of America or its agents, servants, or employees.

(e) Although it is not intended that the Contractor shall have the power to incur such liens, the Contractor shall immediately discharge or cause to be discharged any lien or right in remedy of any kind, whether incurred by the Contractor or its subcontractors, other than in favor of the Maritime Administration, which at any time exists or arises in connection with the work done or materials furnished under this contract.

(f) If any lien or right in remedy is not immediately discharged, MARAD may discharge or cause to be discharged such lien or right in remedy at the expense of the Contractor. MARAD shall have the right to recoup or setoff such funds from any monies owing to the Contractor from any other MARAD contract or any other Government contract. Should a question exist whether there is a valid lien or right in remedy, among other rights, MARAD shall have the right to retain such funds as security without interest.

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(g) From the start of work under this contract the Contractor shall cause a notice, reading as follows (or containing such other information as may be approved by MARAD), in plain type and of such size that the reading matter shall cover a space of at least 2 feet wide by 2 feet high in weather resistant paint to be placed and maintained by the gangway and shall read as follows:

"NOTICE TO SUBCONTRACTORS, MATERIALMEN, AND LABORERS

This vessel is owned by the United States of America, acting by and through the Maritime Administration.

The Contractor, and all persons acting by, (prime contractor), at the direction of, or on behalf of the Contractor (including, without limitation, any subcontractors) have no right, power, or authority whatsoever to create, incur, or permit to be placed or imposed any lien or right in remedy of any kind upon any vessel upon which work is being performed under this Agreement. The Contractor, its agents, servants, and employees, have no authority, either express or implied, to pledge the credit of said vessel."

(h) At the option of MARAD, the Contracting Officer may require that as a condition either for entry upon a vessel of the MARAD by any subcontractor or in order for any subcontractor to provide necessaries to a vessel of the MARAD, that such subcontractor shall on behalf of itself, its agents, subcontractors, servants, and employees, and all persons acting by, at the direction of, or on behalf of such subcontractor waive its right to any maritime lien as well as any right in remedy of any kind based upon a maritime lien theory, upon or against any vessel upon which work has been, is being, or will be performed under this contract or against the United States of America or its agents, servants, and employees, known or unknown. The foregoing clause shall not prevent such subcontractor's right, if any, to proceed under the Contract Disputes Act.

(i) The foregoing clause shall not deprive MARAD of any of the rights or remedies which it has under the common law.

23 MCL.H-13 SUPERVISION

AUGUST
2005

The Contractor shall provide at all times the quantity and quality of supervision necessary for the effective and efficient management of the operation. All supervisors shall have an intimate knowledge of the various tasks, equipment, and materials so as to be able to properly train and direct the workers in their individual tasks and to maintain and control an effective operation.

24 52.227-19 COMMERCIAL COMPUTER SOFTWARE-RESTRICTED RIGHTS JUN 87

52.227-19 Commercial Computer Software—Restricted Rights (June 1987)

(a) As used in this clause, "restricted computer software" means any computer program, computer data base, or documentation thereof, that has been developed at private expense and either is a trade secret, is commercial or financial and confidential or privileged, or is published and copyrighted.

(b) Notwithstanding any provisions to the contrary contained in any Contractor's standard commercial license or lease agreement pertaining to any restricted computer software delivered under this purchase order/contract, and irrespective of whether any such agreement has been proposed prior to or after issuance of this purchase order/contract or of the fact that such agreement may be affixed to or accompany the restricted computer software upon delivery, vendor agrees that the Government shall have the rights that are set forth in paragraph (c) of this clause to use, duplicate or disclose any restricted computer software delivered under this purchase order/contract. The terms and provisions of this contract, including any commercial lease or license agreement, shall be subject to paragraph (c) of this clause and shall comply with Federal laws and the Federal Acquisition Regulation.

(c)(1) The restricted computer software delivered under this contract may not be used, reproduced or disclosed by the Government except as provided in paragraph (c)(2) of this clause or as expressly stated otherwise in this contract.

(2) The restricted computer software may be—

(i) Used or copied for use in or with the computer or computers for which it was acquired, including use at any Government installation to which such computer or computers may be transferred;

(ii) Used or copied for use in or with backup computer if any computer for which it was acquired is inoperative;

(iii) Reproduced for safekeeping (archives) or backup purposes;

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(iv) Modified, adapted, or combined with other computer software, provided that the modified, combined, or adapted portions of the derivative software incorporating any of the delivered, restricted computer software shall be subject to same restrictions set forth in this purchase order/contract;

(v) Disclosed to and reproduced for use by support service Contractors or their subcontractors, subject to the same restrictions set forth in this purchase order/contract; and

(vi) Used or copied for use in or transferred to a replacement computer.

(3) If the restricted computer software delivered under this purchase order/contract is published and copyrighted, it is licensed to the Government, without disclosure prohibitions, with the rights set forth in paragraph (c)(2) of this clause unless expressly stated otherwise in this purchase order/contract.

(4) To the extent feasible the Contractor shall affix a Notice substantially as follows to any restricted computer software delivered under this purchase order/contract; or, if the vendor does not, the Government has the right to do so:

Notice—Notwithstanding any other lease or license agreement that may pertain to, or accompany the delivery of, this computer software, the rights of the Government regarding its use, reproduction and disclosure are as set forth in Government Contract (or Purchase Order) No. _____.

(d) If any restricted computer software is delivered under this contract with the copyright notice of 17 U.S.C. 401, it will be presumed to be published and copyrighted and licensed to the Government in accordance with paragraph (c)(3) of this clause, unless a statement substantially as follows accompanies such copyright notice:

Unpublished—rights reserved under the copyright laws of the United States.

(End of clause)

25 1252.217- GUARANTEE
70

MAY 2005

(a) In the event any work performed or materials furnished by the contractor prove defective or deficient within 60 days from the date of redelivery of the vessel(s), the Contractor, as directed by the Contracting Officer and at its own expense, shall correct and repair the deficiency to the satisfaction of the Contracting Officer.

(b) If the Contractor or any subcontractor has a guarantee for work performed or materials furnished that exceeds the 60 day period, the Government shall be entitled to rely upon the longer guarantee until its expiration.

(c) With respect to any individual work item identified as incomplete at the time of redelivery of the vessel(s), the guarantee period shall run from the date the item is completed.

(d) If practicable, the Government shall give the Contractor an opportunity to correct the deficiency.

(1) If the Contracting Officer determines it is not practicable or is otherwise not advisable to return the vessel(s) to the Contractor, or the Contractor fails to proceed with the repairs promptly, the Contracting Officer may direct that the repairs be performed elsewhere, at the Contractor's expense.

(2) If correction and repairs are performed by other than the Contractor, the Contracting Officer may discharge the Contractor's liability by making an equitable deduction in the price of the contract.

(e) The Contractor's liability shall extend for an additional 90 day guarantee period on those defects or deficiencies that the Contractor corrected.

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(f) At the option of the Contracting Officer, defects and deficiencies may be left uncorrected. In that event, the Contractor and Contracting Officer shall negotiate an equitable reduction in the contract price. Failure to agree upon an equitable reduction shall constitute a dispute under the Disputes clause of this contract.

(End of clause)

26 1252.223- ACCIDENT AND FIRE REPORTING
71

MAY 2005

(a) The Contractor shall report to the Contracting Officer any accident or fire occurring at the site of the work which causes:

- (1) A fatality or as much as one lost workday on the part of any employee of the Contractor or subcontractor at any tier;
- (2) Damage of \$1,000 or more to Government-owned or leased property, either real or personal;
- (3) Damage of \$1,000 or more to Contractor or subcontractor owned or leased motor vehicles or mobile equipment; or
- (4) Damage for which a contract time extension may be requested.

(b) Accident and fire reports required by paragraph (a) above shall be accomplished by the following means:

(1) Accidents or fires resulting in a death, hospitalization of five or more persons, or destruction of Government-owned or leased property (either real or personal), the total value of which is estimated at \$100,000 or more, shall be reported immediately by telephone to the Contracting Officer or his/her authorized representative and shall be confirmed by telegram or facsimile transmission within 24 hours to the Contracting Officer. Such telegram or facsimile transmission shall state all known facts as to extent of injury and damage and as to cause of the accident or fire.

(2) Other accident and fire reports required by paragraph (a) above may be reported by the Contractor using a state, private insurance carrier, or Contractor accident report form which provides for the statement of:

- (i) The extent of injury; and
- (ii) The damage and cause of the accident or fire.

Such report shall be mailed or otherwise delivered to the Contracting Officer within 48 hours of the occurrence of the accident or fire.

(c) The Contractor shall assure compliance by subcontractors at all tiers with the requirements of this clause.

(End of clause)

27 MCL.H-7 ENVIRONMENTAL CONCERNS/ASBESTOS
RELATED/HAZARDOUS MATERIALS/ PETROLEUM AND
PETROLEUM PRODUCTS: ENVIRONMENTAL COMPLIANCE

AUGUST
2005

The Contractor must recognize that MARAD vessels often contain hazardous substances, hazardous materials, petroleum and petroleum products, the handling, removal, storage, transportation and disposal of which is required in the performance of work. Such hazardous substances, hazardous materials, petroleum products include but are not limited to: Asbestos, used in heat and electrical insulation, brake linings, deck covering, boiler refractors, joiner work and other areas; mercury; petroleum products; hydraulic oils; liquid cargo products; lead in marine compounds, products and other areas; chromium; tin in anti-foulants and other areas; zinc; polychlorinated biphenyls (PCBs), found in some electrical cable, rubber gaskets, felt gaskets, thermal insulation material (fiberglass, felt, foam and cork), transformers, capacitors or voltage regulators, switches, reclosers, bushings, electromagnets, adhesives, tapes, oil (leaks, spills as well as electrical equipment, motor, anchor windlasses and hydraulic system containing oil), surface contamination of

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machinery and other solid surfaces, oil based paint, caulking, rubber isolation mounts, foundation mounts, pipe hangers, light ballasts and plasticizers, and other hazardous substances used aboard ship while in operation and/or in Phase IV maintenance.

In performance of the work by the Contractor, the most recent edition of any applicable statute, regulation, standard, or code shall be in effect. Where a conflict among requirements or specifications exist, the most stringent requirements shall be utilized.

HAZARDOUS SUBSTANCE/HAZARDOUS MATERIALS

The term hazardous substance has the meaning ascribed to it by 42 U.S.C. §9601(14). The term hazardous materials has the meaning ascribed to it by 49 CFR 171.8. The term hazardous material, is as defined for hazardous chemicals in 29 CFR 1910.1200.

Specific Requirement Standards: ASBESTOS

(a) All of the handling, removal, storage, transportation and disposal work shall be done in strict compliance with all applicable Federal, State and local statutes, regulations, standards, and codes governing asbestos, asbestos abatement, asbestos disposal and any other trade work done in conjunction with asbestos abatement including, but not limited to:

- (1) Occupational Safety and Health Administration (OSHA):
 - Title 29, CFR, Section 1910, Occupational Safety and Health Standards
 - Title 29, CFR, Part 1915, Occupational Safety and Health Standards for Shipyards Employment
 - Title 29, CFR, Part 1926, Safety and Health Regulations for Construction
 - Title 29, CFR, Section 1910.1200 Hazard Communication
 - Federal Register, dated June 20 and October 17, 1986, Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rule. (29 CFR Parts 1910 and 1926)
- (2) Environmental Protection Agency (EPA)
 - Title 40 CFR Part 61, Subparts A and M (revised Subpart B) National Emission Standard for Hazardous Air Pollutants (Asbestos) and Part 763 Asbestos.
 - Title 40 CFR Part 63, National Emission Standard for Hazardous Air Pollutants Subpart II National Emission Standards for Shipbuilding and Ship Repair (Surface Coating)
- (3) Maritime Administration (MARAD)

Action Plan for the Control of Asbestos Exposures and Uses in MARAD Programs.

NOTE: This action plan is available upon written request to:

Maritime Administration,
Office of Management Services, MAR-310
400 Seventh Street, SW., Room 7225
Washington, D.C. 20590
ATTN.: Safety Officer.

OTHER HAZARDOUS MATERIALS AND HAZARDOUS, REGULATED AND SPECIAL WASTES

Safe, proper and lawful handling of hazardous substances, hazardous materials and petroleum products is the Contractor's responsibility whether or not it is identified as such in this contract or any attachment herein. The Contractor must determine for itself whether work specified in this contract requires the handling, removal, storage, transportation or disposal of hazardous substances, hazardous materials, petroleum products, and/or hazardous regulated or special wastes and price the bid or proposal accordingly. If available, MARAD will provide to the Contractor information regarding the existence and amount of any such material. No additional charges required for handling, removal, storage, transportation, or disposal of any hazardous substances, hazardous materials, petroleum products and/or hazardous, regulated or special wastes in the specified work will be allowed after award is made. Except to extent such additional changes result from the existence of hazardous substances, hazardous materials, petroleum products and/or hazardous, regulated or special wastes that could not have been reasonably anticipated. In the event of the discovery of such material, a condition report shall be issued. The cost of such additional work will be fixed at the unit price provided in the bid. The work can proceed only upon written approval by the Contracting Officer. Any modification to the contract that increases the requirement for the handling, removal, storage, transportation and disposal of asbestos or other hazardous substances, hazardous materials, petroleum products, and/or hazardous, regulated or special wastes will be included in the agreed cost of the modification of the contract.

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All of the handling, removal, storage, transportation and disposal work is to be done in strict compliance with all applicable Federal, State and local regulations, standards, and codes governing environmental compliance, including, but not limited to the following:

1. ENVIRONMENTAL PROTECTION AGENCY (EPA) TITLE 40,
 - Part 50, National Primary and Secondary Ambient Air Quality Standards
 - Part 63 National Emission Standards for Hazardous Air Pollutants Subpart II National Emission Standards for Shipbuilding and Ship Repair (Surface Coating)
 - Part 82, Protection of Stratospheric Ozone
 - Part 110, Discharge of Oil
 - Part 112, Oil Pollution Prevention
 - Part 117, Determination of Reportable Quantities for Hazardous Substances
 - Part 122, EPA Administered Permit Programs: The National Pollutant Discharge Elimination System
 - Part 125, Criteria and Standards for the National Pollutant Discharge Elimination System
 - Part 261, Identification and Listing of Hazardous Waste
 - Part 262, Standards Applicable to Generators of Hazardous Waste
 - Part 279, Standards for the Management of Used Oil
 - Part 300, National Oil and Hazardous Substance Pollution Contingency Plan
 - Part 302, Designation, Reportable Quantities, and Notification
 - Part 355, Emergency Planning and Notification
 - Part 370, Hazardous Chemical Reporting: Community Right-to-Know
 - Part 372, Toxic Chemical Release: Community Right-to-Know
 - Part 761, Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
 - Part 763, Asbestos
2. COAST GUARD (USCG) TITLE 33 CFR,
 - Part 153, Control of Pollution by Oil and Hazardous Substances, Discharge Removal
 - Part 154, Facilities Transferring Oil or Hazardous Material in Bulk
 - Part 156, Oil and Hazardous Material Transfer Operations
3. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) Title 29 CFR,
 - Part 1910, Occupational Safety and Health Standards
 - Part 1915, Occupational Safety And Health Standards for Shipyard employment
 - Part 1926, Occupational Safety and Health Regulations for Construction
4. RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION (RSPA) TITLE 49 CFR,
 - Subchapter C, Hazardous Materials Regulations

The Contractor shall be required to demonstrate a through knowledge of and satisfactory record of compliance with all applicable Federal, State and local environmental statutes, regulations, standards, codes and guidelines governing environmental compliance as part of the pre-award survey.

The Contractor shall be responsible as the generator of all hazardous, solid, regulated and special waste that results from activities of the Contractor under this agreement. The Contractor is required to arrange for transportation and disposal of regulated waste generated during the ship's operational period if required by this contract. The Contractor shall be responsible for all permitting, reporting, transporting, documenting and /or disposing of said wastes and for obtaining all appropriate Environmental Protection Agency Identification Numbers and permits and/or state or local equivalent. In addition, the contractor shall be responsible for:

- (a) conducting required laboratory testing;
- (b) maintaining any and all required records;
- (c) filing any and all reports required by Federal, State or local statute, regulation, standard or guidelines to be filed by the Generator of such waste or the holder of such permits, or numbers; and,
- (d) complying with all applicable Federal, State and local statutes, regulations standards, codes, or guidelines.

The Contractor shall provide all documentation to the COTR pertaining to the sampling, analysis, storage, transportation and disposal of all wastes generated during the contract.

ENVIRONMENTAL MANAGEMENT PLAN

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For all work performed, the Contractor shall submit to the designated MARAD COTR or representative, an acceptable hazardous material and hazardous waste management plan to the COTR within one week after award. An acceptable plan shall address, as a minimum, the following requirements:

- A. Environmental Protection Agency (EPA), State and local authority hazardous waste generator identification numbers or registration with the state or local equivalent, of the Contractor, his/her transporters, storage and disposal facilities (TSDFs).
- B. An inventory of all hazardous chemicals, compounds, and other agents brought aboard the vessel accompanied by their respective Material Safety Data Sheets. The Contractor shall provide and maintain the Material Safety Data Sheets for all hazardous materials in accordance with CFR 29 1910.1200.
- C. A list of all anticipated hazardous wastes to be generated and applicable reference to federal, state, and local regulations.
- D. Waste collection and containment procedures in accordance with 40 CFR 262.
- E. A hazardous materials spill and cleanup plan including tools and materials that will be on hand and readily available to facilitate containment and cleanup.
- F. Training certification for the environmental compliance manager and respective employees.
- G. The Contractor will identify and quantify the amount of hazardous waste generated in the course of the MARAD ship repair. Upon completion of the contract, cost and quantities will be summarized and forwarded to the Office of Environmental Activities MAR-820 Rm. 7209, 400 Seventh St., S.W., Washington, D.C. 20590 for annual OMB A-106 reporting requirements.

28 TAR 1252.217-73 INSPECTION AND MANNER OF DOING WORK

(a) The Contractor shall perform work in accordance with the contract, any drawings and specifications made a part of the job order, and any change or modification issued under the Changes clause.

(b)(1) Except as provided in paragraph (b)(2) of this clause, and unless otherwise specifically provided in the contract, all operational practices of the Contractor and all workmanship, material, equipment, and articles used in the performance of work under this contract shall be in accordance with the best commercial marine practices and the rules and requirements of all appropriate regulatory bodies including, but not limited to the American Bureau of Shipping, the U.S. Coast Guard, and the Institute of Electrical and Electronic Engineers, in effect at the time of Contractor's submission of offer, and shall be intended and approved for marine use.

(2) When Navy specifications are specified in the contract, the Contractor shall follow Navy standards of material and workmanship. The solicitation shall prescribe the Navy standard whenever applicable.

(c) The Government may inspect and test all material and workmanship at any time during the Contractor's performance of the work.

(1) If, prior to delivery, the Government finds any material or workmanship is defective or not in accordance with the contract, in addition to its rights under the Guarantee clause, the Government may reject the defective or nonconforming material or workmanship and require the Contractor to correct or replace it at the Contractor's expense.

(2) If the Contractor fails to proceed promptly with the replacement or correction of the material or workmanship, the Government may replace or correct the defective or nonconforming material or workmanship and charge the Contractor the excess costs incurred.

(3) As specified in the contract, the Contractor shall provide and maintain an inspection system acceptable to the Government.

(4) The Contractor shall maintain complete records of all inspection work and shall make them available to the Government during performance of the contract and for 90 days after the completion of all work required.

(d) The Contractor shall not permit any welder to work on a vessel unless the welder is, at the time of the work, qualified to the standards established by the U.S. Coast Guard, American Bureau of Shipping, or Department of the Navy for the type of welding being performed. Qualifications of a welder shall be as specified in the contract.

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(e) The Contractor shall—

- (1) Exercise reasonable care to protect the vessel from fire;
 - (2) Maintain a reasonable system of inspection over activities taking place in the vicinity of the vessel's magazines, fuel oil tanks, or storerooms containing flammable materials.
 - (3) Maintain a reasonable number of hose lines ready for immediate use on the vessel at all times while the vessel is berthed alongside the Contractor's pier or in dry dock or on a marine railway;
 - (4) Unless otherwise provided in the contract, provide sufficient security patrols to reasonably maintain a fire watch for protection of the vessel when it is in the Contractor's custody;
 - (5) To the extent necessary, clean, wash, and steam out or otherwise make safe, all tanks under alteration or repair.
 - (6) Furnish the Contracting Officer a "gas-free" or "safe-for-hotwork" certificate before any hot work is done on a tank;
 - (7) Treat the contents of any tank as Government property in accordance with the Government Property (Fixed-Price Contracts) clause; and
 - (8) Dispose of the contents of any tank only at the direction, or with the concurrence, of the Contracting Officer.
 - (9) Be responsible for the proper closing of all openings to the vessel's underwater structure upon which work has been performed. The contractor additionally must advise the COTR of the status of all valves closures and openings for which the contractor's workers were responsible.
- (f) Except as otherwise provided in the contract, when the vessel is in the custody of the Contractor or in dry dock or on a marine railway and the temperature is expected to go as low as 35 Fahrenheit, the Contractor shall take all necessary steps to—

- (1) Keep all hose pipe lines, fixtures, traps, tanks, and other receptacles on the vessel from freezing; and
- (2) Protect the stern tube and propeller hubs from frost damage.

(g) The Contractor shall, whenever practicable—

- (1) Perform the required work in a manner that will not interfere with the berthing and messing of Government personnel attached to the vessel; and
- (2) Provide Government personnel attached to the vessel access to the vessel at all times.

(h) Government personnel attached to the vessel shall not interfere with the Contractor's work or workers.

(i)(1) The Government does not guarantee the correctness of the dimensions, sizes, and shapes set forth in any contract, sketches, drawings, plans, or specifications prepared or furnished by the Government, unless the contract requires that the Contractor perform the work prior to any opportunity to inspect.

(2) Except as stated in paragraph (i)(1) of this clause, and other than those parts furnished by the Government, and the Contractor shall be responsible for the correctness of the dimensions, sizes, and shapes of parts furnished under this agreement.

(j) The Contractor shall at all times keep the site of the work on the vessel free from accumulation of waste material or rubbish caused by its employees or the work. At the completion of the work, unless the contract specifies otherwise, the Contractor shall remove all rubbish from the site of the work and leave the immediate vicinity of the work area "broom clean."

(End of clause)

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52.216-1 Type of Contract (Apr 1984)

The Government contemplates award of a firm fixed-price contract resulting from this solicitation.

(End of provision)

30 1252.217- TITLE
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(a) Unless otherwise provided, title to all materials and equipment to be incorporated in a vessel in the performance of this contract shall vest in the Government upon delivery at the location specified for the performance of the work.

(b) Upon completion of the contract, or with the approval of the Contracting Officer during performance of the contract, all Contractor-furnished materials and equipment not incorporated in, or placed on, any vessel, shall become the property of the Contractor, unless the Government has reimbursed the Contractor for the cost of the materials and equipments.

(c) The vessel, its equipment, movable stores, cargo, or other ship's materials shall not be considered Government-furnished property.

ATTACHMENT J-1

T/S STATE OF MAINE AUTOMATION UPGRADE – STATEMENT OF WORK

1.0. ABSTRACT

1.1. Background

It is the Government's intent to upgrade the ship's Automation System in Engine Room and Bridge. Because funds for upgrading the entire Automation System is not expected to be available in one fiscal year, the initial award will be for CLIN 0001, Upgrade Phase I – Machinery Monitoring and Alarm System, Engineers Watch Call System and Tank Level Indicating System in fiscal year 2007; CLIN 0002, Upgrade Phase II – Main Engine Controls, Electric Motor Propulsion Controls, Main Propulsion Controls including Controllable Pitch Propeller Systems in fiscal year 2008. CLIN Item 0001 and 0002 in which the Contractor is authorized to perform upgrade work; the Contractor shall provide/furnish labor, material, and equipment necessary to complete the entire work requirement as listed/specified in each CLIN Item. The entire General Requirement listed within this work items shall be applied to all CLIN Items. To prevent confusing on after installation services and spare parts support, U.S. Government is intended to award all CLIN Items to one Contractor in separate fiscal years when funds make available.

1.2. Introduction

This Statement of Work (SOW) describes an automation upgrade for the training ship T.S. STATE OF MAINE. The ship's General Electric Distributed Micro-Control (DMC) automation system, Siemens IMAC 55 automation system and Lips main propulsion control system will be removed and replaced with latest technology microprocessor based monitoring and propulsion control system. Main Control Console and Ship Control Console discrete indicating lights and push-button/control stations will be re-located or removed and their functions incorporated into the new automation system.

1.3 Purpose

The General Electric Distributed Micro-Control (DMC) ABS ACCU automation was installed during the original ship construction. The General Electric DMC automation is no longer supportable and requires replacement. The Siemens IMAC 55 automation system and Lips main propulsion control system, installed as part of the School ship Conversion, will also be upgraded and replaced.

1.4. Scope

The Contractor shall perform ship checks on the existing automation system. Provide turnkey services for the replacement of the ship's centralized machinery monitoring and control automation system, the existing Siemens IMAC 55 monitoring system and Lips main propulsion control system to provide ABS "ACC" monitoring and control capabilities. Control capabilities are specified within this spec package and include vital propulsion auxiliaries, engine room auxiliary equipment, PID process controls, and remote valve operators. Control capability shall be provided using mimic displays in conjunction with trackball and keypad. Propulsion Control capability shall be provided at the Pilot House, Main Control Station, and local control at the propulsion machinery.

The new automation system shall be a customized design using microprocessor based remote controls and automation and Distributed Processing Units (DPUs), and Ethernet Global Data remote I/O to serve the existing ship systems.

Ship systems served shall include, but are not limited to, the following in upgrade Phases:

Phase I – FY2007/FY2008

- 1) Prepare entire automation system (Phase I and II) drawings and documents submit to Regulatory bodies for approval.
- 2) Auxiliary machinery control, Alarm and Monitoring system.
- 3) Tank Level Indicating System – Tank Internal Hardware

Phase II – FY2008/FY2009

- 1) Main engine and main propulsion electric motor controls Clin 0002AA
- 2) Propulsion system Clin 0002AB
- 3) Tank level indicating system – Tank External Hardware and Software complete system Clin 0002AC

The Contractor shall provide an ABS/USCG approved upgraded automation system that complies with:

ABS Rules for Building and Classing Steel Vessels 2005 - ACC

46 CFR, Part 62 – Vital System Automation

SOW - Where specifications within the CLINS' SOW are more stringent than the requirements of ABS ACC Regulation and the requirements of 46 CFR Part 62, specifications shall take precedence.

The Contractor shall prepare and submit the technical documentation identified in Section 3 to ABS and USCG Marine Safety Center for review/approval, this work shall be completed in Phase I for the entire Automation System. The Contractor shall bear all costs associated with ABS/USCG review/approval. The Contractor shall provide the following to MARAD with USCG

Marine Safety Center and ABS stamps certifying review/approval as applicable:

- All Regulatory Body submittals necessary to provide an ABS/USCG approved upgraded automation system.
- Design Verification Test Procedure (DVTP) in accordance with 46 CFR Part 62.
- Periodic Safety Test Procedure (PSTP) in accordance with 46 CFR Part 62.
- Qualitative Failure Analysis in accordance with 46 CFR Part 62.20-3(2)(b).

2.0. REFERENCES

- 2.1. ABS Rules for Building and Classing Steel Vessels 2006 - ACC
- 2.2. 46 CFR Part 62 – Vital System Automation
- 2.3. NavSea Technical Manual T9436-AW-MMC-010/02295 “Automatic Control System for Unattended Engine Room Certified – Available onboard T.S. State Of Maine.
- 2.4. Attachment
 - 2.4.1. Remote Terminal Unit (RTU) Sensor Name List, RTU No. 1 to 8 (13 Page)
 - 2.4.2. Process Unit 1 Sensor Name List (2 Page)
 - 2.4.3. Siemens RTU Unit Sensor Name List Unit 3 to 6 (4 Page)
 - 2.4.4. *Note:* The total amount of RTU, I/O and Sensors listed in 2.4.1, 2.4.2 and 2.4.3 should be replaced. It is approximately Ten (10) percent of the listed RTU, I/O and Sensors are not in used with the current system, Contractor shall replace the unused/un-activated RTU, I/O and Sensors in RTU or I/O cabinets and mark it as “SPARE”.

3.0. ITEM LOCATION / DESCRIPTION

- 3.1. Ship location – One Water Street, Castine, Maine 04420
- 3.2. Automation System: - Main Control Console – Engine Control Room
 - UPS/Remote I/O Panels – Engine Room
 - Bridge Control Console – Wheel House
 - Chief Engineer Workstation – Chief Engineer Office, Fwd Deck House, 03 level deck, Port
 - Cadet Training Station – Engine Control Room
- 3.3. Manufacturers’ Data/System Description:
 - 3.3.1. Existing/Old System – Main Engine, E-Motor and Main Propulsion Controls – Siemens and Lips Machinery
 - Monitoring, Alarm System and Controls – GE DMC Automation System Ballast Control System – GE DMC System, Vendor unknown
 - Tank Level Indicating System – GE DMC System, Vendor unknown
 - 3.3.2. New System provided by Contractor – The new automation system to be designed and assembled by Contractor with ABS/USCG approved hardware and software including but not limited to the following components and functions:
 - 3.3.2.1. New system shall be used to cover every engine room data acquisition and control function with GE Cimplicity system, or equal programmed software installed in the engine control console.
 - 3.3.2.2. The actual PID speed control and parameters are in the existing main engine governor control will be re-used in the new system.
 - 3.3.2.3. General Installation Techniques:
 - 3.3.2.3.1. All new indicator lights will be of the LED type.
 - 3.3.2.3.2. All alarm status shall be activated and show on the monitor screens. The alarm’s acknowledge push button shall be installed on the console.
 - 3.3.2.3.3. All bridge indicator lights will have a lamp dimmer to adjust them.
 - 3.3.2.3.4. All new console panels shall be fabricated with 10 gauge stainless steel plates with equipment identify labels/name plates. Prior to manufacture the new console panels, Contractor shall submit the designed “lay-out” to vessel Master, Chief Engineer and MARAD Representative for final approval.
 - 3.3.2.4. Propulsion System and Propeller Pitch system:
 - 3.3.2.4.1. The new system shall seamlessly control all aspects of propulsion including signals to the existing diesel main engine control system, the Siemens E-Motor inverter, the LIPS propeller pitch control, clutch, brake, all remote and local propulsion stations, etc.
 - 3.3.2.4.2. Engine Room Console – Install new RPM and Load Limited switch adjusting “0 to 100” percents for main diesel engine and E-Motor, Install new dual lever for controls CPP pitch with “0 to 100” percents “Ahead” and “0 to 100” percents “Astern” for pitch adjusts with diesel engine or E-Motor speed (rpm) and loads.

3.3.2.4.3. All of the control switches and levers should have an analog output for their associated lever, and also internal limit switches, which will be used for proof of direction of the lever. The software will be sure the analog signal is in the same quadrant as the limit switch feed back. This will prevent run-away due to a faulty controls.

3.3.2.4.4. Control transfer will require that the station taking control must align their levers to the same position as the station under control. In the case of taking engine room control, the levers will need to be aligned, or in the stopped position.

3.3.2.4.5. A dual bar graph matching meter shall be used in each console for lever alignment.

3.3.2.4.6. In taking control from the local station, the lever will need to be in the stopped position or in the same position as the propeller pitch. In this case, the matching meters will indicate the actual propeller pitch position instead of the pitch demand setting.

3.3.2.4.7. All buttons and indicators will be the same as specified in the specification.

3.3.2.4.8. Bridge Console – The bridge control console should have similar controls as Engine Room Console. Other push buttons, meters, and indicators shall be as per specification. Relocate engine emergency stop push buttons, emergency fire pump control buttons to the new propulsion control console.

3.3.2.5 PLC Based Computer System:

3.3.2.5.1. Computers used shall be ABS Type Approved General Electric LM9030 PLC or equal with a 364 processor in the existing cabinet on the side of the Engine Room console. The I/O of this PLC will be connected to the existing cabling and existing shaft alley sensors and actuators. It will also be connected to all the propulsion indicator lights, push buttons, meters, etc. on both the bridge and the engine room consoles.

3.3.2.5.2. The computer will control the propeller pitch, as well as send signals to the engines/motors for speed set-point. It will also send signals for the clutch and shaft brake.

3.3.2.5.3. The PLC will be connected to the new engine room data acquisition system. All parameters from the new Pitch Control system will be available for viewing. These will be Engine RPM, E-Motor RPM, Shaft RPM, Clutch status, Brake status, any alarms, position of the actuation solenoids, Bridge and Engine room demand lever positions, etc.

3.3.2.5.4. An automatic Load mode shall be provided in Machinery Control Console and Bridge Control Console, a button and indicator light for the bridge. It will be labeled “Auto Load Mode”. When in this mode, the pitch demand lever will control the engine load at the same time. It will adjust the Engine (or E-Motor) for the appropriate load for the maneuvering setting. When at the top maneuvering Pitch or above, the engine (or E-Motor) will stay at the top maneuvering speed until the load lever is increased beyond this set-point.

3.3.2.5.5. Interfacing – Interface this computer by using analog and digital I/O to the exiting Main Engine controls, for speed control, starting, stopping, clutch, shaft brake, alarms, etc., The new PLC (Programmed Logic Controllers) shall be interfaced to the Siemens AC drive system using the existing communication protocol, which is Profibus.

3.3.2.5.6. Programming - All features and limits of the existing LIPS control system will be programmed into the new system, so operation will be the same as before, with the exception of the engine room pitch control, which will be a lever at the consoles instead of push buttons. Programs will be provided to the vessel with all comments and variable names for backup, maintenance, troubleshooting and configuration.

3.3.2.6 PLC Backup Unit:

3.3.2.6.1 A backup PLC shall be used, that will operate at all times, ready to take over automatically if the main PLC fails. All of the inputs and outputs would be duplicated on each PLC. The main PLC will monitor its own health, and also that of the backup PLC. If it determines that its own health is not up to Parr, but the backup PLC is, then it will transfer control to the backup PLC.

3.3.2.6.2. If the main PLC fails entirely, it will automatically transfer to the backup PLC. It will be a series of relay transfer boards that transfer the digital and analog signals from the PLC's to the appropriate devices. The communication to the E-Motor drive will also be transferred to the backup PLC. The system would be total bumpless transfer, maintaining speed and direction of the engines and propeller pitch. An alarm indicating the action will be generated.

3.3.2.7. Operator Interface Units - Use OIU (operator interface units) in engine room console as specified in Section 4 “Work Requirements” on all Phases/CLIN. Screens shall be developed and edited as necessary to coordinate with Ship’s Master and Engineers’ input.

3.3.2.8. Display – All new display monitors shall be 20 inch, ABS Type Approved TFT color display, Jacob Hatteland Display, Part Number JH 20T04 MMD-C1 or equal with touch screen. All normal operations will be easily performed with a touch screen interface. USB interface jacks that will be mounted below each monitor for a hot pluggable keyboard/mouse pad provide two USB keyboard/mouse combo units for the engine control room.

3.3.2.9. Workstation Computers – All workstation computers shall be Certified Computer Technology, Model A320M or equal with 1 Gig ram, 80 G hard drives, CD Rom., serial ports and USB ports.

3.3.2.10. Contractor shall purchase “Cimplicity Runtime” or equal software licenses for each computer. All computers will be on the same network as all PLC's, so all computers will have the ability to “look at” all information in the whole control system and backup capabilities.

3.3.2.11. All propulsion software which controls the main engine, the E-Motor, and the pitch control system can be working without the Ethernet bus. All I/O to this system is discrete, or on its own communication system, so

thus, the vessel will still be able to operate without its Ethernet.

- 3.3.2.12. The systems shall be configured with security settings, so only authorized personnel can be able to have file access and no other software program can be installed in the control system. The passwords will be issued to ship's Master, Chief Engineer and 1st A/E.
- 3.3.2.13. Contractor shall use "Cimplicity WebView" or equal Software license for one of the Cimplicity machines. Using this machine to set up a web viewer for engineers off the vessel can view the actual real time data of the system. A remote assistance/help internet connection shall be provided for outside technical assistance if needed, this connection only provided to authorize person, such as System Designer/Manufacturers' Service Engineer. Security will be installed to prevent unauthorized changes. It will not be possible to change any configurations, screens, or plant processes over the web server.
- 3.3.2.14. Contractor shall use a second Ethernet port on one of the computers; the web server will use the second Ethernet port, so the web traffic will not affect the control system Ethernet traffic. Contractor shall provide 5 user licenses for Web View system.
- 3.3.2.15. All software licenses shall be turned over to MARAD as owner and end user.
- 3.3.2.16. Printers – Contractor shall use new dot matrix printers in engine room console, one (1) printer for alarm and one (1) for plant status and data logger. Printer control will be available on one of the display monitor screens. Alarm Printer – Configure the operating software to print out each alarm, along with time, description and when it comes into the alarm condition. Data Logging Printer - Configure the printer to print out periodic data logs, with all desired data on it. It should be configurable for on demand data log print out, or automatic periodic print out. Automatic paper feed with paper trays for the receiving paper will be fabricated and installed by Contractor.
- 3.3.2.17. Threshold Warning Alarm – Threshold warning for safety system activations shall be provided in accordance with ABS Rules, see ABS Rules Part 4-9-2/9.3.2.
- 3.3.2.18. Trending – Trending capability shall be provided.
- 3.3.2.19. As a rule, a lit indication lamp on a control panel indicates an active state, while a lit push button indicates that the button is enabled to be activated with a push. Generally, a push button that not lit is not applicable for the moment due to the prevailing situation, and a push on the button will have no effect. Indication lamps and buttons of special importance are in "RED". A "YELLOW" lamp indicates a warning, or another state that requires the operator's attention. GREEN lamps indicate active mode, and BLUE on ones back-up control.

4.0. WORK REQUIREMENTS

CLIN 0001AA - AUTOMATION SYSTEM DESIGN DRAWING AND DOCUMENTATION

4.1. General Work Requirement for all CLIN Items specified in Phase I and II.

4.1.1. Ship Check – Upon received NTP from SAR Contracting Office, Contractor shall perform a detailed ship check, noting each piece of equipment, listing all retained cabling, and equipment to determine the characteristics of each piece of retained equipment for optimum control of same. Use this ship check information to prepare technical drawings, specification and documents and submit to Regulatory Body for approval. Check and record the dimensions on engine room and bridge control consoles' front and counter top panels, which to use for fabricate panels to fit and install the new system controls. All the existing console panels shall be replacing with new panels.

4.1.2. Mimics – The Contractor shall develop mimic displays for efficient monitoring and control of equipment to replace the existing automation system including but not limited to Machinery Monitoring and Alarm System, Auxiliary Machinery Controls, Siemens automation system as part of the automation upgrade. At minimum, mimic displays shall be developed and added to the existing system for (1) Main Propulsion, (2) Main Seawater system, (3) Central Freshwater system, (4) Electric Plant, (5), SSDGs and (6) Watch Call System. 4.1.2.1. Note: Mimic displays ONLY required on monitor screens, and it is NOT required to print on the new console panels.

4.1.3. Tank Level Gauging – All tank levels monitored by the upgraded automation system shall be display capacity both in Percent Full (i.e., 0-100%) and in Gallons. Ballast and FO/DFM mimic displays shall show visual indication of the level in the tank in addition to providing Percent Full and Gallons. The existing tank sensors generate a current of 4-20 mA for each tank. Contractor shall obtain a copy of "Tank Capacity Data Sheet" from ship's Chief Officer for setup/calculate the display scale. The following tanks to be dealt with:

4.1.3.1. Heavy Oil

Fuel Oil Storage Tank, FO 5-47-1 Fuel Oil Storage Tank, FO 5-47-2 Fuel Oil Storage Tank, FO 5-47-0 Fuel Oil Storage Tank, FO 3-144-4 Fuel Oil Storage Tank, FO 3-146-1 Fuel Oil Settling Tank, FO 3-144-1 Fuel Oil Day Tank, FO 3-144-2

4.1.3.2. Diesel Oil (DFM)

DFM Storage Tank, DO 5-35-01 M.E. DFM Day Tank, DO 3-139-1 M.E. DFM Settling Tank, DO 3-144- 3 SSDG DFM Day Tank No.1, DO 2-144-3
SSDG DFM Day Tank No. 2, DO 2-144-1
Emergency Generator Day Tank, 03-78-0

4.1.3.3. Lube Oil

Red G LO Storage Tank, LO 2-138-2 Red G LO Settling Tank, LO 2-140-2 ME LO Storage Tank, LO 3-139-2 LO Settling Tank, LO 3-142-2
SSDG L.O. Storage Tank, 6-136-2
SSDG L.O. Sump 4-126-4

4.1.3.4. Potable Water

FW Service Tank, FW 5-104-0 Potable Water Tank, Stbd, FW 2-1 10-1 Potable Water Tank, Port, FW 2-110-2

4.1.3.5. Distilled and Reserved Feed Water Reserved Feed Water

Tank, FW 2-139-3
Distilled Water Tank, FW 2-139-1

4.1.3.6. Miscellaneous

Gray Water Collection Tank, GW 3-79-2
Waste Settling Tank, WO 6-114-2 Waste Oil Tank, WO-6-114-0
Oily Water Holding Tank, WO 6-120-2
Dirty Oil Tank, WO 6-140-2
Fuel Oil Drain Tank, WO 6-136-2
FWD Sewage Holding Tank

4.1.3.7. Deleted

4.1.3.8. Deleted

4.1.4. Prior to install the new control systems, Contractor shall disconnect and remove all the existing control systems. The removals shall be included but not limited to the control console panels on engine room and bridge consoles, existing wiring/cables, blocks, cabinets, power supply units, etc., All old wire/cables shall be disconnected and removed completely from its installed consoles, cabinets, wire ways, etc., Provide and install new wire/cables to replace the removed wires/cables and run on the existing cable ways. The new wire/cables shall be approved by USCG and ABS for shipboard automation use wires/cables.

4.1.5. Contractor shall provide and install new Unbreakable Power Supplies (UPS) units to serve the new control systems. New UPS units shall be a dual system and provided with battery back-up meeting USCG/ABS requirements

4.1.6. New control system shall be as specified in "3.3.2". Contractor shall provide all hardware, wire/cables, program software, and necessary materials to complete the new installation.

4.1.7. All new wire and cables using on the new control system shall be USCG approved marine type, low smoke wire/cable. Size and type shall be as required by the equipment/hardware manufacturer(s).

4.1.8. All work requirements specified herein each CLIN Item is for guidance to prepare the proposal. It is the contractor sole responsibility to check out the control systems on bidders' inspection/site visit day and use it to prepare his/her technical/price proposal.

4.1.9 All engineering, design and fabrication work shall be accomplished in Contractor's office/facility. All removals and installation shall be accomplished onboard ship at 1 Water Street, Castine, Maine 04420, except Tank Level Indicating System hardware which to be installed inside the tanks, all tank internal hardware/sensor/signal pickup, etc., shall be accomplished during the ship shipyard /dry-docking period with all the tanks are in gas free condition. Contractor shall provide labor, material and equipment to work in the shipyards, location to be announced upon the ship's dry-docking contract awarded, the shipyards' contract proposal shall be open for all shipyards in U.S. East Coast, Florida to Maine and the perform period is July 1 to 30, 2007. This becomes Clin 0001AD

CLIN 0001AB – AUXILIARY MACHINERY CONTROLS, MACHINERY MONITORING AND ALARM SYSTEM

Upon all the work requirements specified in "4.1" is completed, Contractor shall continue working onboard and accomplish all work requirements as follows:

4.2.2. The entire machinery monitoring and alarm system shall consist of two (2) operator workstation located at main control console and expansion capability for additional workstations, system redundancy to be provided. Each workstation shall be provided with full color graphical displays and capability for alarm logging trending, and paging features. One workstation will have read only for use as Cadet Training Center and one (1) workstation install in Chief Engineer's Office for monitoring only. All new hardware and software shall in accordance with "3.3.2."

- 4.2.3. Remove all old DMC electronics from engine room console, the bridge console, and remote I/O cabinets. All internal wiring shall be removed in accordance with "General Requirement". No. 4 I/O cabinet shall remove entirely with the enclosure, provide and install /replace with new smaller one, with better access. Provide and install new Ethernet Global Data Remote I/O in each of the old DMC remote I/O Cabinets, including the new I/O cabinet provided and installed by the Contractor. These will be included RTD's Thermocouples, 4-20 mA, analog voltage input, and digital I/O, as necessary to duplicate all exiting.
- 4.2.4. Contractor shall check all field devices and cables between the remote I/O cabinets and machinery local signal pick up devices for reuse with new system, all communication cables shall be tested and "ring" to prove in good working condition with no defected insulation. Any defective cable shall be replaced with approval of COTR under change order. Any defective RTD local devices shall be replaced with ship furnished spare devices with Contractor furnished labor.
- 4.2.5. Provide and install new data acquisition PLC units inside the main control console which will take care of all the data acquisition from all the remote I/O cabinets, using Ethernet Global Data protocol.
- 4.2.6. Provide and install four (4) each new 20 inch ABS Type approved TFT color display (Jacob Hatteland Display, Part Number JH 20T04 MMD-C1, or equal). One (1) for Main Control Console Workstation 1, Main Control Console Section 4, One (1) for Main Control Console Workstation 2, Main Control Console Section 6, One (1) for Chief Engineer's Office with monitoring function only, and one (1) for Cadet Training with read only, Main Control Console end table Cadet Training Station.

4.2.7. Main Control Console Section 2

- 4.2.7.1. Remove the existing front vertical and counter top horizontal steel panels. Manufacture new 10 gauge stainless steel panels to replace existing vertical and counter top horizontal panel, use the removed panel as template.
- 4.2.7.2. Remove all General Electric DMC components and associated internal wiring.
- 4.2.7.3. Remove nine (9) gauges/meters and associated wiring for SSDG 1 thru 3 LO Temp, LO Press, and JW Temp indication.
- 4.2.7.4. Remove EDG Available indicating light and associated wiring.
- 4.2.7.5. Remove fifteen (15) indicating lights and associated wiring for SSDG 1 thru 3 Local Control, Standby, Available, Overcrank, and Running indication.
- 4.2.7.6. Remove six (6) Remote Start and Remote Stop push-buttons and associated wiring for SSDGs 1 thru 3.
- 4.2.7.7. Remove DFM Permissive and HFO Permissive indicating lights, Fuel Selector switch, and Lamp Test and Engineers Assistance Needed Alarm push-button and associated wiring. Do not retain field connections, these functions are not required.
- 4.2.7.8. Remove nine (9) on/off/standby control stations and associated wiring for MSW Pumps 1, 2 & 3, ASW Pumps 1 & 2, CFW Pumps 1, 2 & 3, SSDG Keep-Warm Pump.
- 4.2.7.9. Remove three (3) on/off/auto control stations and associated wiring for ME JW Standby Pumps 1 & 2, and ME JW Keep-Warm Pump.
- 4.2.7.10. Install hardware and software necessary to incorporate indication and controls removed into the upgraded automation system. Connect all the new field wires/cables to new hardware in accordance with equipment manufacturers' specification.
- 4.2.7.11. All the existing wiring/cabling shall be disconnected and removed from the main console to the field I/O or RTU cabinets. Provide and install new wires/cables as recommended by equipment manufacturers and approved by USCG and ABS for ship board automation system use.

4.2.8. Main Control Console Section 3

- 4.2.8.1. Remove the existing front vertical and counter top horizontal steel panels. Manufacture new 10 gauge stainless steel panels to replace existing vertical and counter top horizontal panel, use the removed existing panel as template.
- 4.2.8.2. Remove all General Electric DMC components and associated internal wiring.
- 4.2.8.3. Remove thirteen (13) "RUNNING" indicating lights and associated wiring for ME FO purifier 1 & 2, DO Purifier, LO Transfer Pump, ME LO Purifier 1 & 2, SSDG LO Purifier, Reduction Gear LO Purifier, ME Fuel Pressure Pumps 1 & 2, ME FO Circ Pumps 1 & 2, and Control Air Dryer.
- 4.2.8.4. Remove Lamp Test push-button and associated wiring.
- 4.2.8.5. Remove six (6) Heat Tracing selector switches and associated wiring. Do not retain field connections, these functions are not required.
- 4.2.8.6. Remove six (6) on/off/standby control stations and associated wiring for Stern Tube LO Pumps 1 & 2, Reduction Gear LO Pumps 1 & 2, and Thrust Bearing LO Pumps 1 & 2.
- 4.2.8.7. Remove fifteen (15) on/off/auto control stations and associated wiring for ME Nozzle Cooling Pumps 1 & 2, FO Transfer Pumps (two speed pumps) 1 & 2, ME Standby LO Pump 1, Start Air Compressors 1 & 2, DFM Transfer/Service Pumps 1 & 2, Topping Off Air Compressor, SSDG DO Pumps 1, 2 & 3, Control Air Compressor, and ME Crankcase Fan.
- 4.2.8.8. Remove FO Transfer Station Alarm and Fueling Station Alarm cut-out switches and associated wiring.
- 4.2.8.9. Remove Lamp Test Push-Button and two (2) spare control stations and associated wiring.
- 4.2.8.10. Install hardware and software necessary to incorporate indication and controls removed into the upgraded automation

system. Connect all the new field wires/cables to new hardware in accordance with equipment manufacturers' specification.

- 4.2.8.11. All the existing wiring/cabling shall be disconnected and removed from the main console to the field I/O or RTU cabinets. Provide and install new wires/cables as recommended by equipment manufacturers and approved by USCG and ABS for ship board automation system use.

4.2.9. Main Control Console Section 4

- 4.2.9.1. Remove the existing front vertical and counter top horizontal steel panels. Manufacture new 10 gauge stainless steel panel and replace existing vertical panel with cutout for monitor, and counter top horizontal panel, use the removed existing panel as template.
- 4.2.9.2. Remove all General Electric DMC components and associated internal wiring.
- 4.2.9.3. Remove monitor and keypad and associated wiring.
- 4.2.9.4. Remove four (4) indicating lights and associated wiring for Steering Gear Motors 1 & 2 RUNNING, Fire Alarm, and Power Available indication.
- 4.2.9.5. Remove twelve (12) indicating push-buttons and associated wiring serving the Engineers Watch Call System.
- 4.2.9.6. Remove Alarm Acknowledge, ER Attendance Monitor, Engineers Assistance Needed, Alarm Test, Lamp Test, Demand Alarm Log, and Demand Bell Log push-buttons and associated wiring.
- 4.2.9.7. Remove Rough Weather and ER Attended/Unattended selector switches and associated wiring. Do not retain field connections, these functions are not required.
- 4.2.9.8. Install hardware and software necessary to incorporate indication and controls removed into the upgraded automation system. Re-connect all field wiring to new hardware. Watch Call System/Engineers Assistance Needed Alarm shall be powered from the General Alarm batteries. The Engineers Assistance Needed Alarm shall be automatically activated upon failure of the automation system power supply in accordance with Regulatory Body requirements. Replace ten (10) General Electric DMC Extended Alarm Watch Call Stations from staterooms with Watch Call/Engineers Assistance Needed Alarm Units. Units shall be provided with audible and visible indication. Cabin reset capability shall be provided to silence the audible alarm. The Watch Call mimic display shall indicate when Cabin reset is activated. Engineers Assistance Needed Alarm shall be powered from the General Alarm batteries. Replace four (4) General Electric DMC Public Space Extended Alarm Panels with Engineers Assistance Needed Alarm Panels. Units shall be provided with audible and visible indication. No silencing (Cabin reset) shall be provided. Engineers Assistance Needed Alarm shall be powered from the General Alarm batteries.
- 4.2.9.9. Install new workstation No.2 in MCC Section 4. Workstation display shall be a 20 inch ABS Type approved TFT color display as specified in 3.3.2.8 installed in the vertical panel. Install trackball and keypad for user interface to automation system. Alarm Test, Alarm Acknowledge, and Engineers Assistance Needed Alarm functions shall be provided at the keypad.
- 4.2.9.10. Provide and install PLC unit, Computers, Operating Software, Printers as specified in "3.3.2" and "4.1."
- 4.2.9.11. All the existing wiring/cabling shall be disconnected and removed from the main console to the field I/O or RTU cabinets. Provide and install new wires/cables as recommended by equipment manufacturers and approved by USCG and ABS for ship board automation system use.

4.2.10. Main Control Console Section 6

- 4.2.10.1. Remove the existing front vertical and counter top horizontal steel panels. Manufacture new 10 gauge stainless steel panel and replace existing vertical panel with cutout for monitor, and counter top horizontal panel, use the removed existing panel as template.
- 4.2.10.2. Remove all General Electric DMC components and associated internal wiring.
- 4.2.10.3. Remove monitor, keypad and all associated wiring.
- 4.2.10.4. Disconnect and pull back four (4) sound powered telephone indicating lights and the reset push-button. Upon the new panel completed, provide and install contractor provided new sound power telephone indicating lights and push-button. Relocate the phones to new location as designated by Chief Engineer.
- 4.2.10.5. Install new workstation No.1 in MCC Section 6. Workstation display shall be a 20 inch ABS Type approved TFT color display as specified in 3.3.2.8 installed in the vertical panel. Install trackball and keypad for user interface to automation system. Alarm Test, Alarm Acknowledge, and Engineers Assistance Needed Alarm functions shall be provided at the keypad.
- 4.2.10.6. Install hardware and software necessary to incorporate indication and controls removed into the upgraded automation system. Connect all the new field wires/cables to the new hardware in accordance with equipment manufacturers' specification.
- 4.2.10.7 Provide and install PLC unit, Computers, Operating Software, Printers as specified in "3.3.2" and "4.1."
- 4.2.10.8. All the existing wiring/cabling shall be disconnected and removed from the main console to the field I/O or RTU cabinets. Provide and install new wires/cables as recommended by equipment manufacturers and approved by USCG and ABS for ship board automation system use.

4.2.11. Main Control Console Section 7

- 4.2.11.1. Remove the existing front vertical and counter top horizontal steel panels. Manufacture new 10 gauge stainless steel panels to replace existing vertical and counter top horizontal panel, use the removed existing

panel as template.

4.2.11.2. Remove all General Electric DMC components and associated internal wiring.

4.2.11.3. Remove nineteen (19) indicating lights and associated wiring for Distiller Feed Pumps 1 & 2, Distiller Brine Pumps 1 & 2, Distiller Distillate Pumps 1 & 2, Distiller Condensate Pumps 1 & 2, Boiler FW Pumps 1 & 2, Exhaust Gas Boiler Recirc Pumps 1 & 2, Oil Fired Boiler FO Service Pumps 1 & 2, Oil Fired Boiler Recirc Pump, AC Plant Failure 1 & 2, and Reefer Plant 1 & 2 indication.

4.2.11.4 Remove six (6) on/off/auto control stations and associated wiring for Sanitary Pumps 1 & 2, Oily Waste Transfer Pumps 1 & 2, Bilge Pumps 1 & 2.

4.2.11.5. Remove AC Plant 3 indicating light, two (2) DMC Printer push-buttons, Lamp Test push-button and associated wiring. Install hardware and software necessary to incorporate with the upgraded automation system.

4.2.11.6. Install hardware and software necessary to incorporate indication and controls removed into the upgraded automation system. Connect all the new field wires/cables to the new hardware in accordance with equipment manufacturers' specification.

4.2.11.7. All the existing wiring/cabling shall be disconnected and removed from the main console to the field I/O or RTU cabinets. Provide and install new wires/cables as recommended by equipment manufacturers and approved by USCG and ABS for ship board automation system use.

4.2.12 Remote Terminal Units (RTU) \ Process Unit

4.2.12.1. Disconnect and remove General Electric IO Cabinets 1, 2, 3, 4, 6, 7 and 8, removal shall included but not limited to DMC components, associated internal wiring, wiring blocks, enclosures, etc., Design and install new IO Cabinets to replace the IO Cabinets to suit the new control system. Replace the entire wiring with new USCG/ ABS approved Shielded Ethernet cable. It is included the cable/wire runs from IO cabinets to RTDs, main console PLC in EOS, Bridge, Chief Engineer's Office Station."

4.2.12.2. Deleted

4.2. 12.3. Deleted

4.2.12.4. Disconnect and remove all the old wire/cables. Provide and install new communication and power cables as recommended by the new equipment manufacturers and approved by USCG/ABS.

4.2.12.5. Install hardware and software necessary to receive inputs identified in Table 4-1 thru 4-8. IO Cabinet 5 was removed during the conversion; the Contractor shall select Ios to connect IO-5 input and install IO-5 inputs.

4.2.12.6. Remove SIEMENS components and associated internal wiring from SIEMENS Process Unit 1 and Ios 3, 4, 5, and 6. Retain IO field wiring, IO power supply cables, and IO communication cables for re-use. Install hardware and software necessary to receive inputs identified in Tables 4-9 thru 4-13..

4.2.13. Cadet Training Station

Install hardware and software necessary to interface new display, trackball and keypad to incorporate with the upgraded automation system in accordance with 3.3.2. and 4.1. This workstation is provided for read only.

4.2.14. Chief Engineer Office Workstation

Provide and install new workstation in Chief Engineer's Office. The new workshop shall be connected from main console with hardware and software. The new workstation shall have capability to view all upgraded automation system data, including mimic displays. No control functions shall be provided. Workstation and display as listed in 3.3.2.

4.2.15. Bridge Control Console

Disable and disconnect all no longer required, or unwanted alarm signals, indicating lights, etc., Left the indicating lights, push buttons, switches, etc., in place. Bridge Control Console to be upgraded and modified in Phase II. 4.2.16.

Alarm and Data Logging Printers

Provide and install two (2) new matrix printers in Machinery Control Console as specified in 3.3.2.16.

4.2.17. The existing control system components/electronic cabinets may not compare to the new proposed control systems.

Contractor shall disconnect and remove all the existing system components/electronic cabinets. Design, build and install new system components/electronic cabinets to suit the new control systems.

4.2.18. Tests and Dock Trials

Upon the completion of Phase I of the Automation Upgrade, the system is to be tested to the satisfaction of the MARAD COTR, the Ship's Master and the Chief Engineer, and all Regulatory Bodies. The Contractor shall prove that the Phase I Upgrade will function with the remaining existing G.E. Automation without causing operational problem in the Phase I new system or the remaining existing G.E. components.

4.2.19. Deleted

4.2.20. Training

Upon completion of the Automation Upgrade Phase I, Contractor shall arrange and provide minimum 72 hours operational and system trouble shooting training to all the Engineers onboard.

CLIN 0001AC – TANK LEVEL INDICATING SYSTEM – PART I

4.2.20 Tank Level Indicating (TLI) System – Tank Internal Sensors

On the ship's next drydocking availability in July 2007, Contractor shall arrange for service technicians to check, repair and calibrate the In-Tank sensing system throughout the TLI System tanks listed in 4.1.3. Services/Repairs

shall be included but not limited to the In-Tank Transmitters, In-Tank Cables, Signal Conditioners, DC Power supplies, Indicators, Controllers, Alarm Indication Devices, etc., The Signal conditioners are factory calibrated to provide a 4-20mA output signal, with an input voltage of 24 VDC. The signal conditioners are provided with "NULL and SPAN" adjustment for calibration. Contractor shall recalibrate all the transmitters with "GEMS Sensors" Transmitter Simulator, P/N 40031 in accordance with Manufacturer's Calibration Bulletin 112323. Replace the defective parts as required. The replacement parts shall be Contractor furnished and will be addressed by a Delivery Order. Check and ring all the signal wiring from local transmitters/Signal Conditioners to the I/O cabinets to ensure all the wiring is in good condition. Defective wire shall be replaced by the Contractor and will be addressed by a Delivery Order. Calibrate Thirteen (13) each, F.O. Tank level gauges mounted in AMR Fuel Oil Transfer Station. Contracting Officer will notify the Contractor of shipyard location and drydock availability period.

4.3. Special Note for CLIN 0001AA, CLIN 0001AB and CLIN 0001AC

4.3.1. All work specified in CLIN 000 1AA and CLIN 000 1AB must be completed on/before March 30, 2006. All engineering and design work shall be accomplished in Contractor's Engineering Office. Shipboard removal and installation shall be accomplished onboard T.S. STATE OF MAINE docked at Maine Maritime Academy, One Water Street, Castine, Maine 04420.

4.3.2. All work specified in CLIN 0001AC shall be accomplished in Shipyard in US East Coast, estimated performance date is July 1, 2007 to July 30, 2006. Exact location and date will be provided upon the vessel's Drydocking Contract is awarded by MARAD, SAR Contracting Officer.

4.3.3. Check Points

Contractor shall maintain Q.A. Inspection Records. No additional check point required.
Prepare USCG/ABS Annual Automation Inspection Check Points and present to USCG/ABS for approval.
Prove the systems in operating condition to USCG, ABS, MARAD and Ship's Engineers.

4.3.4. Deliverable

Three (3) sets of ABS/USCG approved AS BUILT drawings.
Three (3) sets of ABS/USCG approved ANNUAL INSPECTION CHECK POINTS.
Three (3) sets of OPERATION MANUAL. Manual shall provided with 'System Operating Instruction', 'Trouble Shooting', 'Maintenance', 'Vendor Information', 'Spare Parts' Etc.,
Three (3) copy of Manufacturer Recommended Spare Part List

CLIN 0002AA – Main Propulsion Control System, Bridge Control Console, Automation System Final Checks

4.4.1. Upon exercise of the option for Phase II from MARAD SAR Contracting Officer, Contractor shall provide labor, material and equipment to continue the ship's automation upgrade Phase II, all work requirement listed within this spec, except the work requirements in CLIN 0001.

4.4.2. Main Control Console Section 5

- 4.4.2.1. Remove the existing front vertical and counter top horizontal steel panels. Manufacture new 10 gauge stainless steel panels and replace existing vertical and counter top horizontal panels, the vertical panel shall provided with cutout for monitor.
- 4.4.2.2. Remove all General Electric DMC, Siemens machinery monitoring and alarm system and Lips Propulsion Control system components and associated internal wiring. Disconnect and remove Engine Order Telegraph (EOT) panel with all components and associated internal wiring.
- 4.4.2.3. Install new computer, software, display, trackball and keypad for user interface to automation system as 3.3.2. The new Alarm Test, Alarm Acknowledge, and Engineer Assistance Needed Alarm functions shall be provided at the console panel with "push button". On the left hand side of the new TFT color display provide and install new analogue main engine R.P.M. meter, new main engine fuel rack position indicating meter, and new main engine turbo charger analogue R.P.M. meter. On the right hand side of the new TFT color display provide and install new E-Motor load meter in KW and a motor R.P.M. analog meter.
- 4.4.2.4. Provide and install new hardware and software of machinery monitoring, alarm and remote control system to replace the existing Siemens system. Install hardware and software necessary to interface new display, trackball and keypad.
- 4.4.2.5. Provide and install new hardware and software to replace the existing main engine and E-Motor control panels. The new main diesel control panel shall included with "False Start", "Active", "Starting Interlock", "Starting", "Stop", "Lamp Test" Indicating Lights and Controls. The new E-Motor section shall included with " MTR Start/Stop" switch, "MTR Reset" Switch, "E-MTR Shut Down" Indicating Light. Provide and install new "Red" push button "Emergency Shut Down" switches, one for Main Diesel Engine and one for E-Motor.
Provide and install new Diesel Engine Maneuvering System. The new system shall included with a turn knob type engine speed/R.P.M. control from "min" to "max", Indicating lights: Panel Name "Diesel Engine", lights "Remote Control Diesel", "Diesel Engine Overload", "Cutch In", "Clutch Read", "Clutch Out", "Shaft Turning Gear Engaged", and "Shaft Turning Gear Disengaged".

- 4.4.2.6. Provide and install new E-Motor Maneuvering System. The new system shall included with a turn knob type motor speed/R.P.M. control from “min” to “max”, Indicating lights: Panel Name “E-Motor”, lights “E-Motor Overload” and “Remote Control E-Motor”.
- 4.4.2.7. Provide and install new Propulsion Control System to replace the removed “Lips” Propulsion Control System. The new system shall be designed to control the “Lips” Controlled Pitch Propeller. The existing propeller is controlled by either Diesel Engine or E-Motor. The new control panel shall be provided/equipped with following controls, switches and indicating lights: DIESEL ENGINE IN SERVICE Indication light, E-MOTOR IN SERVICE Indication light, LAMP TEST push button, ALARM ACKNOWLEDGE push button, Analogue SHAFT R.P.M. (0-140) Meter, Analogue PROPELLER PITCH Indicating Meter (0-100 Percent Ahead and 0-100 Percent Astern); PROPELLER Ahead/Astern THRUST CONTROL LEVER; LOAD LIMIT SWITCH; Control Status Section buttons and indication lights: 1) lights – “SYSTEM WARNING”, “CONTROL FAILURE”, “LOAD CONTROL FAILURE” and “ENGINE OVERLOAD”. 2) Push button – “SYSTEM RESET/CONNECT”; Maneuver Responsibility Section buttons and indication lights: 1) Push Buttons: “STATION REQUEST”, “BRIDGE ACCEPT”, “ECR ACCEPT”. 2) Indication Lights: “STATION IN COMMAND”, “BRIDGE”, “ECR”, “LEVER IN COMMAND”, “LOCAL PITCH CONTROL”. Load Control Section button and indication lights: Lights “L.L.S. OVERRIDE”, “L.I.C. LIMIT”, “L.I.C. ON”. Button: “L.L.S. OVERRIDE ON/OFF”. Control mode selection and indication buttons and indication lights: 1) lights – “MANEUVERING MODE”, “SEA MODE”, 2) Push buttons – “MANEUVERING MODE”, “SEA MODE”; Back Up Section: 1) Light – “BACK UP”, 2) Push buttons – “BACK UP ON”, “BACK UP OFF”, “AHEAD”, and “ASTERN”. Propeller Hydraulic Pump: 1) PUMP SELECTION switches (3 positions, Off-Pump No. 1, Off-Pump No.2) or with push buttons “PUMP-1 ON”, “PUMP-1 OFF”, “PUMP-2 ON” and “PUMP-2 OFF”. Lights “PUMP-1 IN SERVICE”, “PUMP-2 IN SERVICE” The new control shall be a dual lever control, one lever control the CPP pitch, 0 to 100 percent AHEAD and 0 to 100 percent ASTERN, and one lever control either Diesel Engine loads and RPM or E-Motor loads and RPM. The Diesel Engine or E-Motor loads and RPM shall be automatic regulated as the CPP pitch load requirement.
- 4.4.2.8. Provide and install new flush mounting, pushbutton type/transmit engine telegraph unit and replace the existing EOT. The new Engine Telegraph Unit (ETU) shall provide with following functions: Telegraph Divisions – Ahead: “Dead Slow”, “Slow”, “Half”, “Full”. - Stop. - Astern: “Dead Slow”, “Slow”, “Half”, “Full” and Sub. Telegraph Division – Finished with engine (FWE), Stand By and At Sea. Indicating Lamps: Emergency Control, Control Room Control, Bridge Control, New Command, Wrong Way, RCS not ready, Lamp Test, Sound Off, and Internal Failure.

4.4.3. Pilothouse Control Console

4.4.3.1. Pilothouse Control Console, Center Section

Remove twenty-five (25) General Electric DMC system indicating lights and associated wiring. Remove Alarm Test and Alarm Acknowledge push-buttons, audible alarm (Sonalert), Indicating Light dimmer, Alarm Power Meter and associated wiring. Remove fourteen (14) Siemens Automation system indicating lights, audible alarm, and Indicating Light dimmer and associated wiring. Disconnect and relocation the Whistle Heater switch and indicator light and two (2) Propulsion Emergency Stop push-buttons. Disconnect and remove existing Engine Order Telegraph and the LIPS Propulsion Controls and replace with new units. New Propulsion Control Panel – Shall be same as the ECR unit. Add the following Indications Lights on the new panel: “DIESEL ENGINE”, “E-MOTOR”, “DIESEL ENGINE OVERLOAD”, “E-MOTOR OVERLOAD”, “CLUTCH READY”, “CLUTCH OUT” and “CLUTCH IN”. Delete the following indicators: ‘LOAD LIMIT SWITCH”, “PUMP SELECTION SWITCH”, “PUMP-1 ON”, “PUMP-2 ON”, “PUMP-1 OFF”, “PUMP-2 OFF”, “PUMP-1 IN SERVICE” and “PUMP-2 IN SERVICE”. New Engine Telegraph Unit (ETU) – Shall be same as ECR unit.

Manufacture new 10 gauge stainless steel panels to replace the existing panels. Reinstall Whistle Heater switch and indicator light and two (2) Propulsion Emergency Stop push-buttons and emergency fire control buttons to the new panel. Install new Engine Order Telegraph, and the new Propulsion Controls. Layout shall be approved by the MARAD Surveyor. New panels shall be provided with Automatic Dimmers. Reinstall grab rail.

4.4.3.2. Pilothouse Control Console, Starboard Section

Remove Digital Clock, Digital Clock push-buttons, and associated wiring on Starboard section of Pilothouse Console. Remove twelve (12) General Electric DMC Watch Call System push-buttons and associated wiring from Starboard section of Pilot House Console. Remove Firemain pressure edgewise meter, shaft RPM display and associated wiring. Remove indicating lights, push-buttons, and selector switches, dimmer and associated wiring for Fire & Ballast, Fire & General Service, Emergency Fire and the Independent Bilge Pumps. Disconnect and retain for relocation four (4) FO/LO Valve Shutdowns, six (6) Ventilation Shutdowns, and two (2) FO Pump Shutdowns. Manufacture new 10 gauge stainless steel panel and replace existing Starboard panel of console. Install four (4) new FO/LO Valve Shutdowns, six (6) Ventilation Shutdowns and two (2) FO Pump Shutdowns. Install hardwired control station for Emergency Fire Pump and connect. Reinstall grab rail.

Contractor shall disconnect and remove all the equipments, controls, switches, push buttons currently installed on Starboard side section console, during the Phase I ship check and discuss with ship’s Master and MarAd Surveyor for which controls, switches, push buttons, etc shall be retained and relocated to the new centre section console. Fabricate and manufacture new 10 gauge stainless steel panel to replace the existing panel. The new panel shall be blank for future use.

4.4.3.3. Contractor shall disconnect and remove all the existing wiring/cabling on the main propulsion control system it is included not limited the existing/old wiring/cabling in E.R. Main Control Console, Bridge Control Console, I/O or RTU cabinets, fields, etc., Provide and install new wiring/cabling to replace all the removed wiring/cabling, the new wires/cables shall be in accordance with equipment manufacturers' recommended specification and approved by USCG and ABS for ship board automation system use.

4.4.4. Automation System Final Make Up and Tests

4.4.4.1. Upon Phase II is completed check and ensure all systems (Phase I and II) are working together and interfacing. Cadet Training Station Workshop can be reading/viewing all systems and Chief Engineer's Workstation can be monitoring the entire automation system.

4.4.4.2. Provide and replace the existing Power Distribution System (UPS) including batteries, and battery chargers. The new batteries shall be provided with 30 minutes of operation at the full load capacity of the system. The UPS system can be by-passable in case of a failure of the UPS system. In normal operation, it will continually monitor the incoming power to the console, and in case of a failure, it will immediately be on line, with no gaps in cycle.

4.4.5. Tests and Dock Trials

Upon the new system is completed, tests the new upgraded system in good working condition to the satisfaction of ship's Master, Chief Engineer and MARAD COTR. Then, test operating the upgraded system with the existing system to ensure the new system is not affecting the existing system and maintain all the existing/old control system in working condition until next upgrade Phase.

4.4.6. Regulatory Body Inspections

Conduct operating tests and installation inspections in presence of ABS Surveyor(s) and USCG Inspector(s) to prove the new upgraded system meet all the Regulatory Body requirements for issue ACC Certificate.

4.4.7. Test Equipment, Tools, Notebook Computer, System Software

Upon completion of automation system upgrade, Contractor shall provide and delivery to the ship's Chief Engineer with a set of system test equipment, special tools and a notebook type computer with system software loaded for trouble shooting. All system program software shall be delivered to Chief Engineer.

CLIN 0002AB – TANK LEVEL INDICATING SYSTEM – PART II

4.4.8. Tank Level Indicating (TLI) System

Contractor shall provide labor, material and equipment to complete the Tank Level Indicating (TLI) System installation and all work requirements as follows:

4.4.8.1. Main Control Console Section 1

1) Remove the existing front vertical and counter top horizontal steel panels. Manufacture new 10 gauge stainless steel panels and replace existing vertical and counter top horizontal panels, the vertical panel shall provided with cutout for monitor.

Remove General Electric DMC automation system components, including but not limited to the tank level indicating system, ballast monitoring system, monitor, keyboard, and DMC internal components.

2) Remove two (2) ballast pump control stations and associated wiring. Retain ballast pump control station field wiring terminations for re-connecting new wires. Old wire and cables shall be disconnected and prepared as specified in 3.3.2.8.

3) Install hardware and software necessary to provide control of the two (2) ballast pumps from the upgraded automation system. Provide and install wiring to new hardware. The new computer and software shall be interfacing with new upgraded system in Phase I.

4) Install new Tank Level Indicating (TLI) system, the TLI system consists of computer generated, active color mimics and displays to produce proper indications and alarms. Tank levels are displayed in percent and volumetric. Install workstation display on the vertical panel, the display monitor shall be a 20 inch ABS Type approved TFT color display as listed in 3.3.2.8. The display monitor shall be interfaced with repaired TLI system.

5) Disconnect and remove the MaK main engine safety device control panel currently installed on the horizontal counter top panel and reinstall back to the new panel as original. Upon completion, test operating the system and prove it in good working condition.

4.4.8.2. Deleted.

4.4.8.3. Contractor shall disconnect and remove all the existing wiring/cabling on the equipments listed 4.4.8.1 and 4.4.8.2 it is included not limited the existing/old wiring/cabling in E.R. Main Control Console, I/O or RTU cabinets, fields, etc., Provide and install new wiring/cabling to replace all the removed wiring/cabling, the new wires/cables shall be in accordance with equipment manufacturers' recommended specification and approved by USCG and ABS for ship board automation system use.

4.5. Special Note for CLIN 0002AA, CLIN 0002AB and CLIN 0002AC

4.5.1. All work specified in CLIN 0002AA and CLIN 0002AB must be completed on/before March 30, 2008. All engineering and design work shall be accomplished in Contractor's Engineering Office. Shipboard removal and installation shall be accomplished onboard T.S. STATE OF MAINE docked at Maine Maritime Academy, One Water Street, Castine, Maine 04420.

4.5.3. Check Points

Contractor shall maintain Q.A. Inspection Records. No additional check point required.
Prepare USCG/ABS Annual Automation Inspection Check Points and present to USCG/ABS for approval.
Prove the systems in operating condition to USCG, ABS, MARAD and Ship's Engineers.

4.5.4. Deliverable

Three (3) sets of ABS/USCG approved AS BUILT drawings.
Three (3) sets of ABS/USCG approved ANNUAL INSPECTION CHECK POINTS.
Three (3) sets of OPERATION MANUAL. Manual shall provided with 'System Operating Instruction', 'Trouble Shooting', 'Maintenance', 'Vendor Information', 'Spare Parts' Etc.,
Three (3) copy of Manufacturer Recommended Spare Part List

CLIN 0002AC – SEA TRIALS

Upon the entire automation system completely upgraded and all work requirements in Phase I and Phase II are completed, Contractor shall provide the services of service engineer(s) and technicians to attend and conduct a Seventy-two (72) hours sea trial. On the sea trial, contractor shall correct all the systems' operating deficiencies. Sea trial date to be provided after the entire work is completed and the system has been approved by Regulatory Body..

Attachment – 2.13.1 RTU No. 1 to 8 Sensor List

I/O	REMOTE TERMINAL UNIT 1	SENSOR			COMMENTS
	SENSOR NAME	RTD	T/C	DIG	
	<i>4-20mA</i>				
1	FO STOR TK 5-47-2 LVL	X			
2	FO STOR TK 5-47-0 LVL	X			
3	FO STOR TK 5-47-1 LVL	X			
4	FO STOR TK 5-104-0 LVL	X			
5	DFM STOR TK 5-35-0 LVL	X			
6	EMR GEN DAY TANK 03 -78-0 LVL	X			
7	POT WTR TK 2-110-2 LVL	X			
8	POT WTR TK 2-110-1 LVL	X			
9	FWD SEWAGE HLDG TK LVL	X			
10	FO STOR TK 5-47-0 TEMP	X			100-Ohm Pt
11	FO STOR TK 5-47-1 TEMP	X			100-Ohm Pt
12	FO STOR TK 5-47-2 TEMP	X			100-Ohm Pt
13	DUCT KEEL VOID DRAINWELL			X	'NORMAL/HIGH'
14	EMR FIRE PUMPRM DRAINWELL			X	'NORMAL/HIGH'
15	EMR GEN INSUL MONITOR			X	"NORMAL"/"ABNORMAL"
16	AFT TRK BILGE WTR LVL			X	"HIGH/NORMAL"
17	AFT TRK BILGE WTR LVL			X	"HIGH-HIGH"
18	FWD TRK BILGE WTR LVL			X	"HIGH/NORMAL"
19	FWD TRK BILGE WTR LVL			X	"HIGH-HIGH"
20	TK TOP BILGE FWD WTR LVL			X	"HIGH/NORMAL"
21	TK TOP BILGE FWD WTR LVL			X	"HIGH-HIGH"
22	TK TOP BILGE AFT WTR LVL			X	"HIGH/NORMAL"
23	TK TOP BILGE AFT WTR LVL			X	"HIGH-HIGH"
24	TK TOP BILGE PORT WTR LVL			X	"HIGH/NORMAL"
25	TK TOP BILGE PORT WTR LVL			X	"HIGH-HIGH"
26	TK TOP BILGE STBD WTR LVL			X	"HIGH/NORMAL"
27	TK TOP BILGE STBD WTR LVL			X	"HIGH-HIGH"
28	EMR DSL GEN			X	"NORMAL/MALFUNCTION"
29	STEERING GEAR 2 PWR FEEDER			X	"CLOSED/OPEN"
30	SMOKE/FIRE DETECTION SYS			X	"NORMAL"/"FAILURE"
31	FIRE ENG RM 32FT 6 IN LVL			X	"FIRE"
32	FIRE ENG RM 23FT LVL			X	"FIRE"
33	FIRE ENG RM 12FT LVL			X	"FIRE"
34	FIRE ENG RM TK TOP			X	"FIRE"
35	FIRE ENG RM ACST ENCLOSURE			X	"FIRE"
36	24VDC PWR REMOTE #1 LOOPA			X	"NORMAL"/"FAILURE"
37	EMR DSL GEN READY TO RUN			X	
38	PRPLN EMER TRIP (BRIDGE)			X	"ACTIVATED"
39	MK 227 GYRO POWER			X	"NORMAL"/"FAILURE"
40	MK 37 GYRO POWER			X	"NORMAL"/"FAILURE"
41	FIRE ALARM			X	"NORMAL/UNACK"
42	SHALLW WTR DEPTH ALM PWR			X	"NORMAL"/"FAILURE"
43	24VDC PWR REMOTE #1 LOOPB			X	"NORMAL"/"FAILURE"
REMOTE TERMINAL UNIT (RTU) 1		9	3	0	31
TOTAL					

I/O	REMOTE TERMINAL UNIT 2 SENSOR NAME SENSOR				COMMENTS
		4-20mA RTD	T/C	DIG	
1	NO 2 SSDG LO INLET HDR PRESS	X			"LOW"
2	NO 3 SSDG LO INLET HDR PRESS	X			"LOW"
3	NO 2 SSDG FUEL INLET PRESS	X			"LOW"
4	NO 3 SSDG FUEL INLET PRESS	X			"LOW"
5	NO 2 SSDG JW INLET PRESS	X			"LOW"
6	NO 3 SSDG JW INLET PRESS	X			"LOW"
7	NO 2 SSDG FUEL FINAL FILT DP	X			"HIGH"
8	NO 3 SSDG FUEL FINAL FILT DP	X			"HIGH"
9	SSDG FUEL PMP SUCT STR DP	X			"HIGH"
10	SSDG FUEL SLFCLN STR DP DFM	X			"HIGH"
11	XFR PMP NO1 SUCT PRESS DFM	X			
12	XFR PMP NO1 DISCH PRESS MAIN	X			
13	SEAWATER SYS PRESS	X			
14	NO 2 SSDG START AIR PRESS	X			
15	NO 3 SSDG START AIR PRESS	X			
16	SANITARY MAIN PRESS SSDG	X			
17	LO SMP TK 4-126-4 LVL	X			
18	NO 2 SSDG LO INLET HDR TEMP		X		100-Ohm Pt /"HIGH TEMP"
19	NO 3 SSDG LO INLET HDR TEMP		X		100-Ohm Pt /"HIGH TEMP"
20	NO 2 SSDG JW OUTLET TEMP		X		100-Ohm Pt /"HIGH TEMP"
21	NO 3 SSDG JW OUTLET TEMP		X		100-Ohm Pt /"HIGH TEMP"
22	MAIN SEAWATER SYS TEMP WO		X		100-Ohm Pt
23	SETLG TK 6-114-2 TEMP ME LO		X		100-Ohm Pt /"HIGH TEMP"
24	SETLG TK 3-142-2 TEMP RDGR LO		X		100-Ohm Pt /"HIGH TEMP"
25	SETLGTK 2-140-2 TEMP		X		100-Ohm Pt /"HIGH TEMP"
26	NO 2 SSDG NO 1 CYL EGT			X	TYPE "K"
27	NO 2 SSDG NO 2 CYL EGT			X	TYPE "K"
28	NO 2 SSDG NO 3 CYL EGT			X	TYPE "K"
29	NO 2 SSDG NO 4 CYL EGT			X	TYPE "K"
30	NO 2 SSDG NO 5 CYL EGT			X	TYPE "K"
31	NO 2 SSDG NO 6 CYL EGT			X	TYPE "K"
32	NO 2 SSDG TURBO EGT			X	TYPE "K"
33	NO 3 SSDG NO 1 CYL EGT			X	TYPE "K"
34	NO 3 SSDG NO 2 CYL EGT			X	TYPE "K"
35	NO 3 SSDG NO 3 CYL EGT			X	TYPE "K"
36	NO 3 SSDG NO 4 CYL EGT			X	TYPE "K"
37	NO 3 SSDG NO 5 CYL EGT			X	TYPE "K"
38	NO 3 SSDG NO 6 CYL EGT			X	TYPE "K"
39	NO 3 SSDG TURBO EGT			X	TYPE "K"
40	NO 2 SSDG EMER SHUTDOWN			X	"SHUTDOWN"
41	NO 2 SSDG CLG AIR TEMP			X	"NORMAL"/"HIGH"
42	NO 2 SSDG AIR CLR LEAK			X	"LEAK DETECTED"
43	NO 2 SSDG OVERSPEED TRIP			X	"ACTIVATED"
44	NO 1 SSDG ALM ARM SIG			X	"ARM"/"DISARM"
45	NO 2 SSDG ALM ARM SIG			X	"ARM"/"DISARM"
46	NO 3 SSDG ALM ARM SIG			X	"ARM"/"DISARM"
47	SSDG FO CIRC PUMP PRESS			X	"NORMAL"/"LOW"
48	NO 2 SSDG SUMP LEVEL			X	"NORMAL"/"LOW"
49	NO 2 SSDG LO FILTER DP			X	"NORMAL"/"HIGH"
50	SSDG FUEL OIL PRESS MN			X	"NORMAL"/"HIGH"
51	ENG JW EXP TK LVL CEN			X	"NORMAL"/"LOW"
52	FW CLG EXP TK LVL			X	"NORMAL"/"LOW"
53	SSDG JW EXP TK LVL			X	"NORMAL"/"LOW"
54	NO 3 SSDG EMER SHUTDOWN			X	"SHUTDOWN"
55	NO 3 SSDG CLG AIR TEMP			X	"NORMAL"/"HIGH"
56	NO 3 SSDG AIR CLR LEAK			X	"LEAK DETECTED"
57	NO 3 SSDG OVERSPEED TRIP			X	"ACTIVATED"
58	NO 2 SSDG AUTO BK FL FLTR DP			X	"NORMAL"/"HIGH"
59	NO 1 SSDG RPM SWITCH			X	"FAILURE"
60	NO 2 SSDG RPM SWITCH			X	"FAILURE"
61	NO 3 SSDG AUTO BK FL FLTR DP			X	"NORMAL"/"HIGH"
62	NO 3 SSDG SUMP LEVEL			X	"NORMAL"/"LOW"
63	NO 3 SSDG LO FILTER DP			X	"NORMAL"/"HIGH"
64	NO 3 SSDG RPM SWITCH			X	"FAILURE"
65	SSDG FO BYPASS DSC FILTER DP			X	"NORMAL"/"HIGH"
66	NO 2 SSDG SUMP LEVEL			X	"NORMAL"/"HIGH"
67	NO 3 SSDG SUMP LEVEL			X	"NORMAL"/"HIGH"
68	NO 1 SSDG MALFUNCTION			X	"NORMAL"/"MALFUNCTION"
69	24VDC REMOTE # 2 LOOP A			X	"NORMAL"/"FAILURE"
70	NO 2 SSDG MALFUNCTION			X	"NORMAL"/"MALFUNCTION"
71	REFRIG PLANT 1 MALFUNCTION			X	"NORMAL"/"MALFUNCTION"

72	REFRIG PLANT 2 MALFUNCTION	X	"NORMAL"/"MALFUNCTION"		
73	EVAPORATOR SALINITY	X	"NORMAL"/"HIGH"		
74	MN ENG STBY LO PUMP (RUN)	X	"STOP"/"RUN"		
75	MN ENG STBY LO PUMP (FLR)	X	"NORMAL"/"FAILURE"		
76	MN ENG STBY JW PUMP (RUN)	X	"STOP"/"RUN"		
77	MN ENG STBY JW PUMP (FLR)	X	"NORMAL"/"FAILURE"		
78	MN ENG JW KEEPWARM PMP	X	"STOP"/"RUN"		
79	MN ENG JW KEEPWARM PMP	X	"NORMAL"/"FAILURE"		
80	MN ENG CRKCASE VENT FAN	X	"STOP"/"RUN"		
81	MN ENG CRKCASE VENT FAN	X	"NORMAL"/"FAILURE"		
82	SSDG FO CIRC PUMP 2 (FLR)	X	"NORMAL"/"FAILURE"		
83	SSDG FO PRESS PUMP 2 (FLR)	X	"NORMAL"/"FAILURE"		
84	THRUST BRG LO PUMP 1 (FLR)	X	"NORMAL"/"FAILURE"		
85	LUBE OIL XFER PUMP (RUN)	X	"STOP"/"RUN"		
86	SSDG FUEL MIXING TK LVL	X	"NORMAL"/"LOW"		
87	NO 3 SSDG MALFUNCTION	X	"NORMAL"/"MALFUNCTION"		
88	NO 1 SSDG 24VDC POWER	X	"NORMAL"/"FAILURE"		
89	NO 2 SSDG 24VDC POWER	X	"NORMAL"/"FAILURE"		
90	NO 3 SSDG 24VDC POWER	X	"NORMAL"/"FAILURE"		
91	LO XFER PUMP	X	"NORMAL"/"FAILURE"		
92	SSDG WTR KEEP WARM PUMP	X	"STOP"/"RUN"		
93	SSDG WTR KEEP WARM PUMP	X	"NORMAL"/"FAILURE"		
94	24VDC PWR REMOTE #2 LOOP B	X	"NORMAL"/"FAILURE"		
REMOTE TERMINAL UNIT (RTU) 2		17	8	14	55
TOTAL					

I/O	REMOTE TERMINAL UNIT 3 SENSOR NAME SENSOR				COMMENTS
		4-20mA RTD	T/C	DIG	
1	NO 1 SSDG LO INLET HDR PRESS	X			"LOW"
2	NO 1 SSDG FUEL INLET PRESS	X			"LOW"
3	NO 1 SSDG JW INLET PRESS MN	X			"LOW"
4	ENG FO SPLY HDR PRESS MN	X			"LOW"
5	ENG CONT AIR PRESS NO 3 SSDG	X			"LOW"
6	JW INLET PRESS NO 1 SSDG	X			"LOW"
7	FUEL FINAL FILT DP CFW CLG	X			"HIGH"
8	PMP DISCH PRESS FIREMAIN	X			"HIGH"
9	PRESSURE NO 1 SSDG START AIR	X			"LOW"
10	PRESS MN ENG START AIR	X			"LOW"
11	PRESS WO TK 6-114-0 LVL	X			"LOW"
12	CLN FO DR TK 4-116-1 LVL	X			"HIGH"
13	OLY WAST HLDG TK 6-120-2 LVL	X			"HIGH"
14	SSDG DAY TANK 2-144-1 LVL	X			"HIGH"
15	SSDG DAY TANK 2-144-3 LVL ME	X			"HIGH"
16	DFM DAY TANK 3-139-1 LVL	X			"LOW"/"HIGH"
17	DFM SETLG TK 3-144-3 LVL WO	X			"LOW"/"HIGH"
18	SETLG TK 6-114-2 LVL DIRTY OIL	X			"LOW"/"HIGH"
19	TK 6-140-2 LVL DIST WTR TK 2-	X			"HIGH"
20	139-1 LVL RES FD WTR TK 2-139-3	X			"HIGH"
21	LVL NO 1 SSDG LO INL HDR	X			"HIGH"
22	TEMP NO 1 SSDG JW OUT TEMP	X			"HIGH"
23	CFW CLG PMP SUCT TEMP WO		X		100-Ohm Pt /"HIGH TEMP"
24	TK 6-114-0 TEMP		X		100-Ohm Pt /"HIGH TEMP"
25	CLN FO DR TK 4-116-1 TEMP		X		100-Ohm Pt /"HIGH TEMP"
26	EVAP JW INLET TEMP		X		100-Ohm Pt /"HIGH TEMP"
27	OIL FIRED BOILER STACK TEMP		X		100-Ohm Pt /"HIGH TEMP"
28	DIRTY OIL TK 6-140-2 TEMP NO 1		X		100-Ohm Pt /"HIGH TEMP"
29	SSDG NO 1 CYL EGT NO 1 SSDG	X			100-Ohm Pt /"HIGH TEMP"
30	NO 2 CYL EGT NO 1 SSDG NO 3	X			100-Ohm Pt /"HIGH TEMP"
31	CYL EGT NO 1 SSDG NO 4 CYL		X		TYPE "K"
32	EGT NO 1 SSDG NO 5 CYL EGT		X		TYPE "K"
33	NO 1 SSDG NO 6 CYL EGT NO 1		X		TYPE "K"
34	SSDG TURBO EGT NO 1 SSDG		X		TYPE "K"
35	EMER SHUTDOWN NO 1 SSDG		X		TYPE "K"
36	PRIMING PUMP NO 1 SSDG CLG		X		TYPE "K"
37	AIR TEMP NO 1 SSDG AIR CLR		X		TYPE "K"
38	LEAK NO 1 SSDG OVERSPEED			X	"SHUTDOWN"
39	TRIP NO 1 SSDG SUMP LEVEL NO			X	"STOP"/"RUN"
40	1 SSDG LO FILTER DP			X	"NORMAL"/"HIGH"
41	NO 1 SSDG AUTO BK FL FLTR DP			X	"LEAK DETECTED"
42	NO 1 SSDG SUMP LEVEL EVAP			X	"ACTIVATED"
43	BRINE PUMP NO 1 EVAP BRINE			X	"NORMAL"/"LOW"
44	PUMP NO 2 EVAP FEED PUMP NO			X	"NORMAL"/"HIGH"
45	1 EVAP FEED PUMP NO 2 A/C			X	"NORMAL"/"HIGH"
46	PLANT NO 1			X	"NORMAL"/"HIGH"
47	A/C PLANT NO 2			X	"STOP"/"RUN"
48	EVAP COND PUMP NO 1 (RUN)			X	"STOP"/"RUN"
49	EVAP COND PUMP NO 2 (RUN)			X	"STOP"/"RUN"
50	24VDC PWR REMOTE #3 LOOP A			X	"STOP"/"RUN"
51	SSDG FO PRESS PUMP 1 SSDG FO			X	"NORMAL"/"MALFUNCTION"
52	CIRC PUMP 1 EVAP FEED PUMP			X	"NORMAL"/"MALFUNCTION"
53	NO 1 EVAP DSTLT PUMP NO 1			X	"STOP"/"RUN"
54	EVAP DSTLT PUMP NO 2 EVAP			X	"STOP"/"RUN"
55	BRINE PUMP NO 1 EVAP BRINE			X	"NORMAL"/"FAILURE"
56	PUMP NO 2 EVAP FEED PUMP NO			X	"NORMAL"/"FAILURE"
57	2 EVAP DSTLT PUMP NO 1 EVAP			X	"NORMAL"/"FAILURE"
58	DSTLT PUMP NO 2 CEN FW CLG			X	"NORMAL"/"FAILURE"
59	PMP NO 1 (FLR) CEN FW CLG			X	"NORMAL"/"FAILURE"
60	PMP NO 1 (RUN) CEN FW CLG			X	"NORMAL"/"FAILURE"
61	PMP NO 1 (STBY) CEN FW CLG			X	"NORMAL"/"FAILURE"
62	PMP NO 2 (FLR) CEN FW CLG			X	"NORMAL"/"FAILURE"
63	PMP NO 2 (RUN) CEN FW CLG			X	"NORMAL"/"FAILURE"
64	PMP NO 2 (STBY)			X	"STOP"/"RUN"
65				X	"STOP"/"RUN"
66				X	"NORMAL"/"FAILURE"
67				X	"STOP"/"RUN"
68				X	"STBY"/"RUN"
69				X	"NORMAL"/"FAILURE"
70				X	"STOP"/"RUN"
71				X	"STBY"/"RUN"

72	CEN FW CLG PMP NO 3 (FLR)				X	“NORMAL”/“FAILURE”
73	CEN FW CLG PMP NO 3 (RUN)				X	“STOP”/“RUN”
74	CEN FW CLG PMP NO 3 (STBY)				X	“STBY”/“RUN”
75	EMER CONT AIR SPLY				X	“ACTIVATED”
76	REFRD CONT AIR DRYER (MALF)				X	“NORMAL”/“MALFUNCTION”
77	EMER VALVE SHTDN RCV PRS				X	“NORMAL”/“LOW”
78	EVAP COND PUMP NO 1 (FLR)				X	“NORMAL”/“FAILURE”
79	EVAP COND PUMP NO 2 (FLR)				X	“NORMAL”/“FAILURE”
80	24VDC PWR REMOTE #3 LOOP B				X	“NORMAL”/“FAILURE”
REMOTE TERMINAL UNIT (RTU) 3		22	8	7	43	
TOTAL						

Attachment – 4.4.1 RTU No. 1 to 8 Sensor List

I/O	REMOTE TERMINAL UNIT 4 SENSOR NAME	SENSOR			COMMENTS	
		4-20mA	RTD	T/C		DIG
1	OIL IN OVBD DISCHARGE				X	“NORMAL”/“HIGH”
2	MN ENG OPER ON DFM				X	“OFF”/“DFM”
3	MN ENG OPER ON FO				X	“OFF”/“FO”
4	MN ENG FUEL LEAK				X	
5	MN ENG OIL MIST DET MALF				X	
6	NO 2 SSDG LO PRIMING PUMP				X	“STOP”/“RUN”
7	NO 3 SSDG LO PRIMING PUMP				X	“STOP”/“RUN”
8	MN ENG LO SUMP LVL				X	“NORMAL”/“LOW”
9	THR BRG LO PUMP 1 (RUN)				X	“RUN”
10	SSDG FO PRESS PMP 1 STBY RUN				X	“STBY”/“RUN”
11	SSDG FO PRESS PMP 1 (RUN)				X	“STOP”/“RUN”
12	SSDG FO CIRC PMP 1 STBY RUN				X	“STBY”/“RUN”
13	SSDG FO CIRC PMP 1 (RUN)				X	“STOP”/“RUN”
14	ME STBY LO PMP (AUTORUN)				X	“AUTORUN”
15	ME STBY JW PUMP (AUTORUN)				X	“AUTORUN”
16	SSDG FO CIRC PMP 2 STBY RUN				X	“STBY”/“RUN”
17	SSDG FO CIRC PMP 2 (RUN)				X	“STOP”/“RUN”
18	SSDG FO PRESS PMP 2 STBY RUN				X	“STBY”/“RUN”
19	SSDG FO PRESS PMP 2 (RUN)				X	“STOP”/“RUN”
20	THR BRG LO PUMP 1 STBY RUN				X	“STBY”/“RUN”
21	24VDC PWR REMOTE #4 LOOP A				X	“NORMAL”/“LOSS”
22	MSW SERVICE PMP 1 STBY RUN				X	“STBY”/“RUN”
23	MSW SERVICE PMP 1 (RUN)				X	“RUN”
24	FO TRANSFER PMP 1 (SLOW)				X	“SLOW”
25	FO TRANSFER PMP 1 (FAST)				X	“FAST”
26	FO TRANSFER PMP 1 (FLR)				X	“FAILURE”
27	DFM XFR/SVC PMP 1 (RUN)				X	“RUN”
28	MSW SERVICE PMP 1 (FLR)				X	“FAILURE”
29	MSW SERVICE PMP 3 (FLR)				X	“FAILURE”
30	MSW SERVICE PMP 2 (FLR)				X	“FAILURE”
31	DFM XFR/SVC PMP 2 (RUN)				X	“RUN”
32	THR BRG LO PUMP 2 (FLR)				X	“FAILURE”
33	MN ENG VIBRATION				X	“NORMAL”/“HIGH”
34	MN ENG OVERSPEED TRIP				X	“OVERSPEED”
35	MN ENG LO GR DRIVE PMP				X	“NORMAL”/“MALFUNCTION”
36	MN ENG EMER TRIP (LOCAL)				X	“TRIP”
37	ME OIL MIST CONCENTRATION				X	“NORMAL”/“HIGH”
38	MN ENG OVERLOAD ALARM				X	“ME OVERLOAD”
39	24VDC PWR REMOTE #4 LOOP B				X	“NORMAL”/“LOSS”
REMOTE TERMINAL UNIT (RTU) 4 TOTAL		0	0	0	39	

Attachment – 5.4.1 RTU No. 1 to 8 Sensor List

I/O	REMOTE TERMINAL UNIT 5 SENSOR NAME	SENSOR			COMMENTS	
		4-20 mA	RTD	T/C		DIG
1	RDCN GR HEAD TANK LVL				X	“NORMAL”/“LOW”
2	MSW SVC PUMP 3 STBY RUN				X	“STBY”/“RUN”
3	MSW SVC PUMP 3 (RUN)				X	“RUN”
4	MSW SVC PUMP 2 STBY RUN				X	“STBY”/“RUN”
5	MSW SVC PUMP 2 (RUN)				X	“RUN”
6	FO TRANSFER PUMP 2 (SLOW)				X	“SLOW”
7	FO TRANSFER PUMP 2 (FAST)				X	“FAST”
8	FO TRANSFER PUMP 2 (FLR)				X	“FAILURE”
9	24VDC PWR REMOTE #5 LOOP A				X	“NORMAL”/“LOSS”
10	THR BRG LO PUMP 2 (STBY RUN)				X	“STBY”/“RUN”
11	THR BRG LO PUMP 2 (RUN)				X	“RUN”
12	AUTO BILGE PUMP 1 (RUN)				X	“STOP”/“RUN”
13	AUTO BILGE PUMP 2 (RUN)				X	“STOP”/“RUN”
14	OILY WASTE XFR PUMP 1 (RUN)				X	“STOP”/“RUN”
15	OILY WASTE XFR PUMP 2 (RUN)				X	“STOP”/“RUN”
16	SANITARY WTR PUMP 1 (FLR)				X	“NORMAL”/“FAILURE”
17	SANITARY WTR PUMP 2 (FLR)				X	“NORMAL”/“FAILURE”
18	VAC PRIMING PUMP 1 (FLR)				X	“NORMAL”/“FAILURE”
19	VAC PRIMING PUMP 1 (FLR)				X	“NORMAL”/“FAILURE”
20	24VDC PWR REMOTE #5 LOOP B				X	“NORMAL”/“LOSS”
REMOTE TERMINAL UNIT (RTU) 5 TOTAL		0	0	0	20	

I/O	REMOTE TERMINAL UNIT 6 SENSOR NAME SENSOR				COMMENTS
		4-20mA RTD	T/C	DIG	
1	FO XFR PMP NO 1 SUCT PRESS	X			
2	FO XFR PMP NO 2 SUCT PRESS	X			
3	FO XFR PMP DISCH PRESS	X			
4	DFM XFR PMP NO 2 SUCT PRESS	X			
5	DFM XFR PMP NO 2 DISCH PRESS	X			
6	STERN TUBE PMP DISCH PRESS	X			"LOW"
7	SSDG LO STO TK 6-136-2 LVL	X			"LOW"
8	MN THR BRG LO INL PRESS	X			"LOW"
9	NO 1 LINE SHFT BRG TEMP	X			"HIGH"
10	NO 2 LINE SHFT BRG TEMP	X			"HIGH"
11	STERN TUBE AFT BRG TEMP	X			"HIGH"
12	STERN TUBE FWD BRG TEMP	X			"HIGH"
13	MN THR BRG LO OUT TEMP	X			"HIGH"
14	STERN TUBE LO OUT TEMP	X			"HIGH"
15	MN THR BRG INL TEMP	X			"HIGH"
16	FWD SEAL TK LO RTN TEMP	X			"HIGH"
17	NO 1 GEN BRG TEMP DR END	X			"HIGH"
18	NO 1 GEN BRG TEMP	X			"HIGH"
19	NO 2 GEN BRG TEMP DR END	X			"HIGH"
20	NO 2 GEN BRG TEMP	X			"HIGH"
21	NO 3 GEN BRG TEMP DR END	X			"HIGH"
22	NO 3 GEN BRG TEMP	X			"HIGH"
23	ME AIR CLR CFW OUT TEMP ME JW CLR CFW OUT		X		100-Ohm Pt /"HIGH TEMP"
24	TEMP MAIN THR BRG LO SUMP LVL STRN TUBE LO		X		100-Ohm Pt /"HIGH TEMP"
25	HEAD TK (HI) STRN TUBE LO HEAD TK (LOW) MAIN				"NORMAL"/"LOW"
26	THR BRG LO SUMP TEMP SHAFT ALLEY DRAINWELL				"HIGH" "LOW"
27	AUX MACH SPACE DRAINWELL STRG GR 2 RPNSH				"NORMAL"/"HIGH"
28	PRESS STRG GR RM DRAINWELL STRN TUBE LO PMP				"NORMAL"/"HIGH"
29	1 (FLR) STRN TUBE LO PMP 1 (RUN) STRN TUBE LO				"NORMAL"/"HIGH"
30	PMP 1 STBY RUN STRN TUBE LO PMP 2 (FLR) STRN				"NORMAL"/"LOW"
31	TUBE LO PMP 2 (RUN) STRN TUBE LO PMP 2 STBY				"NORMAL"/"HIGH"
32	RUN FWD SEAL PMP LO TK LVL HI FWD SEAL PMP LO				"FAILURE"
33	TK LVL LOW STEERING GEAR MOTOR 1 STEERING			X	"RUN"
34	GEAR 1 CONT PWR STRG GEAR 1 HYD OIL TK LVL			X X	"STBY"/"RUN"
35	STRG GEAR 1 MTR PHASE (FLR) STRG GEAR 1 MTR			X X	"FAILURE"
36	(OVERLOAD) STRG GEAR 1 SERVO PRESS STRG GEAR			X X	"RUN"
37	1 RPNSH PRESS MN THR BRG LO DISCH FLTR DP			X X	"STBY"/"RUN"
38	STEERING GEAR MOTOR 2 STEERING GEAR 2 CONT			X X	"HIGH" "LOW"
39	PWR STRG GEAR 2 HYD OIL TK LVL STRG GEAR 2			X X	"STOP"/"RUN"
40	MTR PHASE (FLR) STRG GEAR 2 MTR (OVERLOAD)			X X	"NORMAL"/"FAILURE"
41	STRG GEAR 2 SERVO PRESS 24VDC PWR REMOTE #6			X X	"NORMAL"/"LOW"
42	LOOP A			X X	"NORMAL"/"FAILURE"
43	REMOTE TERMINAL UNIT (RTU) 6	22		X X	"OVERLOAD"
44	TOTAL			X X	"NORMAL"/"LOW"
45				X X	"NORMAL"/"LOW"
46				X X	"NORMAL"/"HIGH"
47				X X	"STOP"/"RUN"
48				X X	"NORMAL"/"FAILURE"
49				31	"NORMAL"/"LOW"
50					"NORMAL"/"FAILURE"
51					"OVERLOAD"
52					"NORMAL"/"LOW"
53					"NORMAL"/"LOSS"
54					
55					

I/O REMOTE TERMINAL UNIT 7 SENSOR NAME SENSOR**COMMENTS**

			T/C	DIG	
	ME LO STOR TK 3-139-2 LVL ME				“HIGH”
1	LO SETLG TK 3-142-2 LVL RDGR	X			“HIGH”
2	PORT PIN AFT BRG TEMP RDGR	X			100-Ohm Pt /“HIGH TEMP” 100-
3	STBD PIN AFT BRG TEMP RDGR		X		Ohm Pt /“HIGH TEMP” 100-Ohm Pt
4	PORT PIN FWD BRG TEMP RDGR		X		/“HIGH TEMP” 100-Ohm Pt /“HIGH
5	PORT PIN FWD BRG TEMP RDGR		X		TEMP” 100-Ohm Pt /“HIGH TEMP”
6	MN GR FWD BRG TEMP RDGR		X		100-Ohm Pt /“HIGH TEMP” 100-
7	MN GR AFT BRG TEMP MN THR		X		Ohm Pt /“HIGH TEMP” 100-Ohm Pt
8	JNL BRG TEMP RDGR LO OUTLET		X		/“HIGH TEMP” 100-Ohm Pt /“HIGH
9	TEMP RDGR LO INLET TEMP		X		TEMP” 100-Ohm Pt /“LOW/HIGH
10	ME LO SMTK TEMP		X		TEMP” 100-Ohm Pt /“LOW/HIGH
11	FO SETLG TK 3-144-1 TEMP FO		X		TEMP” 100-Ohm Pt /“LOW/HIGH
12	DAY TAK 3-144-2 TEMP DFM		X		TEMP” 100-Ohm Pt /“HIGH TEMP”
13	SETLG TK 3-144-3 TEMP FO		X	X	“RUN”/“STOP”
14	PURIFIER 1 (RUN)		X	X	“RUN”/“STOP”
15	FO PURIFIER 2 (RUN)		X	X	“RUN”/“STOP”
16	DFM PURIFIER (RUN)		X	X	“ABNORMAL”
17	DFM PURIFIER (ABNORMAL)		X	X	“ABNORMAL”
18	FO PURIFIER 1 (ABNORMAL)		X	X	“ABNORMAL”
19	FO PURIFIER 2 (ABNORMAL)		X	X	“NORMAL”/“FAILURE”
20	RDCN GR 1 LO PUMP (FLR)		X	X	“RUN”/“STOP”
21	ME LO PURIFIER 1 (RUN)		X	X	“ABNORMAL”
22	ME LO PURIFIER 1 (ABNORMAL)		X	X	“RUN”/“STOP”
23	ME LO PURIFIER 2 (RUN) ME LO		X	X	“ABNORMAL”
24	PURIFIER 2 (ABNORMAL) SSDG		X	X	“RUN”/“STOP”
25	LO PURIFIER 1 (RUN)		X	X	“ABNORMAL”
26	SSDGLOPURIFIER1(ABNORMAL)		X	X	“RUN”/“STOP”
27	SSDG LO PURIFIER 2 (RUN)		X	X	“ABNORMAL”
28	SSDGLOPURIFIER2(ABNORMAL)		X	X	“NORMAL”/“HIGH”
29	RDCN GEAR LO DSCH STR DP		X	X	“NORMAL”/“LOW”
30	RDCN GEAR LO SUMP LEVEL		X	X	“NORMAL”/“HIGH”
31	ENG RM PORT DRAINWELL ENG		X	X	“NORMAL”/“HIGH”
32	RM STBD DRAINWELL ME		X	X	“NORMAL”/“LOW”
33	CLUTCH AIR PRESSURE RDCN		X	X	“RUN”/“STOP”
34	GEAR 1 LO PUMP ASW SERVICE		X	X	“NORMAL”/“FAILURE”
35	PUMP 1 (FLR) ASW SERVICE		X	X	“RUN”/“STOP”
36	PUMP 1 (RUN)		X	X	“STBY”/“RUN”
37	ASWSERVICEPUMP1(STBYRUN)		X	X	“NORMAL”/“FAILURE”
38	ASW SERVICE PUMP 2 (FLR) ASW		X	X	“RUN”/“STOP”
39	SERVICE PUMP 2 (RUN)		X	X	“STBY”/“RUN”
40	ASWSERVICEPUMP2(STBYRUN)		X	X	“NORMAL”/“HIGH”
41	OIL IN FWDR TK		X	X	“NORMAL”/“LOW”
42	RDCN GEAR LO GR SPRAY HDR		X	X	“NORMAL”/“LOSS”
43	24VDC PWR REMOTE #7 LOOP A		X	X	“NORMAL”/“HIGH”
44	FWDC TANK LEVEL		X	X	“NORMAL”/“LOW”
45	FWDC TANK LEVEL		X	X	“ENGAGED”/“DISENGAGED”
46	ME CLUTCH		X	X	“RUN”/“STOP”
47	BOILER FEED PUMP 1 (RUN)		X	X	“RUN”/“STOP”
48	BOILER FEED PUMP 2 (RUN)		X	X	“NORMAL”/“FAILURE”
49	BOILER FEED PUMP 1 (FLR)		X	X	“NORMAL”/“FAILURE”
50	BOILER FEED PUMP 2 (FLR)		X	X	“RUN”/“STOP”
51	EXHGASBLRRECIRCPMP1(RUN)		X	X	“RUN”/“STOP”
52	EXHGASBLRRECIRCPMP 2(RUN)		X	X	“NORMAL”/“FAILURE”
53	EXHGASBLRRECIRCPMP1(FLR)		X	X	“NORMAL”/“FAILURE”
54	EXHGASBLRRECIRCPMP2(FLR)		X	X	“NORMAL”/“ABNORMAL”
55	EXH GAS BOILER ABNORMAL		X	X	“RUN”/“STOP”
56	OILFRDBOILERFOSVCPMP1(RUN)		X	X	“RUN”/“STOP”
57	OILFRDBOILERFOSVCPMP2(RUN)		X	X	“RUN”/“STOP”
58	SSDG FO BOOSTER PMP 3 (RUN)		X	X	“NORMAL”/“FAILURE”
59	SSDG FO BOOSTER PMP 3 (FLR)		X	X	“RUN”/“STOP”
60	OILFRDBOILERRECIRCPMP1(RUN)		X	X	“NORMAL”/“EXCESSIVE”
61	BOILER SMOKE		X	X	“NORMAL”/“FAILURE”
62	OIL FIRED BOILER AC POWER		X	X	“NORMAL”/“ABNORMAL”
63	OIL FIRED BOILER (ABNORMAL)		X	X	“NORMAL”/“ABNORMAL”
64	ME LO ALARM MONITOR ME FO		X	X	“NORMAL”/“HIGH”
65	FILTER DP		X	X	“NORMAL”/“FAILURE”
66	RDCN GEAR 2 LO PUMP (FLR)		X	X	“RUN”/“STOP”
67	RDCN GEAR 2 LO PUMP (RUN)		X	X	“AUTO”
68	RDCN GEAR 2 LO PUMP (AUTO)		X	X	“AUTO”
69	RDCN GEAR 1 LO PUMP (AUTO)		X	X	“AUTO”
70					
71					

72 24VDC PWR REMOTE #7 LOOP B				X	"NORMAL"/"LOSS"
REMOTE TERMINAL UNIT (RTU) 7 TOTAL	2	13	0	57	

I/O	REMOTE TERMINAL UNIT 8 SENSOR NAME SENSOR				COMMENTS
		4-20mA RTD	T/C	DIG	
1	STEAM MAIN PRESSURE FEED	X			
2	WATER PRESSURE	X			
3	EXH GAS BLR GAS OUT PRESS	X			
4	RDGR LO STOR TK 2-138-2 LVL	X			
5	RDGR LO SETLG TK 2-140-2 LVL	X			
6	FO SETLG TK 3-144-1 LVL FO	X			
7	DAY TK 3-144-2 LVL FO STOR TK	X			
8	3-146-1 LVL FO STOR TK 3-144-4	X			
9	LVL MAIN ENGINE FO	X			
10	VISCOSITY THROTTLE POSITION	X			
11	MAIN ENGINE STACK TEMP	X	X		
12	NO 1 SSDG STACK TEMP		X		100-Ohm Pt
13	NO 2 SSDG STACK TEMP		X		100-Ohm Pt
14	NO 3 SSDG STACK TEMP FO		X		100-Ohm Pt
15	STOR TK 3-146-1 TEMP FO STOR		X		100-Ohm Pt
16	TK 3-144-4 TEMP EXH GAS BLR		X		100-Ohm Pt
17	GAS INL TEMP SSDG 1 VOLTAGE		X		100-Ohm Pt
18	LOW ENG RM SPLY FAN NO 33		X		100-Ohm Pt
19	ENG RM SPLY FAN NO 33 ENG			X	
20	RM VENT SPLY FAN 1 ENG RM			X	"SLOW"
21	SPLY FAN NO 34 ENG RM SPLY			X	"FAST"
22	FAN NO 34 ENG RM VENT SPLY			X	"FAILURE"
23	FAN 2 ENG RM SPLY FAN NO 36			X	"SLOW"
24	ENG RM SPLY FAN NO 36 ENG			X	"FAST"
25	RM VENT SPLY FAN 3 ENG RM			X	"FAILURE"
26	SPLY FAN NO 37 ENG RM SPLY			X	"SLOW"
27	FAN NO 37 ENG RM VENT SPLY			X	"FAST"
28	FAN 4 ENG RM EXH FAN NO 38			X	"FAILURE"
29	ENG RM VENT EXH FAN 1 ENG			X	"SLOW"
30	RM EXH FAN NO 39 ENG RM			X	"FAST"
31	VENT EXH FAN 2 ENG RM EXH			X	"FAILURE"
32	FAN NO 40 ENG RM VENT EXH			X	"STOP"/"RUN"
33	FAN 3 ENG RM EXH FAN NO 41			X	"FAILURE"
34	ENG RM VENT EXH FAN 4			X	"STOP"/"RUN"
35	CONTROL AIR COMPRESSOR			X	"FAILURE"
36	SSDG 1 VOLTAGE HIGH			X	"STOP"/"RUN"
37	STEERING GEAR 1 PWR FEEDER			X	"FAILURE"
38	FO DAY TANK 3-144-2 LEVEL			X	"STOP"/"RUN"
39	NO 1 GEN INSUL MONITOR			X	"FAILURE"
40	SSDG 1 FREQUENCY SSDG 1			X	"NORMAL"/"FAILURE"
41	FREQUENCY SSDG 1			X	
42	CURRENT			X	"CLOSED"/"OPEN"
43	SSDG 2 VOLTAGE			X	"HIGH"/"NORMAL"
44	SSDG 2 VOLTAGE			X	"NORMAL"/"ABNORMAL"
45	24VDC PWR REMOTE #8 RED			X	"LOW"
46	GEAR EMER STOP PROPULSION			X	"HIGH"
47	CONTROL POWER MN ENG EMER			X	"HIGH"/"NORMAL"
48	STOP (AT EOS)			X	"LOW"
49	NO 2 GEN INSUL MONITOR			X	"HIGH"
50	SHAFT AUTO SHTDN OVRD EOS			X	"NORMAL"/"LOSS"
51	ME AUTO SHTDN OVRD EOS			X	
52	SSDG 2 FREQUENCY SSDG 2			X	"NORMAL"/"FAILURE"
53	FREQUENCY SSDG 2 CURRENT			X	
54	NO 3 GEN INSUL MONITOR			X	"NORMAL"/"ABNORMAL"
55	SSDG 3 VOLTAGE				X X
56	SSDG 3 VOLTAGE			X	"LOW"
57	SSDG 3 FREQUENCY			X	"HIGH"
58	SSDG 3 FREQUENCY			X	"HIGH"/"NORMAL"
59	SSDG 3 CURRENT			X	"NORMAL"/"ABNORMAL"
60	SHAFT AUTO SLOWDOWN			X	"LOW"
61	MN ENG ALM ARM SIG			X	"HIGH"
62	BOILER FEED WATER SALINITY			X	"LOW"
63	RED GEAR AUTO SHUTDOWN			X	"HIGH"
64	MN ENG FUEL SWITCH OVER			X	"HIGH"/"NORMAL"
65	MN ENG OVER-CRANK			X	
66				X	"ARM"/"DISARM"
67				X	"NORMAL"/"HIGH"
68				X	
69				X	"NORMAL"/"MALFUNCTION"
70				X	"FAILURE TO START"
71					

Attachment – 2.10.1 RTU No. 1 to 8 Sensor List

72 MN ENG AUTO-SHUTDOWN					X
73 EOT POWER FAILURE					X
74 24VDC PWR FAIL REMOTE #8					X
REMOTE TERMINAL UNIT (RTU) 8	11	7	0		56
TOTAL					

Attachment – 2.4.2 Process Unit 1 Sensor List

I/O	PROCESS UNIT 1 SENSOR NAME	SENSOR				COMMENTS
		4-20mA	RTD	0-10V	DIG	
1	MPE OVERSPEED				X	
2	MPE BELOW 0.7X RATED SPEED				X	
3	MPE ALARM SUPPR LOW SPEED				X	
4	MPE RPM SWITCHGEAR FAIL				X	
5	MPE AUTO-STOP				X	
6	MPE EMERGENCY STOP				X	
7	MPE REDUCTION				X	
8	MPE RUNNING				X	
9	MPE DE-CLUTCHED				X	
10	CPP CONTROL POWER FAILURE				X	
11	CPP CONTROL SYSTEM FAILURE				X	
12	CPP SENSOR FAILURE				X	
13	E-MOT MAIN BREAKER OPEN				X	
14	E-MOT MAIN BREAKER CLOSED				X	
15	E-MOT MAIN BREAKER TRIPPED				X	
16	CONVERTER SPACE HEATER ON				X	
17	E-MOT SPACE HEATER ON				X	
18	MPE OIL MIST OVER LIMIT				X	
19	CPP STANDBY PUMP RUNNING				X	
20	UPS OFF				X	
21	UPS ON BATTERY				X	
22	UPS ON EMERGENCY POWER				X	
23	NOZZLE CLG PMP 1 STBY ALRM				X	
24	NOZZLE CLG PMP 2 STBY ALRM				X	
25	JW PMP 1 STBY ALARM				X	
26	JW PMP 2 STBY ALARM				X	
27	EOT POWER FAILURE				X	
28	EXH GAS BOILER HIGH LEVEL				X	
29	EXH GAS BOILER LOW LEVEL				X	
30	EXH GAS BOILER LOW TEMP				X	
31	PRPLN CONT TROUBLE				X	
32	PRPLN CONT PWR TROUBLE				X	
33	PRPLN TROUBLE				X	
34	MPE AUTO-SLOWDOWN				X	
35	LOW START AIR PRESSURE				X	
36	E-MOT RUNNING				X	
37	E-MOT SHUTDOWN				X	
38	DIESEL ENGINE RUNNING				X	
39	DIESEL ENGINE SHUTDOWN				X	
40	E-MOT LOCAL CONTROL				X	
41	E-MOT POWER LIMIT ACTIVE				X	
42	E-MOT SPEED MISMATCH				X	
43	SHIP SERVICE PWR OVERLOAD				X	
44	MOTOR/CONV HEATER ON				X	
45	MOTOR/CONV HEATER OFF				X	
46	MPE RPM				X	
47	CPP ACTUAL PITCH SETTING			X		
48	E-MOT SPEED REFERENCE			X		
I/O	PROCESS UNIT 1	SENSOR				COMMENTS
		4-20mA	RTD	0-10V	DIG	
	PROCESS UNIT 1 TOTAL	0	0	2	46	

Attachment – 2.12.3 Siemens RTU Sensor List

I/O	SIEMENS RTU UNIT 3 SENSOR NAME	SENSOR				COMMENTS
		4-20mA	RTD	COIL	DIG	
1	WINDING A1 TEMP		X			PT-100
2	WINDING B1 TEMP		X			PT-100
3	WINDING C1 TEMP		X			PT-100
4	DE BEARING TEMP		X			PT-100
5	NDE BEARING TEMP		X			PT-100
6	COOLING AIR TEMP		X			PT-100
7	XFMR WDG TEMP A1		X			PT-100
8	XFMR WDG TEMP B1		X			PT-100
9	XFMR WDG TEMP C1		X			PT-100
10	% PWR USED FROM SS SWBD	X				
11	MOTOR POWER	X				
12	DRIVE IN MANUAL				X	
13	DRIVE AND MOTOR SHUTDOWN				X	
14	NO AIR FLOW IN RECTIFIER				X	
15	NO AIR FLOW IN MASTER INVRT				X	
16	NO AIR FLOW IN SLAVE INVRT				X	
17	DRIVE EMER STOP				X	
18	DRIVE GROUND FAULT				X	
19	DRIVE GROUND FAULT SHUTDN				X	
20	LEAK IN RECTIFIER COOLER				X	
21	LEAK IN MAST INV COOLER				X	
22	LEAK IN SLAVE INV COOLER				X	
23	LEAK IN MOTOR COOLER				X	
24	SSDG 1 BREAKER CLOSED				X	
25	SSDG 2 BREAKER CLOSED				X	
26	SSDG 3 BREAKER CLOSED				X	
27	SSDGs AT 95% POWER				X	
28	DRIVE BREAKER OPEN				X	
29	CPP/E-MOT START INTERLOCK				X	
30	DRIVE START				X	
31	DRIVE RESET				X	
32	FEEDER BREAKER OPEN				X	
33	MPE/E-MOT START INTERLOCK				X	
34	E-MOT RUNNING			X		
35	DRIVE AND MOTOR ON			X		
36	DRIVE EXTERNAL FAULT			X		
37	MOTOR REMOTE CONTROL			X		
38	MOTOR OVERLOAD			X		
39	FEEDER BREAKER TRIP			X		
40	DRIVE RESET			X		
48	E-MOT SPEED REFERENCE			X		
		4-20mA	RTD	0-10V	DIG	
SIEMENS RTU UNIT 3 TOTAL		2	9	8	22	

Attachment – 2.13.3 Siemens RTU Sensor List

I/O	SIEMENS RTU UNIT 4 SENSOR NAME	SENSOR			COMMENTS
		4-20mA	RTD	T/C	
1	MPE EXHAUST GAS TEMP CYL 1			X	
2	MPE EXHAUST GAS TEMP CYL 2			X	
3	MPE EXHAUST GAS TEMP CYL 3			X	
4	MPE EXHAUST GAS TEMP CYL 4			X	
5	MPE EXHAUST GAS TEMP CYL 5			X	
6	MPE EXHAUST GAS TEMP CYL 6			X	
7	MPE EXH GAS TEMP TURBO OUT			X	
8	CHARGE AIR HIGH TEMP				X
9	MPE FO BEF ENG LOW PRESS				X
10	MPE FO BEF ENG LOW TEMP				X
11	MPE CLG WTR VALVE CLOSED				X
12	MPE TURNING GEAR ENGAGED				X
13	MPE OVERLOAD				X
14	MPE ALARM CKT FAILURE				X
15	MPE SAFETY CKT FAILURE				X
16	MPE OIL MIST DETECT FAILURE				X
17	MPE CYL LO PRESSURE LOW				X
18	FO PRESSURE	X			
19	LO PRESSURE	X			
20	LO PRESS DUPLEX FILT INLET	X			
21	FW PRESSURE	X			
22	LO TEMPERATURE		X		100-Ohm Pt
23	FW TEMPERATURE		X		100-Ohm Pt
SIEMENS RTU UNIT 4 TOTAL		4	2	7	10

Attachment – 2.14.3 Siemens RTU Sensor List

I/O	SIEMENS RTU UNIT 5 SENSOR NAME	SENSOR			COMMENTS	
		4-20mA	RTD	COIL		DIG
1	AIR TEMP AFTER COOLER		X			PT-100
2	CONNECT CUBICLE TEMP		X			PT-100
3	RECTIFIER TEMP		X			PT-100
4	MASTER INV TEMP		X			PT-100
5	SLAVE INV TEMP		X			PT-100
6	REACTOR TEMP		X			PT-100
7	WINDING TEMP A1		X			PT-100
8	WINDING TEMP B1		X			PT-100
9	WINDING TEMP C1		X			PT-100
10	MPE ALRM SUPPR LOW SPEED				X	
11	MPE LO STBY PUMP START				X	
12	MPE LAST BRG PRESS LOW				X	(@FULL LOAD)
13	MPE LAST BRG PRESS LOW LOW				X	
14	MPE LO FILT DIFF PRESS HIGH				X	
15	MPE STBY FO PUMP 2 ALARM				X	
16	MPE MIXING TANK LOW LVL				X	
17	MPE FW CIRC STBY PMP 2 ALRM				X	
18	MPE SELF CLEANING FILTER				X	DIRTY
19	MPE VISCOSITY LOW				X	
20	MPE VISCOSITY HIGH				X	
21	MPE NOZZ CLG OIL PRESS LOW				X	
22	MPE NOZZ CLG OIL LVL LOW				X	
23	MPE NOZZ CLG OIL LVL HIGH				X	
24	MPE LOW FW CLG PRESS LOW				X	
25	MPE LOW START AIR PRESS				X	
26	MPE REM CONT AIR PRESS LOW				X	
27	MPE ALARM SUPPRESSION				X	ACTIVE
28	MPE STBY FO PMP 1 ALARM				X	
29	MPE FW CIRC STBY PMP 1 ALRM				X	
30	MPE FO LEAKAGE DETECTED				X	
SIEMENS RTU UNIT 5 TOTAL		0	9	0	21	

Attachment – 15.4.3 Siemens RTU Sensor List

I/O	SIEMENS RTU UNIT 6 SENSOR NAME	SENSOR			COMMENTS
		RTD	COIL	DIG	
		<i>4-20mA</i>			
1	CPP HYD OIL TEMP HIGH				X
2	CPP HYD OIL FILTER HIGH DP				X
3	CPP HYD OIL TANK LOW LEVEL				X
4	CPP HYD OIL PRESSURE LOW				X
5	CPP HYD OIL HEAD TK LOW LVL				X
6	CPP HYD OIL PRESSURE HIGH				X
SIEMENS RTU UNIT 6 TOTAL		0	0	0	6