

**INFORMATION TO OFFERORS OR QUOTERS
SECTION A - COVER SHEET**

1. SOLICITATION NUMBER N00173-98-R-SE03	2. (X one)
	<input type="checkbox"/> a. SEALED BID
	<input checked="" type="checkbox"/> b. NEGOTIATED (RFP)
	<input type="checkbox"/> c. NEGOTIATED (RFQ)

INSTRUCTIONS

NOTE THE AFFIRMATIVE ACTION REQUIREMENT OF THE EQUAL OPPORTUNITY CLAUSE WHICH MAY APPLY TO THE CONTRACT RESULTING FROM THIS SOLICITATION.

You are cautioned to note the "Certification of Non-Segregated Facilities" in the solicitation. Failure to agree to the certification will render your reply nonresponsive to the terms of solicitations involving awards of contracts exceeding \$25,000 which are not exempt from the provisions of the Equal Opportunity clause.

"Fill-ins" are provided on the face and reverse of Standard Form 18 and Parts I and IV of Standard Form 33, or other solicitation documents and Sections of Table of Contents in this solicitation and should be examined for applicability.

See the provision of this solicitation entitled either "Late Bids, Modifications of Bids or Withdrawal of Bids" or "Late Proposals, Modifications of Proposals and Withdrawals of Proposals."

When submitting your reply, the envelope used must be plainly marked with the Solicitation Number, as shown above and the date and local time set forth for bid opening or receipt of proposals in the solicitation document.

If NO RESPONSE is to be submitted, detach this sheet from the solicitation, complete the information requested on reverse, fold, affix postage, and mail. NO ENVELOPE IS NECESSARY.

Replies must set forth full, accurate, and complete information as required by this solicitation (including attachments). The penalty for making false statements is prescribed in 18 U.S.C. 1001.

3. ISSUING OFFICE (Complete mailing address, including ZIP Code)

PROCURING CONTRACT OFFICE (CODE 3235.SE)
NAVAL RESEARCH LABORATORY
DEPARTMENT OF THE NAVY
STENNIS SPACE CENTER, MS 39529-5004

4. ITEMS TO BE PURCHASED (Brief description)

SEA-GOING ACOUSTICS MEASUREMENT SYSTEM

5. PROCUREMENT INFORMATION (X and complete as applicable)

<input checked="" type="checkbox"/>	a. THIS PROCUREMENT IS UNRESTRICTED
<input type="checkbox"/>	b. THIS PROCUREMENT IS A _____ % SET-ASIDE FOR ONE OF THE FOLLOWING (X one). (See Section I of the Table of Contents in this solicitation for details of the set-aside.)
<input type="checkbox"/>	(1) Small Business
<input type="checkbox"/>	(2) Labor Surplus Area Concerns
<input type="checkbox"/>	(3) Combined Small Business/Labor Area Concerns

6. ADDITIONAL INFORMATION

THE NAVAL RESEARCH LABORATORY CONTRACTING DIVISION ISSUES SOLICITATIONS AND AMENDMENTS TO SOLICITATIONS ELECTRONICALLY VIA THE INTERNET AT THE FOLLOWING WEBSITE:

HTTP://HERON.NRL.NAVY.MIL/CONTRACTS/HOME.HTM.

ANY AMENDMENTS TO THIS SOLICITATION WILL BE POSTED AT THE WEBSITE REFERENCED ABOVE. AMENDMENTS WILL NOT BE DISTRIBUTED BY ANY OTHER MEANS. IT IS THE RESPONSIBILITY OF POTENTIAL OFFERORS TO PERIODICALLY REVIEW THE WEBSITE FOR AMENDMENTS TO THIS SOLICITATION.

7. POINT OF CONTACT FOR INFORMATION

a. NAME (Last, First, Middle Initial) Sogard, Eric J.	b. ADDRESS (Include Zip Code) PROCURING CONTRACT OFFICE (CODE 3235) NAVAL RESEARCH LABORATORY STENNIS SPACE CENTER, MS 39529-5004
c. TELEPHONE NUMBER (Include Area Code and Extension) (NO COLLECT CALLS) (228) 688-5784	

8. REASONS FOR NO RESPONSE (X all that apply)			
<input type="checkbox"/>	a. CANNOT COMPLY WITH SPECIFICATIONS	<input type="checkbox"/>	b. CANNOT MEET DELIVERY REQUIREMENT
<input type="checkbox"/>	c. UNABLE TO IDENTIFY THE ITEM(S)	<input type="checkbox"/>	d. DO NOT REGULARLY MANUFACTURE OR SELL THE TYPE OF ITEMS INVOLVED
<input type="checkbox"/>	e. OTHER (Specify)		
9. MAILING LIST INFORMATION (X one)			
<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
WE DESIRE TO BE RETAINED ON THE MAILING LIST FOR FUTURE PROCUREMENT OF THE TYPE OF TIME(S) INVOLVED.			
10. RESPONDING FIRM			
a. COMPANY NAME		b. ADDRESS (include Zip Code)	
c. ACTION OFFICER			
(1) Typed or Printed Name (Last, First, Middle Initial)	(2) Title	(3) Signature	(4) Date Signed (YYMMDD)

DD FORM 1707 REVERSE, MAR 90

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FROM

**AFFIX
STAMP
HERE**

SOLICITATION NUMBER	
N00173-98-R-SE03	
DATE (YYMMDD)	LOCAL TIME
98 DEC 14	3:30 PM

TO

SOLICITATION, OFFER AND AWARD		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING C9E	PAGE OF 1 49 PAGES
2. CONTRACT NO.	3. SOLICITATION NO. N00173-98-R-SE03	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFI)		5. DATE ISSUED 10 NOV 98	6. REQUISITION/PURCHASE NO.
7. ISSUED BY Contracting Officer, Code 3235:EJS Naval Research Laboratory NRL-SSC Department of the Navy Stennis Space Center, MS 39529-5004		CODE N68462	8. ADDRESS OFFER TO (If other than Item 7)		

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and L-10 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in Bldg. 1100, Stennis Space Ctr, MS 39529-5004 until 3:30 local time 14 DEC 98
(Hour) (Date)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-10. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME Eric J. Sogard	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) (228) 688-5980
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11. TABLE OF CONTENTS

(✓)	SEC.	DESCRIPTION	PAGE(S)	(✓)	SEC.	DESCRIPTION	PAGE(S)
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<input checked="" type="checkbox"/>	A	SOLICITATION/CONTRACT FORM	1	<input checked="" type="checkbox"/>	I	CONTRACT CLAUSES	12-17
<input checked="" type="checkbox"/>	B	SUPPLIES OR SERVICES AND PRICES/COSTS	2-4	PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
<input checked="" type="checkbox"/>	C	DESCRIPTION/SPECS./WORK STATEMENT	5	<input checked="" type="checkbox"/>	J	LIST OF ATTACHMENTS	18
<input checked="" type="checkbox"/>	D	PACKAGING AND MARKING	5	PART IV - REPRESENTATIONS AND INSTRUCTIONS			
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OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52-232-8)	10 CALENDAR DAYS	20 CALENDAR DAYS	30 CALENDAR DAYS	CALENDAR DAYS
	%	%	%	%

14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated:	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)
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15B. TELEPHONE NO. (Include area code)	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.	17. SIGNATURE	18. OFFER DATE
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AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION
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22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304(c) () <input type="checkbox"/> 41 U.S.C. 253(c) ()	23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified) ITEM
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24. ADMINISTERED BY (If other than Item 7) CODE	25. PAYMENT WILL BE MADE BY CODE
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26. NAME OF CONTRACTING OFFICER (Type or print)	27. UNITED STATES OF AMERICA <i>(Signature of Contracting Officer)</i>	28. AWARD DATE
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IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

PART I - THE SCHEDULE

SECTION B

SUPPLIES OR SERVICES AND PRICES/COSTS

B-1 SUPPLIES OR SERVICES AND PRICES/COSTS

ITEM NUMBER	SUPPLIES OR SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
	The Contractor shall provide the following Items in accordance with the specifications Set forth in Section C and its Attachment 1, and Exhibit A.				
0001	Sea-Going Acoustic Measurement System (SEGAMS) in accordance with Section C, to include the following:	1	SYS		
000101	Data Acquisition Unit (DAU)	1	SYS	NSP**	NSP
000102	Data Storage Unit (DSU)	1	SYS	NSP	NSP
000103	Data Transfer Unit (DTU)	1	SYS	NSP	NSP
000104	Energy Unit (EU)	1	EA	NSP	NSP
000105	Test Plan	1	SET	NSP	NSP
000106	Deployment Plan with Hardware	1	SET	NSP	NSP
000107	Documentation/Technical Manuals	1	SET	NSP	NSP

TOTAL DOLLAR AMOUNT FOR CLINs*: \$

*Contract Line Item Number

**Not Separately Priced

OPTION ITEMS – SEPARATELY PRICED

ITEM NUMBER	SUPPLIES OR SERVICES	QTY	UNIT	UNIT PRICE	AMOUNT
OPTION 1					
0002	Acoustic Mooring releases in accordance with Attach (1) para 4.1	4	EA		
OPTION 2					
0003	Acoustic Positioning System in accordance with Attach (1) para 4.2.	4	EA		
OPTION 3					
0004	Acoustic Array Element Navigation in accordance with Attach (1) para 4.3.	4	EA		
OPTION 4					
0005	Acoustic Telemetry in accordance with Attach (1) para 4.4.	4	EA		
OPTION 5					
0006	Storage Capacity Up-grade in accordance with Attach (1) para 4.5.	10	EA		
OPTION 6					
0007	EU capacity Up-grade in accordance with Attach (1) para 4.6.	10	EA		
OPTION 7					
0008	Engineering Module in accordance with Attach (1) para 4.8.	12	UNITS		
OPTION 8					
0009	DAU Basebanding function in accordance with Attach (1) para 4.9.	4	UNITS		
OPTION 9					
0010	Vertical Acoustic Array in accordance with with Attach (1) para 4.10.	4	UNITS		
OPTION 10					
0011	Vertical Acoustic Array in accordance with Attach (1) para 4.11.	4	UNITS		

<u>ITEM NUMBER</u>	<u>SUPPLIES OR SERVICES</u>	<u>QTY</u>	<u>UNIT</u>	<u>PRICE</u>	<u>AMOUNT</u>
OPTION 11					
0012	Horizontal Acoustic Array in accordance with Attach (1) para 4.12.	4	UNITS		
OPTION 12					
0013	Horizontal Acoustic Array in accordance with Attach (1) para 4.13.	4	UNITS		
OPTION 13					
0014	Increased Array Depth in accordance with Attach (1) para 4.14.	14	EA		
OPTION 14					
0015	Vertical Array Cable in accordance with Attach (1) para 4.15.	4	EA		
OPTION 15					
0016	Horizontal Array Cable in accordance with Attach (1) para 4.16.	4	EA		
OPTION 16					
0017	DAU in accordance with Attach (1) para 3.3	3	SYS		
OPTION 17					
0018	DSU in accordance with Attach (1) para 3.4	3	SYS		
OPTION 18					
0019	DTU in accordance with Attach (1) para 3.5	3	SYS		
OPTION 19					
0020	EU in accordance with Attach (1) para 3.6	3	SYS		
OPTION 20					
0021	Maintenance and Services in accordance with Attach (1) para 4.17	1	JOB		

NOTE: Exercise of the options above shall be in accordance with Section H.4. (See page 11 of this Solicitation)

SECTION C**DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK**

C-1 Items furnished under this contract shall comply with Attachment (1), Specifications with Exhibit A, DD Form 1423, Contracts Data Requirements List, and all other Attachments cited in Section J, which are incorporated by reference into Section C.

C-2 REQUIREMENTS FOR ON-SITE CONTRACTORS

For those portions of the work under this contract performed at any NRL site, the contractor shall comply with the Requirements for On-Site Contractors dated 02 February 1998 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/home.htm>.

SECTION D**PACKAGING AND MARKING**

D-1 Preservation, packaging, packing and marking of all deliverable contract line items must conform to normal commercial packing standards to assure safe delivery at destination.

D-2 The Contractor shall mark all shipments under this contract in accordance with the edition of ASTM-D-3951-90 "Standard Practice for Commercial Packaging" in effect on the date of the contract.

SECTION E**INSPECTION AND ACCEPTANCE****E-1 INSPECTION AND ACCEPTANCE CLAUSES BY REFERENCE:****FAR CLAUSE TITLE**

52.246-2 - Inspection Of Supplies - Fixed -Price (AUG 1996)
52.246-16 - Responsibility For Supplies (APR 1984)

DFARS CLAUSE TITLE

252.246-7000 - Material Inspection And Receiving Report (DEC 1991)

E-2 INSPECTION AND ACCEPTANCE

Inspection will be performed at the Contractor's facility in accordance with the approved Test Plan. Acceptance of the final delivery will be accomplished by the Technical Manager (TM) or Contracting Officer Representative (COR) designated in Section G of this contract at the Naval Research Laboratory, Washington DC 20375-5320.

SECTION F

DELIVERIES OR PERFORMANCE

F-1 DELIVERIES OR PERFORMANCE CLAUSES BY REFERENCE:

FAR CLAUSE TITLE

- 52.211-16 - Variation In Quantity (APR 1984) - The permissible variation shall be limited to:
0% Percent increase/decrease
- 52.211-17 - Delivery Of Excess Quantities (SEP 1989)
- 52.242-15 - Stop-Work Order (AUG 1989)
- 52.242-17 - Government Delay Of Work (APR 1984)
- 52.247-34 - F.O.B. Destination (NOV 1991)

F-2 FAR 52.211-8 - TIME OF DELIVERY (JUN 1997)

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

REQUIRED DELIVERY SCHEDULE

ITEM NO.	QUANTITY	WITHIN DAYS AFTER DATE OF CONTRACT
0001	1	360
0002 through 0021	ALL	At the time of delivery of CLIN 0001 or within 120 days after the exercise of an option whichever is later.

The Government will evaluate equally, as regards time of delivery, offers that propose delivery of each quantity within the applicable delivery period specified above. Offers that propose delivery that will not clearly fall within the applicable required delivery period specified above, will be considered nonresponsive and rejected. The Government reserves the right to award under either the required delivery schedule or the proposed delivery schedule, when an offeror offers an earlier delivery schedule than required above. If the offeror proposes no other delivery schedule, the required delivery schedule above will apply.

OFFEROR'S PROPOSED DELIVERY SCHEDULE

ITEM NO.	QUANTITY	WITHIN DAYS AFTER DATE OF CONTRACT
0001	1	_____
0002 through 0020	ALL	_____

(b) Attention is directed to the Contract Award provision of the solicitation that provides that a written award or acceptance of offer mailed, or otherwise furnished to the successful offeror, results in a binding contract. The Government will mail or otherwise furnish to the offeror an award or notice of award not later than the day award is dated. Therefore, the offeror should compute the time available for performance beginning with the actual date of award, rather than the date the written notice of award is received from the Contracting Officer through the ordinary mails. However, the Government will evaluate an offer that proposes delivery based on the Contractor's date of receipt of the contract or notice of award by adding (i) five calendar days for delivery of the award through the ordinary mails or (ii) one working day if the solicitation states that the contract or notice of award will be transmitted electronically. (The term "working day" excludes weekends and U.S. Federal holidays.) If, as so computed, the offered delivery date is later than the required delivery date, the offer will be considered nonresponsive and rejected.

F-3 PLACE OF DELIVERY - FOB DESTINATION

The contractor shall deliver supplies, all transportation charges paid, to destination in accordance with the clause in Section F of the Schedule titled FAR 52.247-34 FOB Destination (NOV 1991).

Receiving Officer
 Naval Research Laboratory
 Contract Number *
 ATTN: *
 CODE: *
 LOCATION: *
 Bldg. 49
 4555 Overlook Avenue, SW
 Washington DC 20375-5320

(* To be filled in at time of award.)

F.4 ENGINEERING CHANGES AND TECHNOLOGY REFRESHMENT CHANGES

a. After Contract award, the Government may solicit, and the Contractor is encouraged to propose independently, engineering changes and technology refreshment changes to the requirements of Contract. These changes may be proposed to save money, to improve performance, to save energy, or to improve potential use of required deliverables. If the proposed changes are acceptable to both parties, the Contractor shall submit a proposal to the Government for evaluation. Those proposed engineering or technology refreshment changes that are acceptable to the Government will be processed as modifications to the Contract.

b. This Contract engineering change/technology refreshment change applies only to those proposed changes identified by the Contractor as a proposal submitted pursuant to the provisions of this Section. As a minimum, the following information shall be submitted by the Contractor with each engineering change and technology refreshment proposal:

(1) A description of the difference between the existing Contract requirements and the proposed change, and the comparative advantages and disadvantages of each;

(2) Itemized requirements of the Contract which must be changed if the proposal is adopted, and the proposed revision to the Contract;

(3) An estimate of the changes in performance and cost, if any, that will result from adoption of the proposal;

(4) An evaluation of the effects the proposed change would have on collateral costs to the Government, such as Government-furnished property costs, costs of related items, and costs of maintenance and operation; and

(5) A statement of the time by which the change order adopting the proposal must be issued so as to obtain the maximum benefits of the changes during the remainder of this contract. Also, any effect on the Contract completion time or delivery schedule shall be identified.

c. Engineering change or technology refreshment proposals submitted to the Contracting Officer will be processed expeditiously. The Government will not be liable for proposal preparation costs or any delay in acting upon any proposal submitted pursuant to this provision. The Contractor has the right to withdraw, in whole or in part, any engineering or technology refreshment change proposal not accepted by the Government within the period specified in the change proposal. The decision of the Contracting Officer as to the acceptance of any such proposal under this Contract shall be final.

d. The Contracting Officer may accept any engineering or technology change proposal submitted pursuant to this clause by giving the Contractor written notice thereof. This written notice may be given by issuance of a modification to this Contract. Unless and until a modification is executed to incorporate an engineering or technology refreshment change proposal under this Contract, the Contractor shall remain obligated to perform in accordance with the terms of the existing contract.

e. If an engineering or technology refreshment change proposal submitted pursuant to this clause is accepted and applied to this Contract, an equitable adjustment in the Contract cost/price and in any other affected provisions of this Contract may be made in accordance with this clause and other applicable clauses of this Contract. When the cost of performance of this Contract is increased or decreased as a result of the change, the equitable adjustment increasing or decreasing the Contract cost shall be in accordance with the "Changes" clause rather than under this clause; but, the resulting Contract modification shall state that it is made pursuant to this clause.

f. The Contractor is requested to identify specifically any information contained in the engineering change or technology refreshment proposal which the Contractor considers confidential and/or proprietary and which the Contractor prefers not be disclosed to the public.

SECTION G**CONTRACT ADMINISTRATION DATA****G-1 PROCURING OFFICE REPRESENTATIVE**

In order to expedite administration of this contract, the Administrative Contracting Officer (ACO) will direct inquiries to the appropriate office listed below. Please do not direct routine inquiries to the person listed in Item 20A on Standard Form 26.

Contract Matters – Eric J. Sogard, Code 3235, (228)688-5980, DSN 485-5980, or Telecopier (228)688-6055)

Security Matters -Mr. Charles Rogers, Code 1221, (202) 767-2240, DSN 297-2240

Safety Matters - Mr. Kirk J. King, Code 1240, (202)767-2232, DSN 297- 2232

Patent Matters - Mr. Thomas McDonnell, Code 3008.2, (202)767-3427, DSN 297-3427

Release of Data - Mr. Richard L. Thompson, Code 1230 (202) 767-2541, DSN 297-2541

The ACO will forward invention disclosures and reports directly to the Associate Counsel for Patents, Code 3008.2, Naval Research Laboratory, Washington DC 20375-5320. The Associate Counsel for Patents will return the reports along with a recommendation to the Administrative Contracting Officer. The Associate Counsel for Patents will represent the Contracting Officer with regard to invention reporting matters arising under this contract.

G-2 TECHNICAL MANAGER - FUNCTIONS AND LIMITATIONS

* is hereby designated the cognizant Technical Manager who will represent the Contracting Officer in the administration of technical details within the scope of this contract and inspection and acceptance. The Technical Manager is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The Technical Manager does not have the authority to alter the Contractor's obligations or change the specifications in the contract. If, as a result of technical discussions, it is desirable to alter contract obligations or statements of work, a modification must be issued in writing and signed by the Contracting Officer. The Technical Manager, after review and signature of the "Material Inspection and Receiving Report, DD Form 250, If applicable, will forward a copy to the Administrative Contracting Officer.

(* To be filled in at time of award)

G-3 NAPS 5252.232-9000 - SUBMISSION OF INVOICES (FIXED PRICE) (JUL 1992)

(a) "Invoices" as used in this clause does not include contractor's requests for progress payments.

(b) The contractor shall submit original invoices with 4 copies to the address identified in the solicitation/contract award form (SF 26-Block 10; SF 33-Block 23; SF 1447-Block 14), unless delivery orders are applicable, in which case invoices will be segregated by individual order and submitted to the address specified in the order (DD 1155-Block 13 or SF 26-Block 10).

(c) The use of copies of the Material Inspection and Receiving Report (MIRR), DD Form 250, as an invoice is encouraged. DFARS Appendix F-306 provides instructions for such use. Copies of the MIRR used as an invoice are in addition to the standard distribution stated in DFARS F-401.

(d) In addition to the requirements of the Prompt Payment clause of this contract, the contractor shall cite on each invoice the contract line item number (CLIN); the contract subline item number (SLIN), if applicable; the accounting classification reference number (ACRN) as identified on the financial accounting data sheets, and the payment terms.

(e) The contractor shall prepare:

 * a separate invoice for each activity designated to receive the supplies or services.

 X a consolidated invoice covering all shipments delivered under an individual order.

 * either of the above.

(f) If acceptance is at origin, the contractor shall submit the MIRR or other acceptance verification directly to the designated payment office. If acceptance is at destination, the consignee will forward acceptance verification to the designated payment office.

G-4 ACCOUNTING AND APPROPRIATION DATA

(To be filled in at time of award)

SECTION H

SPECIAL CONTRACT REQUIREMENTS

H-1 TYPE OF CONTRACT

(To be filled in at time of award)

H-2 YEAR 2000 COMPLIANT INFORMATION TECHNOLOGY

Information technology delivered under this contract shall be Year 2000 compliant as defined at FAR 39.002. "Information technology" is defined at FAR 2.101.

H-3 REPRESENTATIONS AND CERTIFICATIONS

The Contractor's completed Representations, Certifications, and Other Statements of Offerors or Respondents is incorporated herein by reference in any resultant award.

H-4 OPTION(S)

(a) The Government may require delivery of the optional items under this contract in the quantity and at the price stated in the Schedule by the Contracting Officer's giving written notice anytime from date of contract award through a period of three years.

PART II - CONTRACT CLAUSES**SECTION I****CONTRACT CLAUSES****I-1 52.252-2 - CLAUSES INCORPORATED BY REFERENCE (FEB 1998)**

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):

<http://www.arnet.gov/far>

<http://heron.nrl.navy.mil/contracts/home.htm>

a. FEDERAL ACQUISITION REGULATION CLAUSES**FAR CLAUSE TITLE**

- | | | |
|-----------|---|--|
| 52.202-1 | - | Definitions (OCT 1995) |
| 52.203-3 | - | Gratuities (APR 1984) |
| 52.203-5 | - | Covenant Against Contingent Fees (APR 1984) |
| 52.203-6 | - | Restrictions On Subcontractor Sales To The Government (JUL 1995) |
| 52.203-7 | - | Anti-Kickback Procedures (JUL 1995) |
| 52.203-8 | - | Cancellation, Rescission, And Recovery Of Funds For Illegal Or Improper Activity (JAN 1997) |
| 52.203-10 | - | Price Or Fee Adjustment For Illegal Or Improper Activity (JAN 1997) |
| 52.203-12 | - | Limitation On Payments To Influence Certain Federal Transactions (JUN 1997) |
| 52.204-4 | - | Printing/Copying Double-Sided On Recycled Paper (JUN 1996) |
| 52.209-6 | - | Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (JUL 1995) |
| 52.211-5 | - | Material Requirements (OCT 1997) |
| 52.211-15 | - | Defense Priority and Allocation Requirements (SEP 1990) |
| 52.215-2 | - | Audit And Records-Negotiation (AUG 1996) |
| 52.215-8 | - | Order of Precedence - Uniform Contract Format (OCT 1997) |
| 52.215-14 | - | Integrity of Unit Prices (OCT 1997) |
| 52.215-17 | - | Waiver of Facilities Capital Cost of Money (OCT 1997) |
| 52.215-21 | - | Requirements for Cost and Pricing Data or Information Other Than Cost or Pricing Data - Modifications (OCT 1997) - Alternate IV (OCT 1997) |
| 52.219-8 | - | Utilization Of Small, Small Disadvantaged and Women-Owned Small Business Concerns (JUN 1997) |
| 52.219-9 | - | Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (AUG 1996) |
| 52.219-16 | - | Liquidated Damages - Subcontracting Plan (OCT 1995) |
| 52.219-23 | - | Notice of Price Evaluation Adjustment For Small Disadvantaged Business Concerns (OCT 1998) Offers will be evaluated by adding a factor of 10%.
___ Offeror elects to waive the adjustment |

- 52.222-1 - Notice To The Government Of Labor Disputes (FEB 1997)
- 52.222-3 - Convict Labor (AUG 1996)
- 52.222-4 - Contract Work Hours And Safety Standards Act-Overtime Compensation (JUL 1995)
- 52.222-20 - Walsh-Healey Public Contracts Act (DEC 1996)
- 52.222-21 - Prohibition of Segregated Facilities (APR 1984) (DEVIATION)
- 52.222-26 - Equal Opportunity (APR 1984) (DEVIATION)
- 52.222-29 - Notification Of Visa Denial (APR 1984) (DEVIATION)
- 52.222-35 - Affirmative Action For Disabled Veterans And Veterans Of The Vietnam Era (APR 1998)
- 52.222-36 - Affirmative Action For Handicapped Workers (APR 1984)
- 52.222-37 - Employment Reports On Disabled Veterans And Veterans Of The Vietnam Era (APR 1998)
- 52.223-2 - Clean Air And Water (APR 1984)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)
- 52.223-5 - Pollution Prevention and Right-To-Know Information (APR 1998)
- 52.223-6 - Drug-Free Workplace (JAN 1997)
- 52.223-14 - Toxic Chemical Release Reporting (OCT 1996)
- 52.225-3 - Buy American Act - Supplies (JAN 1994)
- 52.225-10 - Duty-Free Entry (APR 1984)
- 52.225-11 - Restrictions On Certain Foreign Purchases (OCT 1996)
- 52.226-1 - Utilization Of Indian Organizations And Indian-Owned Economic Enterprises (SEP 1996)
- 52.227-1 - Authorization And Consent (JUL 1995)
- 52.227-2 - Notice And Assistance Regarding Patent And Copyright Infringement (AUG 1996)
- 52.227-11 - Patent Rights - Retention By The Contractor (Short Form) (JUN 1997)
- 52.227-12 - Patent Rights - Retention By The Contractor (Long Form) (JAN 1997)
- 52.229-3 - Federal, State, And Local Taxes (JAN 1991)
- 52.229-5 - Taxes - Contracts Performed In U.S. Possessions Or Puerto Rico (APR 1984)
- 52.229-6 - Taxes - Foreign Fixed-Price Contracts (JAN 1991)
- 52.229-7 - Taxes - Fixed-Price Contracts With Foreign Governments (JAN 1991)
- 52.230-2 - Cost Accounting Standards (APR 1998)
- 52.230-3 - Disclosure And Consistency Of Cost Accounting Practices (APR 1998)
- 52.230-4 - Consistency In Cost Accounting Practices (AUG 1992)
- 52.230-5 - Cost Accounting Standards - Educational Institution (APR 1998)
- 52.230-6 - Administration Of Cost Accounting Standards (APR 1996)
- 52.232-1 - Payments (APR 1984)
- 52.232-8 - Discounts For Prompt Payment (MAY 1997)
- 52.232-9 - Limitation On Withholding Of Payments (APR 1984)
- 52.232-11 - Extras (APR 1984)
- 52.232-16 - Progress Payments (JUL 1991)
- 52.232-16 - Progress Payments (JUL 1991) Alternate I (AUG 1987)
- 52.232-17 - Interest (JUN 1996)
- 52.232-23 - Assignment Of Claims (JAN 1986)
- 52.232-25 - Prompt Payment (JUN 1997)
- 52.233-1 - Disputes (OCT 1995)
- 52.233-3 - Protest After Award (AUG 1996)

- 52.242-13 - Bankruptcy (JUL 1995)
- 52.243-1 - Changes - Fixed Price (AUG 1987)
- 52.243-6 - Change Order Accounting (APR 1984)
- 52.244-1 - Subcontracts (Fixed-Price Contracts) (OCT 1997)
- 52.244-1 - Subcontracts (Fixed-Price Contracts) (OCT 1997) Alternate I (APR 1984)
- 52.244-5 - Competition In Subcontracting (DEC 1996)
- 52.245-2 - Government Property (Fixed-Price Contracts) (DEC 1989)
- 52.245-2 - Government Property (Fixed-Price Contracts) (DEC 1989) Alternate I (APR 1984) (DEVIATION)
- 52.245-2 - Government Property (Fixed-Price Contracts) (DEC 1989) Alternate II (JUL 1985) (DEVIATION)
- 52.245-4 - Government-Furnished Property (Short Form) (APR 1984)
- 52.245-5 - Government Property (Cost-Reimbursement, Time-And-Material, Or Labor-Hour Contracts) (JAN 1986) (DEVIATION)
- 52.245-5 - Government Property (Cost-Reimbursement, Time-And-Material, Or Labor-Hour Contracts) (JAN 1986) - Alternate I (JUL 1985) (DEVIATION)
- 52.245-9 - Use And Charges (APR 1984)(DEVIATION)
- 52.245-17 - Special Tooling (DEC 1989)DEVIATION
- 52.245-18 - Special Test Equipment (FEB 1993)
- 52.245-19 - Government Property Furnished "As Is" (APR 1984)
- 52.246-18 - Warranty of Supplies of a Complex Nature (APR 1984)
- 52.246-23 - Limitation Of Liability (FEB 1997)
- 52.246-24 - Limitation Of Liability - High-Value Items (FEB 1997)
- 52.248-1 - Value Engineering (MAR 1989)
- 52.249-2 - Termination For Convenience Of The Government (Fixed Price) (SEP 1996)
- 52.249-5 - Termination For Convenience Of The Government (Educational And Other Nonprofit Institutions) (SEP 1996)
- 52.249-8 - Default (Fixed-Price Supply And Service) (APR 1984)
- 52.252-6 - Authorized Deviations in Clauses (APR 1984) fill in Defense Federal Acquisition Regulation Supplement (48 CFR Chapter 2);
- 52.253-1 - Computer Generated Forms (JAN 1991)

DFARS CLAUSE TITLE

- 252.201-7000 - Contracting Officer's Representative (DEC 1991)
- 252.203-7001 - Special Prohibition On Employment (JUN 1997)
- 252.204-7000 - Disclosure Of Information (DEC 1991)
- 252.204-7002 - Payment For Subline Items Not Separately Priced (DEC 1991)
- 252.204-7003 - Control Of Government Personnel Work Product (APR 1992)
- 252.204-7004 - Required Central Contractor Registration (MAR 1998)
- 252.205-7000 - Provision Of Information To Cooperative Agreement Holders (DEC 1991)
- 252.209-7000 - Acquisition From Subcontractors Subject To On-Site Inspection Under The Intermediate-Range Nuclear Forces (INF) Treaty (NOV 1995)
- 252.209-7003 - Compliance With Veterans' Employment Reporting Requirements (MAR 1998)
- 252.209-7004 - Subcontracting With Firms That Are Owned Or Controlled By The Government Of A Terrorist Country (MAR 1998)

- 252.209-7005 - Military Recruiting on Campus (FEB 1996)
- 252.215-7002 - Cost Estimating System Requirements (OCT 1998)
- 252.219-7001 - Notice Of Partial Small Business Set-Aside With Preferential Consideration For Small Disadvantaged Business Concerns (MAY 1995) Alternate I (MAY 1994)
- 252.219-7002 - Notice Of Small Disadvantaged Business Set-Aside (MAY 1995) Alternate I (MAY 1994)
- 252.219-7003 - Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DoD Contracts) (APR 1996)
- 252.219-7004 - Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (Test Program) (JUN 1997)
- 252.219-7005 - Incentive For Subcontracting With Small Businesses, Small Disadvantaged Businesses, Historically Black Colleges And Universities, And Minority Institutions (OCT 1998) If the Contractor exceeds the small disadvantaged business, historically black college and university, minority institution goal of its subcontracting plan, at completion of contract performance, the Contractor will receive 1 percent of the excess.
- 252.223-7001 - Hazard Warning Labels (DEC 1991)
- 252.223-7004 - Drug-Free Work Force (SEP 1988)
- 252.225-7001 - Buy American Act And Balance Of Payments Program (MAR 1998)
- 252.225-7002 - Qualifying Country Sources As Subcontractors (DEC 1991)
- 252.225-7009 - Duty-Free Entry - Qualifying Country Supplies (End Products And Components) (MAR 1998)
- 252.225-7010 - Duty-Free Entry - Additional Provisions (MAR 1998)
- 252.225-7012 - Preference for Certain Domestic Commodities (SEP 1997)
- 252.225-7025 - Restriction On Acquisition Of Forgings (JUN 1997)
- 252.225-7026 - Reporting of Contract Performance Outside the United States (MAR 1998)
- 252.225-7031 - Secondary Arab Boycott Of Israel (JUN 1992)
- 252.225-7043 - Antiterrorism/Force Protection Policy For Defense Contractors Outside The United States (JUN 1998)
- 252.226-7000 - Notice Of Historically Black College Or University And Minority Institution Set-Aside (APR 1994)
- 252.227-7000 - Non-Estoppel (OCT 1966)
- 252.227-7001 - Release Of Past Infringement (AUG 1984)
- 252.227-7013 - Rights In Technical Data--Noncommercial Items (NOV 1995)
- 252.227-7014 - Rights In Noncommercial Computer Software And Noncommercial Computer Software Documentation (JUN 1995)
- 252.227-7016 - Rights In Bid or Proposal Information (JUN 1995)
- 252.227-7019 - Validation Of Asserted Restrictions--Computer Software (JUN 1995)
- 252.227-7025 - Limitations On The Use Or Disclosure Of Government-Furnished Information Marked With Restrictive Legends (JUN 1995)
- 252.227-7026 - Deferred Delivery Of Technical Data Or Computer Software (APR 1988)
- 252.227-7027 - Deferred Ordering Of Technical Data Or Computer Software (APR 1988)
- 252.227-7030 - Technical Data--Withholding Of Payment (OCT 1988)
- 252.227-7034 - Patents--Subcontracts (APR 1984)
- 252.227-7036 - Certification Of Technical Data Conformity (JAN 1997)
- 252.227-7037 - Validation Of Restrictive Markings On Technical Data (NOV 1995)
- 252.227-7039 - Patents--Reporting of Subject Inventions (APR 1990)

- 252.231-7000 - Supplemental Cost Principles (DEC 1991)
- 252.232-7004 - DoD Progress Payment Rates (FEB 1996)
- 252.232-7009 - Payment By Electronic Funds Transfer (CCR) (JUN 1998)
- 252.233-7000 - Certification Of Claims And Requests For Adjustment Or Relief (MAY 1994)
- 252.242-7000 - Postaward Conference (DEC 1991)
- 252.242-7004 - Material Management And Accounting System (SEP 1996)
- 252.243-7001 - Pricing Of Contract Modifications (DEC 1991)
- 252.243-7002 - Requests for Equitable Adjustment (MAR 1998)
- 252.245-7001 - Reports of Government Property (MAY 1994)
- 252.247-7023 - Transportation Of Supplies By Sea (NOV 1995)
- 252.247-7024 - Notification Of Transportation Of Supplies By Sea (NOV 1995)
- 252.248-7000 - Preparation of Value Engineering Change Proposals (MAY 1994)

I-2 52.217-5 -- Evaluation of Options (JUL 1990)

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 offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

(End of Provision)

I-3 FAR 52.223-11 - OZONE-DEPLETING SUBSTANCES (JUN 1996)

(a) Definitions.

"Ozone-depleting substance", as used in this clause, means any substance designated as Class I by the Environmental Protection Agency (EPA) (40 CFR Part 82), including but not limited to chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or any substance designated as Class II by EPA (40 CFR Part 82), including but not limited to hydrochlorofluorocarbons.

(b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j (b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

"WARNING: Contains (or manufactured with, if applicable) _____*, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere."

* The Contractor shall insert the name of the substance(s).

I-4 DFARS 252.225-7008 - SUPPLIES TO BE ACCORDED DUTY- FREE ENTRY (MAR 1998)

In accordance with paragraph (b) of the Duty-Free Entry clause of this contract, in addition to duty-free entry for all qualifying country supplies (end products and components) and all eligible end products subject to applicable trade agreements (if this contract contains the Buy American Act - Trade Agreements - Balance of Payments Program clause or the Buy American Act - North American Free Trade Agreement Implementation Act - Balance of Payments Program clause), the following foreign end products that are neither qualifying country end products nor eligible end products under a trade agreement, and the following nonqualifying country components, are accorded duty free entry.

PART III - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS

SECTION J

LIST OF ATTACHMENTS

- J-1** Attachment (1) - Specifications - 27 Pages, with Exhibit A - DD Form 1423, Contract Data Requirements and Enclosure 1, Instructions for Distribution, 3 Pages.

PART IV - REPRESENTATIONS AND INSTRUCTIONS**SECTION K****REPRESENTATIONS, CERTIFICATIONS
AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS**

K-1 The following Representations, Certifications, and Other Statements Of Offerors Or Respondents are incorporated by reference with the same force and effect as if they were given in full text.

FAR CLAUSE TITLE

52.203-11 - Certification And Disclosure Regarding Payments To Influence Certain Federal Transactions (APR 1991)

DFARS CLAUSE TITLE

252.209-7001 - Disclosure Of Ownership Or Control By The Government Of A Terrorist Country (MAR 1998)

K-2 FAR 52.204-3 - TAXPAYER IDENTIFICATION (JUN 1997)

(a) *Definitions.*

"Common parent," as used in the solicitation provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

"Corporate status," as used in this solicitation provision, means a designation as to whether the offeror is a corporate entity, an unincorporated entity, (e.g., sole proprietorship or partnership), or corporation providing medical and health care services.

"Taxpayer Identification Number (TIN)," as used in this solicitation provision, means the number required by the IRS to be used by the offeror in reporting income tax and other returns.

(b) All offerors are required to submit the information required in paragraphs (c) through (e) of this solicitation provision in order to comply with reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service (IRS). If the resulting contract is subject to reporting requirements described in FAR 4.903, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) *Taxpayer Identification Number (TIN).*

TIN: _____.

- TIN has been applied for.
- TIN is not required because:
- Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the U.S. and does not have an office or place of business or a fiscal paying agent in the U.S.;
 - Offeror is an agency or instrumentality of a foreign government;
 - Offeror is an agency or instrumentality of a Federal, state, or local government;
 - Other. State basis. _____

(d) *Corporate Status.*

- Corporation providing medical and health care services, or engaged in the billing and collecting of payments for such services;
- Other corporate entity;
- Not a corporate entity;
- Sole proprietorship
 - Partnership
 - Hospital or extended care facility described in 26 CFR 501(c)(3) that is exempt from taxation under 26 CFR 501(a).

(e) *Common Parent.*

- Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this clause.
- Name and TIN of common parent:

Name _____

TIN _____

K-3 FAR 52.203-2 - CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (APR 1985)

(a) The offeror certifies that:

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to (i) those prices; (ii) the intention to submit an offer; or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory:

(1) Is the person in the offeror's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision; or

(2) (i) Has been authorized, in writing to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision

_____ [*insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization*];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) of this provision have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision.

(c) If the offeror deletes or modifies subparagraph (a)(2) of this provision, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

K-4 FAR 52.204-5 - WOMEN-OWNED BUSINESS (OCT 1995)

(a) *Representation.* The offeror represents that it is, is not a women-owned business concern.

(b) *Definition.* "Women-owned business concern," as used in this provision, means a concern which is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

K-5 FAR 52.207-4 - ECONOMIC PURCHASE QUANTITY--SUPPLIES (AUG 1987)

(a) Offerors are invited to state an opinion on whether the quantity(ies) of supplies on which bids, proposals or quotes are requested in this solicitation is (are) economically advantageous to the Government.

(b) Each offeror who believes that acquisitions in different quantities would be more advantageous is invited to recommend an economic purchase quantity. If different quantities are

recommended, a total and a unit price must be quoted for applicable items. An economic purchase quantity is that quantity at which a significant price break occurs. If there are significant price breaks at different quantity points, this information is desired as well.

OFFEROR RECOMMENDATIONS

<u>ITEM</u>	<u>QUANTITY</u>	<u>PRICE QUOTATION</u>	<u>TOTAL</u>
<hr/>			
<hr/>			
<hr/>			

(c) The information requested in this provision is being solicited to avoid acquisitions in disadvantageous quantities and to assist the Government in developing a data base for future acquisitions of these items. However, the Government reserves the right to amend or cancel the solicitation and resolicit it with respect to any individual item in the event quotations received and the Government's requirements indicate that different quantities should be acquired.

K-6 FAR 52.209-5 - CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (MAR 1996)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that-

(i) The Offeror and/or any of its Principals:

(A) Are are not presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have have not , within a 3-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are are not presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a)(1)(i)(B) of this provision. The Offeror and/or any of its Principals-

(ii) The Offeror has has not , within a 3-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

THIS CERTIFICATION CONCERNS A MATTER WITHIN THE JURISDICTION OF AN AGENCY OF THE UNITED STATES AND THE MAKING OF A FALSE, FICTITIOUS, OR FRAUDULENT CERTIFICATION MAY RENDER THE MAKER SUBJECT TO PROSECUTION UNDER SECTION 1001, TITLE 18, UNITED STATES CODE.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror non-responsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

K-7 FAR 52.215-4 -TYPE OF BUSINESS ORGANIZATION (OCT 1997)

The offeror or respondent, by checking the applicable box, represents that -

(a) It operates as an individual, a partnership, a nonprofit organization, a joint venture, or a corporation incorporated under the laws of the State of _____.

(b) If the offeror or respondent is a foreign entity, it operates as an individual, a partnership, a nonprofit organization, a joint venture, or a corporation, registered for business in _____.
(country)

K-8 FAR 52.215-6 -PLACE OF PERFORMANCE (OCT 1997)

(a) The offeror or respondent, in the performance of any contract resulting from this solicitation, intends, does not intend [check applicable block] to use one or more plants or facilities located at a different address from the address of the offeror or respondent as indicated in this proposal or response to request for information.

(b) If the offeror or respondent checks "intends" in paragraph (a) of this provision, it shall insert in the following spaces the required information:

PLACE OF PERFORMANCE
(STREET ADDRESS, CITY,
STATE, COUNTY, ZIP CODE)

NAME AND ADDRESS OF OWNER
AND OPERATOR OF THE PLANT
OR FACILITY IF OTHER THAN
OFFEROR OR RESPONDENT

K-9 FAR 52.219-1 - SMALL BUSINESS PROGRAM REPRESENTATIONS (OCT 1998)

(a) (1) The standard industrial classification (SIC) code for this acquisition is _____.
[insert SIC code]

(2) The small business size standard is _____. [insert size standard]

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) *Representation.*

(1) The offeror represents as part of its offer that it is , is not a small business concern.

(2) (Complete only if offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, for general statistical purposes, that it is, is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) (Complete only if offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it is, is not a women-owned small business concern.

(c) *Definitions.*

"Small business concern", as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in CFR Part 121 and the size standard in paragraph (a) of this provision.

"Women-owned small business concern", as used in this provision, means a small business concern -

(1) Which is at least 51 percent owned by one or more women or, in the case of any publicly owned business , at least 51 percent of the stock of which is owned by one ore more women; and

(2) Whose management and daily business operations are controlled by one ore more women.

(d) *Notice.*

(1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small or small disadvantaged business concern in order to obtain a contract to be awarded under the

preference programs established pursuant to sections 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall --

- (i) Be punished by imposition of fine, imprisonment, or both;
- (ii) Be subject to administrative remedies, including suspension and debarment; and
- (iii) Be ineligible for participation in programs conducted under the authority of the Act.

Alternate I (OCT 1998)

(4) (Complete if offeror represented itself as disadvantaged in paragraph (b) (2) of this provision). [*The offeror shall check the category in which its ownership falls*]:

_____ Black American.

_____ Hispanic American.

_____ Native American (American Indians, Eskimos, Aleuts, or Native Hawaiians).

_____ Asian-Pacific American (persons with origins from Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Japan, China, Taiwan, Laos, Cambodia (Kampuchea), Vietnam, Korea, The Philippines, U.S. Trust Territory of the Pacific Islands (Republic of Palau), Republic of the Marchall Islands, Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, Guam, Samoa, Macao, Hong Kong, Fiji, Tonga, Kiribati, Tuvalu, or Nauru).

_____ Subcontinent Asian (Asian-Indian) American (persons with origins from India, Pakistan, Bangladesh, SriLanka, Bhutan, the Maldives Islands, or Nepal).

_____ Individual/concern, other than one of the preceding.

K-10 FAR 52.219-22 - SMALL DISADVANTAGED BUSINESS STATUS (OCT 1998)

(a) *General.* This provision is used to assess an offeror's small disadvantaged business status for the purpose of obtaining a benefit on this solicitation. Status as a small business and status as a small disadvantaged business for general statistical purposes is covered by the provision at FAR 52.219-1, Small Business Program Representation.

(b) *Representations.* (1) *General.* The offeror represents, as part of its offer, that it is a small business under the size standard applicable to this acquisition; and either--

(i) It has received certification by the Small Business Administration as a small disadvantaged business concern consistent with 13 CFR 124, Subpart B; and

(A) No material change in disadvantaged ownership and control has occurred since its certification;

(B) Where the concern is owned by one or more disadvantaged individuals, the net worth of each individual upon whom the certification is based does not exceed \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(C) It is listed, on the date of this representation, on the register of small disadvantaged business concerns maintained by the Small Business Administration; or

(ii) It has submitted a completed application to the Small Business Administration or a Private Certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR 124, Subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since its application was submitted.

(2) *For Joint Ventures.* The offeror represents, as part of its offer, that it is a joint venture that complies with the requirements at 13 CFR 124.1002(f) and that the representation in paragraph (b)(1) of this provision is accurate for the small disadvantaged business concern that is participating in the joint venture. [*The offeror shall enter the name of the small disadvantaged business concern that is participating in the joint venture:_____.*]

(c) *Penalties and Remedies.* Anyone who misrepresents any aspects of the disadvantaged status of a concern for the purposes of securing a contract or subcontract shall--

- (1) Be punished by imposition of a fine, imprisonment, or both;
- (2) Be subject to administrative remedies, including suspension and debarment; and
- (3) Be ineligible for participation in programs conducted under the authority of the Small Business Act.

**K-11 FAR 52.222-22 - PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (APR 1984)
(DEVIATION)**

The offeror represents that--

(a) It has, has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation,

(b) It has, has not filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

K-12 FAR 52.222-25 - AFFIRMATIVE ACTION COMPLIANCE (APR 1984)

The offeror represents that --

(a) It has developed and has on file, has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or

(b) It has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

K-13 FAR 52.223-1 - CLEAN AIR AND WATER CERTIFICATION (APR 1984)

The Offeror certifies that--

(a) Any facility to be used in the performance of this proposed contract is , is not listed on the Environmental Protection Agency List of Violating Facilities;

(b) The Offeror will immediately notify the Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the Offeror proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and

(c) The Offeror will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

K-14 FAR 52.223-13 - CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (OCT 1996)

(a) Submission of this certification is a prerequisite for making or entering into this contract imposed by Executive Order 12969, August 8, 1995.

(B) By signing this offer, the offeror certifies that --

(1) As the owner or operator of facilities that will be used in the performance of this contract that are subject to the filing and reporting requirements described in section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023) and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106), the offeror will file and continue to file for such facilities for the life of the contract the Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of EPCRA and section 6607 of PPA; or

(2) None of its owned or operated facilities to be used in the performance of this contract is subject to the Form R filing and reporting requirements because each such facility is exempt for at least one of the following reasons: *(Check each block that is applicable)*

(i) The facility does not manufacture, process, or otherwise use any toxic chemicals listed under section 313(c) of EPCRA, 42 U.S.C. 11023(c);

(ii) The facility does not have 10 or more full-time employees as specified in section 313(b)(1)(A) of EPCRA, 42 U.S.C. 11023(b)(1)(A);

(iii) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

(iv) The facility does not fall within Standard Industrial Classification Code (SIC) designations 20 through 39 as set forth in section 19.102 of the Federal Acquisition Regulation; or

(v) The facility is not located within any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, or any other territory or possession over which the United States has jurisdiction.

K-15 52.225-1 - BUY AMERICAN CERTIFICATE (DEC 1989)

The offeror certifies that each end product, except those listed below, is a domestic end product (as defined in the clause entitled "Buy American Act - Supplies"), and that components of unknown origin are considered to have been mined, produced, or manufactured outside the United States.

EXCLUDED END PRODUCTS

COUNTRY OF ORIGIN

K-16 52.226-2 - HISTORICALLY BLACK COLLEGE OR UNIVERSITY AND MINORITY INSTITUTION REPRESENTATION (MAY 1997)

(a) *Definitions.* As used in this provision--

“Historically Black College or University” means an institution determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. For the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, the term also includes any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

“Minority Institution” means an institution of higher education meeting the requirements of Section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1135d-5(3)) which, for the purpose of this provision, includes a Hispanic-serving institution of higher education as defined in Section 316(b)(1) of the Act (20 U.S.C. 1059c(b)(1)).

(b) *Representation.* The offeror represents that it--

is is not a Historically Black College or University;

is is not a Minority Institution.

(End of provision)

K-17 FAR 52.227-6 - ROYALTY INFORMATION (APR 1984)

(a) *Cost or charges for royalties.* When the response to this solicitation contains costs or charges for royalties totaling more than \$250, the following information shall be included in the response relating to each separate item of royalty or license fee:

- (1) Name and address of licensor.
- (2) Date of license agreement.
- (3) Patent numbers, patent application serial numbers, or other basis on which the royalty is payable.
- (4) Brief description, including any part or model numbers of each contract item or component on which the royalty is payable.
- (5) Percentage or dollar rate of royalty per unit.
- (6) Unit price of contract item.
- (7) Number of units.
- (8) Total dollar amount of royalties.

(b) *Copies of current licenses.* In addition, if specifically requested by the Contracting Officer before execution of the contract, the offeror shall furnish a copy of the current license agreement and an identification of applicable claims of specific patents.

K-18 FAR 52.230-1 - COST ACCOUNTING STANDARDS NOTICES AND CERTIFICATION (APR

1998)

Note: This notice does not apply to small businesses or foreign governments. This notice is in three parts, identified by Roman numerals I through III.

Offerors shall examine each part and provide the requested information in order to determine Cost Accounting Standards (CAS) requirements applicable to any resultant contract.

If the offeror is an educational institution, Part II does not apply unless the contemplated contract will be subject to full or modified CAS coverage pursuant to 48 CFR 9903.201-2(c)(5) or 9903.201-2(c)(6), respectively.

I. DISCLOSURE STATEMENT--COST ACCOUNTING PRACTICES AND CERTIFICATION

(a) Any contract in excess of \$500,000 resulting from this solicitation, except contracts in which the price negotiated is based on (1) established catalog or market prices of commercial items sold in substantial quantities to the general public, or (2) prices set by law or regulation, will be subject to the requirements of the Cost Accounting Standards Board (48 CFR Chapter 99), except for those contracts which are exempt as specified in 48 CFR 9903.201-1.

(b) Any offeror submitting a proposal which, if accepted, will result in a contract subject to the requirements of 48 CFR Chapter 99 must, as a condition of contracting, submit a Disclosure Statement as required by 48 CFR 9903.202. When required, the Disclosure Statement must be submitted as a part of the offeror's proposal under this solicitation unless the offeror has already submitted a Disclosure Statement disclosing the practices used in connection with the pricing of this proposal. If an applicable Disclosure Statement has already been submitted, the offeror may satisfy the requirement for submission by providing the information requested in paragraph (c) of Part I of this provision.

CAUTION: In the absence of specific regulations or agreement, a practice disclosed in a Disclosure Statement shall not, by virtue of such disclosure, be deemed to be a proper, approved, or agreed-to practice for pricing proposals or accumulating and reporting contract performance cost data.

(c) Check the appropriate box below:

(1) *Certificate of Concurrent Submission of Disclosure Statement.*

The offeror hereby certifies that, as a part of the offer, copies of the Disclosure Statement have been submitted as follows: (i) original and one copy to the cognizant Administrative Contracting Officer (ACO) or cognizant Federal agency official authorized to act in that capacity (Federal official), as applicable, and (ii) one copy to the cognizant Federal auditor.

(Disclosure must be on Form No. CASB-DS-1 or CASB DS-2, as applicable. Forms may be obtained from the cognizant ACO Federal official and/or from the loose-leaf version of the Federal Acquisition Regulation.)

Date of Disclosure Statement: _____

Name and Address of Cognizant ACO or Federal Official Where Filed: _____

The offeror further certifies that the practices used in estimating costs in pricing this proposal are consistent with the cost accounting practices disclosed in the Disclosure Statement.

(2) *Certificate of Previously Submitted Disclosure Statement*

The offeror hereby certifies that Disclosure Statement was filed as follows:

Date of Disclosure Statement: _____

Name and Address of Cognizant ACO or Federal Official Where Filed: _____

The offeror further certifies that the practices used in estimating costs in pricing this proposal are consistent with the cost accounting practices disclosed in the applicable Disclosure Statement.

(3) *Certificate of Monetary Exemption*

The offeror hereby certifies that the offeror, together with all divisions, subsidiaries, and affiliates under common control, did not receive net awards of negotiated national defense prime contracts and subcontracts subject to CAS totaling more than \$25 MILLION (of which at least one award exceeded \$1 MILLION) in the cost accounting period immediately preceding the period in which this proposal was submitted. The offeror further certifies that if such status changes before an award resulting from this proposal, the offeror will advise the Contracting Office immediately.

(4) *Certificate of Interim Exemption*

The offeror hereby certifies that (i) the offeror first exceeded the monetary exemption for disclosure, as defined in (3) of this subsection, in the cost accounting period immediately preceding the period in which this offer was submitted and (ii) in accordance with 48 CFR 9903.202-1, the offeror is not yet required to submit a Disclosure Statement. The offeror further certifies that if an award resulting from this proposal has not been made within 90 days after the end of that period, the offeror will immediately submit revised a certificate to the Contracting Officer, in the form specified under subparagraphs (c)(1) or (c)(2) of Part I of this provision, as appropriate, to verify submission of completed Disclosure Statement.

CAUTION: Offerors currently required to disclose because they were awarded a CAS-covered prime contract or subcontract of \$25 MILLION or more in the current cost accounting period may not claim this exemption (4). Further, the exemption applies only in connection with proposals submitted before expiration of the 90-day period following the cost accounting period in which the monetary exemption was exceeded.

II. COST ACCOUNTING STANDARDS - ELIGIBILITY FOR MODIFIED CONTRACT COVERAGE

If the offeror is eligible to use the modified provisions of 48 CFR 9903.201-2(b) and elects to do so, the offeror shall indicate by checking the box below. Checking the box below shall mean that the resultant contract is subject to the Disclosure and Consistency of Cost Accounting Practices clause in lieu of the Cost Accounting Standards clause.

The offeror hereby claims an exemption from the Cost Accounting Standards clause under the provisions of 48 CFR 9903.201-2(b) and certifies that the offeror is eligible for use of the Disclosure and Consistency of Cost Accounting Practices clause because during the cost accounting period immediately preceding the period in which this proposal was submitted, the offeror received less than \$25 MILLION in awards of CAS-covered prime contracts and subcontracts, or the offeror did not receive a single CAS-covered award exceeding \$1 MILLION. The offeror further certifies that if such status changes before an award resulting from this proposal, the offeror will advise the Contracting Officer immediately.

CAUTION: An offeror may not claim the above eligibility for modified contract coverage if this proposal is expected to result in the award of a CAS-covered contract of \$25 MILLION or more or if, during its current cost accounting period, the offeror has been awarded a single CAS-covered prime contract or subcontract of \$25 MILLION or more.

III. ADDITIONAL COST ACCOUNTING STANDARDS APPLICABLE TO EXISTING CONTRACTS.

The offeror shall indicate below whether award of the contemplated contract would, in accordance with paragraph (a)(3) of the Cost Accounting Standards clause, require a change in established cost accounting practices affecting existing contracts and subcontracts.

YES NO

Alternate I (APR 1996).

(5) *Certificate of Disclosure Statement Due Date by Educational Institution.* If the offeror is an educational institution that, under the transition provisions of 48 CFR 3303.202-1(f), is or will be required to submit a Disclosure Statement after receipt of this award, the offeror hereby certifies that (check one and complete):

(i) A Disclosure Statement Filing Due Date of _____ has been established with the cognizant Federal agency.

(ii) The Disclosure Statement will be submitted within the 6-month period ending _____ months after receipt of this award.

Name and Address of Cognizant ACO or Federal Official Where Disclosure Statement is to be Filed:

K-19 DFARS 252.209-7002 DISCLOSURE OF OWNERSHIP OR CONTROL BY A FOREIGN

GOVERNMENT (SEP 1994)

(a) *Definitions.*

As used in this provision --

(1) "Effectively owned or controlled" means that a foreign government or any entity controlled by a foreign government has the power, either directly or indirectly, whether exercised or exercisable, to control or influence the election, appointment, or tenure of the Offeror's board of directors by any means, e.g., ownership, contract, or operation of law (or equivalent power for unincorporated organizations).

(2) "Entity controlled by a foreign government" --

(i) Means --

(A) Any domestic or foreign organization or corporation that is effectively owned or controlled by a foreign government; or

(B) Any individual acting on behalf of a foreign government.

(ii) Does not include an organization or corporation that is owned, but is not controlled, either directly or indirectly, by a foreign government of the ownership of that organization or corporation by that foreign government was effective before October 23, 1992.

(3) "Foreign government" includes the state and the government of any country (other than the United States and its possessions and trust territories) as well as any political subdivision, agency, or instrumentality thereof.

(4) "Proscribed information" means --

(i) Top Secret information;

(ii) Communications Security (COMSEC) information, except classified keys used to operate secure telephone units (STU IIIs);

(iii) Restricted Data as defined in the U.S. Atomic Energy Act of 1954, as amended;

(iv) Special Access Program (SAP) information; or

(v) Sensitive Compartmented Information (SCI).

(b) *Prohibited on award.*

No contract under a national security program may be awarded to an entity controlled by a foreign government if that company requires access to proscribed information to perform the contract, unless the Secretary of Defense or a designee has waived application of 10 U.S.C. 2536(a).

(c) *Disclosure.*

The Offeror shall disclose any interest a foreign government has in the Offeror when that interest constitutes control by a foreign government as defined in this provision. If the Offeror is a subsidiary, it shall also disclose any reportable interest a foreign government has in any entity that owns or controls the subsidiary, including reportable interest concerning the Offeror's immediate parent, intermediate parents, and the ultimate parent. Use separate paper as needed, and provide the information in the following format:

Offeror's Point of Contact for Questions about Disclosure (Name and Phone Number with Country Code, City Code and Area Code, as applicable)

Name and Address of Offeror

Name and Address of Entity
Controlled by a Foreign
Government

Description of Interest, Ownership
Percentage, and Identification
of Foreign Government

_____	_____
_____	_____
_____	_____
_____	_____

K-20 DFARS 252.209-7003 - COMPLIANCE WITH VETERANS' EMPLOYMENT REPORTING REQUIREMENTS (MAR 1998)

By submission of its offer, the offeror represents that, if it is subject to the reporting requirements of 37 U.S.C. 4212(d) (i.e., the VETS-100 report required by Federal Acquisition Regulation clause 52.222-37, Employment Reports on Disabled Veterans and Veterans of the Vietnam Era), it has submitted the more recent report required by 37 U.S.C. 4212(d).

K-21 DFARS 252.217-7026 - IDENTIFICATION OF SOURCES OF SUPPLY (NOV 1995)

(a) The Government is required under 10 U.S.C. 2384 to obtain certain information on the

actual manufacturer or sources of supplies it acquires.

(b) The apparently successful Offeror agrees to complete and submit the following table before award:

TABLE

Line items	National Stock No.	Commercial item (Y or N)	Sources of Supply			Actual Mfg.?
			Company	Address	Part No.	
(1)	(2)	(3)	(4)	(4)	(5)	(6)

(1) List each deliverable item of supply and item of technical data.

(2) If there is no national stock number, list "none."

(3) Use "Y" if the item is a commercial item; otherwise, use "N". If "Y" is listed, the Offeror need not complete the remaining columns in the table.

(4) For items of supply, list all sources. For technical data, list the source.

(5) For items of supply, list each source's part number for the item.

(6) Use "Y" if the source of supply is the actual manufacturer; "N" if it is not; and "U" if unknown.

K-22 DFARS 252.225-7000 - BUY AMERICAN ACT - BALANCE OF PAYMENTS PROGRAM CERTIFICATE (DEC 1991)

(a) *Definitions.*

“Domestic end product”, “qualifying country”, “qualifying country end product,” and “nonqualifying country end product” have the meanings given in the Buy American Act and Balance of Payments Program clause of this solicitation.

(b) *Evaluation.*

Offers will be evaluated by giving preference to domestic end products and qualifying country end products over nonqualifying country end products.

(c) *Certifications.*

(1) The Offeror certifies that--

(i) Each end product, except those listed in paragraphs (c)(2) or (3) of this clause, is a

domestic end product; and

(ii) Components of an unknown origin are considered to have been mined, produced, or manufactured outside the United States or a qualifying country.

(2) The Offeror certifies that following end products are qualifying country end products:

QUALIFYING COUNTRY END PRODUCTS

Line Item No.	Country of Origin
_____	_____
_____	_____
_____	_____
_____	_____

(List only qualifying country end products)

(3) The offeror certifies that the following end products are nonqualifying country end products:

NONQUALIFYING COUNTRY END PRODUCTS

Line Item No.	Country of Origin (If known)
_____	_____
_____	_____
_____	_____
_____	_____

K-23 DFARS 252.225-7003 - INFORMATION FOR DUTY-FREE ENTRY EVALUATION (MAR 1998)

(a) Does the offeror propose to furnish --

(1) A domestic end product with nonqualifying country components for which the offeror requests duty-free entry; or

(2) A foreign end product consisting of end items, components, or material of foreign origin other than those for which duty-free entry is to be accorded pursuant to the Duty-Free Entry --Qualifying Country Supplies (End Products and Components) clause or, if applicable, the Duty-Free Entry -- Eligible End Products clause of this solicitation?

YES ()

NO ()

(b) If the answer in paragraph (a) is yes, answer the following questions:

(1) Are such foreign supplies now in the United States?

YES ()

NO ()

(2) Has the duty on such foreign supplies been paid?

YES ()

NO ()

(3) If the answer to paragraph (b)(2) is no, what amount is included in the offer to cover such duty? \$_____.

(c) If the duty has not been paid, the Government may elect to make award on a duty-free basis. If so, the offered price will be reduced in the contract award by the amount specified in paragraph (b)(3). The Offeror agrees to identify, at the request of the Contracting Officer, the foreign supplies which are subject to duty-free entry.

Alternate I (MAR 1998)

(a) Does the offeror propose to furnish a U. S. made end product with nonqualifying country components for which the offeror requests duty-free entry?

YES ()

NO ()

K-24 DFARS 252.225-7020 - TRADE AGREEMENT CERTIFICATE (MAR 1998)

(a) Definitions. Caribbean Basin country end product, designated country end product, NAFTA country end product, nondesignated country end product, qualifying country end product, and U. S. made end product have the meanings given in the Trade Agreements clause of this solicitation.

(b) Evaluation. Offers will be evaluated in accordance with the policies and procedures of part 225 of the Defense Federal Acquisition Regulation Supplement. Offers of foreign end products that are not U.S. made, qualifying country, designated country, Caribbean Basin country, or NAFTA country end products will not be considered for award, unless the Contracting Officer determines that there are not offers of such end products; or the offers of such end products are insufficient to fulfill the requirements; or a national interest exception to the Trade Agreements Act is granted.

(c) Certifications. (1) The offeror certifies that each end product to be delivered under this contract, except those listed in paragraph (c) (2) of this provision, is a U.S. made, qualifying country, designated country, Caribbean Basin country, or NAFTA country end product.

(2) The following supplies are other nondesignated country end product:

Insert Line item number

Insert country of origin

K-25 DFARS 252.226-7001 - HISTORICALLY BLACK COLLEGE AND UNIVERSITY AND MINORITY INSTITUTION CERTIFICATION (APR 1994)

(a) *Definitions.*

"Historically black colleges and universities," as used in this provision, means institutions determined by the Secretary of Education to meet the requirements of 34 CFR 608.2.

"Minority institutions," as used in this provision, means institutions meeting the requirements of paragraphs (3), (4), and (5) of Section 321(b) of the Higher Education Act of 1965 (20 U.S.C. 1058). The term also means any nonprofit research institution that was an integral part of a

historically black college or university before November 14, 1986.

(b) *Certification.*

The Offeror certifies that it is--

_____A historically black college or university

_____A minority institution

(c) *Notification.*

Notify the Contracting Officer before award if your status as a historically black college or university or minority institution changes.

K-26 DFARS 252.247-7022 - REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA
(AUG 1992)

(a) The Offeror shall indicate by checking the appropriate blank in paragraph(b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term "supplies" is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) *Representation.*

The Offeror represents that it--

_____Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

_____Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notice of Transportation of Supplies by Sea.

K-27 COMMERCIAL AND GOVERNMENT ENTITY (CAGE) CODE REPORTING

The Offeror's CAGE Code is _____.

See DFARS 252.204-7001 in Section L for procedures on requesting a CAGE Code.

SECTION L

INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS OR RESPONDENTS

L-1 52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions 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. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of

those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

<http://www-far.npr.gov/References/References.html>

<http://heron.nrl.navy.mil/contracts/home.htm>

<u>FAR CLAUSE</u>	<u>TITLE</u>
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52.204-6	- Data Universal Numbering System (DUNS) Number (APR 1998)
52.214-34	- Submission Of Offers In The English Language (APR 1991)
52.214-35	- Submission Of Offers In U.S. Currency (APR 1991)
52.215-1	- Instructions to Offerors- Competitive Acquisition (OCT 1997)
52.215-16	- Facilities Capital Cost Of Money (OCT 1997)

L-2 FAR 52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 1997)ALTERNATE IV (OCT 1997)

(a) Submission of cost or pricing data is not required.

(b) Provide information described below

The offeror shall provide such pricing information as is necessary to fully cover all requirements of the RFP as they pertain to Section B, Line Items Numbers 0001 through 0021.

L-3 FAR 52.216-1 - TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a Firm Fixed Price supply contract resulting from this solicitation.

L-4 FAR 52.233-2 - SERVICE OF PROTEST (AUG 1996)

(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 (addressed as follows) by obtaining written and dated acknowledgment of receipt from the Control Desk, Code 3200, Bldg. 222, Rm. 115, Naval Research Laboratory, 4555 Overlook Ave., S.W., Washington DC 20375-5326.

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

L-5 DFARS 252.204-7001 - COMMERCIAL AND GOVERNMENT ENTITY (CAGE) CODE REPORTING (DEC 1991)

(a) The Offeror is requested to enter its CAGE code on its offer in the block with its name and address. The CAGE code entered must be for that name and address. Enter CAGE Before the number.

(b) If the Offeror does not have a CAGE code, it may ask the Contracting Officer to request one from the Defense Logistics Services Center (DLSC). The Contracting Officer will--

(1) Ask the Contractor to complete section B of a DD Form 2051, Request for Assignment of the Commercial and Government Entity (CAGE) Code;

(2) Complete section A and forward the form to DLSC; and

(3) Notify the Contractor of its assigned CAGE code.

(c) Do not delay submission of the offer pending receipt of a CAGE code.

L-6 DFARS 252.227-7017 - IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS (JUN 1995)

(a) The terms used in this provision are defined in following clause or clauses contained in this solicitation--

(1) If a successful offeror will be required to deliver technical data, the Rights in Technical Data--Noncommercial Items clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.

- (2) If a successful offeror will not be required to deliver technical data, the Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.
- (b) The identification and assertion requirements in this provision apply only to technical data, including computer software documents, or computer software to be delivered with other than unlimited rights. For contracts to be awarded under the Small Business Innovative Research Program, the notification requirements do not apply to technical data or computer software that will be generated under the resulting contract. Notification and identification is not required for restrictions based solely on copyright.
- (c) Offers submitted in response to this solicitation shall identify, to the extent known at the time an offer is submitted to the Government, the technical data or computer software that the Offeror, its subcontractors or suppliers, or potential subcontractors or suppliers, assert should be furnished to the Government with restrictions on use, release, or disclosure.
- (d) The Offeror's assertions, including the assertions of its subcontractors or suppliers or potential subcontractors or suppliers shall be submitted as an attachment to its offer in the following format, dated and signed by an official authorized to contractually obligate the Offeror:

Identification and Assertion of Restrictions on the Government's Use, Release, or Disclosure of Technical Data or Computer Software.

The Offeror asserts for itself, or the persons identified below, that the Government's rights to use, release, or disclose the following technical data or computer software should be restricted:

Technical Data or Computer Software to be Furnished With Restrictions*	Basis for Assertion**	Asserted Rights Category***	Name of Person Asserting Restrictions****
(LIST)*****.	(LIST)	(LIST)	(LIST)

* For technical data (other than computer software documentation) pertaining to items, components, or processes developed at private expense, identify both the deliverable technical data and each such items, component, or process. For computer software or computer software documentation identify the software or documentation.

** Generally, development at private expense, either exclusively or partially, is the only basis for asserting restrictions. For technical data, other than computer software documentation, development refers to development of the item, component, or process to which the data pertain. The Government's rights in computer software documentation generally may not be restricted. For computer software, development refers to the software. Indicate whether

development was accomplished exclusively or partially at private expense. If development

was not accomplished at private expense, or for computer software documentation, enter the specific basis for asserting restrictions.

*** Enter asserted rights category (e.g., government purpose license rights from a prior contract, rights in SBIR data generated under another contract, limited, restricted, or government purpose rights under this or a prior contract, or specially negotiated licenses).

**** Corporation, individual, or other person, as appropriate.

***** Enter "none" when all data or software will be submitted without restrictions.

Date _____

Printed Name and Title _____

Signature _____

(End of identification and assertion)

- (e) An offeror's failure to submit, complete, or sign the notification and identification required by paragraph (d) of this provision with its offer may render the offer ineligible for award.
- (f) If the Offeror is awarded a contract, the assertions identified in paragraph (d) of this provision shall be listed in an attachment to that contract. Upon request by the Contracting Officer, the Offeror shall provide sufficient information to enable the Contracting Officer to evaluate any listed assertion.

L-7 DFARS 252.227-7028 - TECHNICAL DATA OR COMPUTER SOFTWARE PREVIOUSLY DELIVERED TO THE GOVERNMENT (JUN 1995)

The Offeror shall attach to its offer an identification of all documents or other media incorporating technical data or computer software it intends to deliver under this contract with other than unlimited rights that are identical or substantially similar to documents or other media that the Offeror has produced for, delivered to, or is obligated to deliver to the Government under any contract or subcontract. The attachment shall identify - -

- (a) The contract number under which the data or software were produced;
- (b) The contract number under which, and the name and address of the organization to whom, the data or software were most recently delivered or will be delivered; and
- (c) Any limitations on the Government's rights to use or disclose the data or software, including, when applicable, identification of the earliest date the limitations expire.

L-8 GOVERNMENT-FURNISHED PROPERTY

No material, labor, or facilities will be furnished by the Government unless provided for in the solicitation.

L-9 INQUIRIES CONCERNING THE RFP

Any questions concerning the RFP must be submitted in writing to the Contracting Officer at the location noted in blocks 7 and 9 of the Standard Form 33, "Solicitation, Offer and Award," or to e-mail address esogard@nrlssc.navy.mil, no less than fifteen (15) days before closing. The Government will not consider questions received after this date. Offerors are cautioned against directing any questions concerning this RFP to technical personnel at the Naval Research Laboratory.

L-10 INSTRUCTIONS FOR SUBMISSION AND INFORMATION REQUIRED TO EVALUATE PROPOSALS**PART A - TECHNICAL PROPOSAL**

(1) Information for the technical proposal shall be placed in Volume I and be **completely separate from the cost/price proposal (Volume II)**.

(2) Required Copies: one original and five copies

(3) Proposal Identification/Mailing - The proposal should be packaged for delivery so as to permit safe and timely arrival at destination. The proposal package should be sent to the address shown in Block 7 of the RFP face page and marked:

RFP No. N00173-98-R-SE03

Closing Date:

(As specified in Block 9, RFP face page)

Attn: Code 3235

(4) The following information is required for evaluation of your technical proposal. Any additional information may be provided.

(a) The technical proposal must demonstrate an understanding of all requirements covered in the RFP's terms and conditions. The proposal must be sufficiently detailed and complete to demonstrate an understanding of and an ability to comply with the requirements of the RFP's Statement of Work or Specifications identified in Section C. General statements that the offeror can or will comply with the requirements, that standard procedures will be used, that well known techniques will be used, or paraphrases of the RFP's Statement of Work or Specification in whole or in part will not constitute compliance with these requirements concerning the content of the technical proposal. Failure to conform to any of the requirements of the RFP may form the basis for rejection of the proposal.

(b) The following additional information is required:

1. The technical proposal shall include any drawings, including schematic drawings, product literature or other documentation which will enable independent technical evaluation of the proposal.

2. The technical proposal shall clearly and concisely identify the Offeror's technical approach and technical qualifications to accomplish the requirements outlined in Section C. The technical proposal shall be subdivided into a "Proposal Summary" section, a "System Design/Representation of Technical Compliance" Section and a "Past Performance" Section, in that order.

(i) PROPOSAL SUMMARY

The proposal summary is an unevaluated requirement. The Offeror shall provide a concise summary, exclusive of cost, of its proposal contents. This summary should be complete, stand on its own and provide evaluation members a abridged understanding of the content of the proposal including summary of system compliance and past performance.

(ii) SYSTEM DESIGN/REPRESENTATION OF TECHNICAL COMPLIANCE

This section shall provide detailed evidence of the offeror's understanding of the scope of the Technical Performance Specifications and approach in designing a system with options that are in compliance with the requirements listed in Section C. Statements that the offeror understands, can or will meet the specifications and statements paraphrasing the specifications or parts thereof will be considered inadequate.

(iii) PAST PERFORMANCE

Offerors shall submit the following information as part of their proposal. (Offerors are encouraged to submit the information prior to other parts of the proposal to assist the government in reducing the length of the evaluation period.) List the last five contracts or subcontracts completed during the past three years for services similar in nature to this requirement. Include in the 5 any current contracts or subcontracts for similar services that were awarded at least one year prior to the date of this solicitation. Offerors that have no similar previous or current contracts should provide the requested information for proposed subcontractors that will perform major or critical aspects of the requirement or for the proposed project manager or key personnel responsible for major or critical aspects of the requirement.

1. Name of contracting organization.
2. Contract number
3. Contract type
4. Total contract value
5. Description of the contract work

6. Contracting officer and telephone number
7. Contracting officer's representative, program manager, or similar official and telephone number

Offerors shall contact the contracting organizations identified pursuant to paragraph (a) as soon as possible and request them to send past performance information on the identified contracts to the address in Block 7 of the face page of this solicitation. The past performance report which is available at <http://heron.nrl.navy.mil/contracts/home.htm> is to be provided to the contracting organization for this purpose. If the contracting organization has already collected past performance information on the contract pursuant to FAR Subpart 42.15, the format used to collect the information may be used instead of the past performance report.

Offerors may include in their proposals specific information relating to problems encountered in performing the identified contracts and any corrective actions by the offeror. Offerors should not provide general information on their performance on the identified contracts as this will be obtained from the contracting organizations.

PART B - COST/PRICE PROPOSAL

- (1) The cost/price proposal shall be in Volume II and be completely separate from the technical and management proposal (Volume I).
- (2) Required Copies: one original and two copies.

L-11 MULTIPLE AWARDS

The Government may make multiple awards resulting from this solicitation.

SECTION M

EVALUATION FACTORS FOR AWARD

M-1 EVALUATION

- (a) Technical proposals will be evaluated in accordance with the criteria stated in Section L.10. The criteria are grouped into two major categories; Technical and Price. The major category, technical, when all factors are combined, is of greater importance than price. Within the category of technical, evaluation will be completed in two phases. The first phase is verification that each proposal has met all the mandatory requirements listed below. Failure to provide evidence that these mandatory requirements have or will be met will result in the proposal being rejected as non-responsive. The second phase will entail evaluation of technical factors weighted in descending order of importance as listed in Section M.3. Finally price will be evaluated.

M-2 MANDATORY REQUIREMENTS

The initial evaluation will be to determine if the following mandatory requirements contained in Section C have been met:

- (a) Test Plan – Technical Performance Specifications (TPS), Section 3.7
- (b) Deployment/Recovery Plan and Hardware – TPS, Section 3.8
- (c) Documentation/Manuals – TPS Section 3.9
- (d) Inclusion of Section B CLINs 0017 through 0020

M-3 WEIGHTED TECHNICAL EVALUATION FACTORS

This portion of the evaluation will consider the offeror's approach to, understanding of and demonstrated capability to adequately provide the requirements listed in Section C and Attachment (1) Technical Performance Specifications. The Evaluation sub-factors to be considered are ranked in descending order of importance below with the Technical Performance Specifications Section listed in parenthesis:

M.3.1 Technical Compliance

- (a) Data Acquisition Unit (DAU) requirements (3.3)
 - (1) DAU System Timing Functions (3.3.4)
 - (2) DAU Channel Requirements (3.3.5)
 - (3) DAU Sample Requirements (3.3.6)
 - (4) DAU User Programmable Parameters (3.3.3.2)
 - (5) DAU Mechanical Requirements (3.3.1)
 - (6) DAU General Requirements (3.3.2)
 - (7) DAU Remote Control Monitoring (3.3.3.1)
 - (8) DAU User System Acquisition Schedule (3.3.3.3)
 - (9) DAU User System Status Monitoring (3.3.3.4)

- (b) Data Storage Unit (DSU) requirements (3.4)
 - (1) DSU Storage Capacity (3.4.3)
 - (2) DSU Expansion Capacity ((3.4.4)
 - (3) DSU Data Rate Transfer (3.4.6)
 - (4) DSU Connectivity (3.4.5)
 - (5) Mechanical Requirements (3.4.2)

- (c) Data Transfer Unit (DTU) requirements (3.5)
 - (1) DTU Command Control Function (3.5.2)
 - (2) DTU Expansion Options (3.5.3)
 - (3) DTU Stored Data Format (3.5.5)
 - (4) DTU Mechanical Requirements (3.5.4)

- (d) Energy Unit (EU) requirements (3.6)
 - (1) EU Electrical Requirements (3.6.2)
 - (2) EU Mechanical Requirements (3.6.3)

- (e) Acoustic Array Requirements (4.10-4.13)
 - (1) Vertical Array Requirements (4.10/4.11)
 - (2) Horizontal Array Requirements (4.12/4.13)

- (f) Basic Vertical Array Engineering Module Requirements(4.8)

- (g) Test Plan Requirements (3.7)

- (h) Documentation/Manuals (3.9)
 - (1) Operation Manuals (3.9.a)
 - (2) Technical Manuals (3.9.b)

- (i) Deployment Plan/Hardware Requirements (3.8)

- (j) Other Option requirements (4.1-4.7, 4.9,4.14-4.17)
 - (1) Acoustic Mooring Releases (4.1)
 - (2) Acoustic Positioning System (4.2)
 - (3) Acoustic Array Element Navigation (4.3)
 - (4) Acoustic Telemetry (4.4)
 - (5) Storage Capacity Up-grade (4.5)
 - (6) EU Capacity Up-grade (4.6)
 - (7) Engineering Modules (4.7)
 - (8) DAU Basebanding Option (4.9)
 - (9) Increased Array Depth (4.14)
 - (10) Vertical Array Cable (4.15)
 - (11) Horizontal Array Cable (4.16)
 - (12) Maintenance and Services Support (4.17)

M.3.2 Past Performance

Past Performance will be evaluated on the basis of the quality of the work performed, timeliness of performance, cost control, and business relations. The evaluation will be based on the information provided pursuant to Section L and other sources if available. Offerors that have no relevant performance history or for which past performance information is not available will not be evaluated favorably or unfavorably on past performance. The government may begin proposal evaluation prior to receipt of past performance information. If, after completion of proposal evaluation except evaluation of past performance, the contracting officer determines that evaluation of past performance will not affect the outcome of competitive selection, the contracting officer may waive its evaluation in accordance with FAR 15.304(c)(3)(iii).

M-4 COST/PRICE

- (a) Cost/Price consideration is not the most important evaluation factor, however, the importance of price as an evaluation factor will increase with the degree of equality of the proposals in relation to the technical category, or when it is so significantly high as to diminish the value of the technical superiority to the Government.
- (b) The Offeror's Cost/Price will be evaluated on the basis of the realism of the proposed cost/price. An Offeror's proposal is presumed to represent its best effort to respond to this solicitation. Any inconsistencies, whether real or apparent, between promised performance and cost/price should be clarified in the Offeror's Cost/Price Proposal. Any significant inconsistency raises a fundamental question of the Offeror's understanding of the nature and scope of the requirements. These unexplained inconsistencies may be ground for downgrading or rejecting the proposal. The burden of proof as to credibility rests with the Offeror.

M-5 AWARD WITHOUT DISCUSSIONS

- (a) Pursuant to Section L provision FAR 52.215-01(f)(4) entitled "Instructions of Offerors—Competitive Acquisition," and except as noted in paragraph (b) below, the Government intends to evaluate proposals and award a contract without discussion to the responsible offeror whose offer, conforming to the solicitation, is evaluated to be the most advantageous to the Government, cost or price and other factors considered. Consequently, a proposal submitted in response to the solicitation should represent the Offeror's best product in terms of technical content and cost/price.
- (b) The Government reserves the right, however, to conduct discussions if determined by the Contracting Officer to be necessary. Discussions will be conducted following evaluations only with those offerors determined to have a reasonable chance of award, in accordance with FAR part 15.306(c).

M-6 FAR 52.217-5 - EVALUATION OF OPTIONS (JUL 1990)

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 offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

M-7 BASIS FOR AWARD

The basis for award will be an integrated assessment, using the evaluation factors stated above, of the Offeror's prospect for proving the Government's needs. The Government reserves the right to reject any or all proposals. The Government also reserves the right to award to other than the lowest offeror. The Government anticipates award to a single offeror, however, multiple awards may be made if determined more advantageous to the Government, cost and other factors considered.

TECHNICAL PERFORMANCE SPECIFICATION
FOR
SEA-GOING ACOUSTIC MEASUREMENT SYSTEM

1.0 SCOPE

This specification establishes the requirements for a complete turn-key Sea-Going Acoustic Measurement System (SGAMS) to be deployed from UNOLS Class III, U.S. Navy or commercial oceanographic vessels as a fully autonomous acoustic data collection system with no sea surface expression. SGAMS shall be a modular system consisting of the following modules/hardware: Data Acquisition Unit (DAU), Data Storage Unit (DSU), Energy Unit (EU), Data Transfer Unit (DTU), acoustic hydrophone array(s), and the mechanical structure and ancillary equipment needed to make a deployable system. Each of the deployable modules (the DAU, DSU, and EU) shall be contained in individual pressure housings. The units shall be delivered so that the user can configure a system with various numbers of input channels, recording capacity, and deployment duration (increased energy capacity). The basic system shall provide for autonomous recording of 64 acoustic channels and 24 engineering sensor channels.

2.0 APPLICABLE DOCUMENTS AND GLOSSARY OF TERMS

2.1 Section 7.0 (Glossary of Terms)
Audio engineering Society AES17-1991

2.2 GLOSSARY OF TERMS:

mb	megabits (1mb = 1048576-bits)
MB	Megabytes (1MB = 1048576-bytes)
GB	Gigabytes (1GB = 1024 Megabytes)
mbs	megabits per second
MBS	Megabytes per second
rms	root mean square
Hz	hertz
kHz	kilohertz
DAU	Data Acquisition Unit
DSU	Data Storage Unit
DTU	Data Transfer Unit
EU	Energy Unit
SGAMS	Sea-Going Acoustic Measurement System
CMRR	Common Mode Rejection Ratio
GPS	Global Positioning System
A/D	Analog to Digital Converter
ADC	Analog to Digital Converter
dB	Decibels
I/O	Input/Output
COR	Contracting Officers Representative
RCM	remote control and monitoring
TTL	transition to transfer logic

Attachment (1)

3.0 REQUIREMENTS

- 3.1 System Definition. SGAMS deployed from oceanographic research vessels (UNOLS, U.S. Navy or commercial) shall serve as an acoustic data collection system for the recording of acoustic signals (phase and amplitude) which have propagated through the ocean. The base system shall include all components and equipment necessary to configure a baseline system which is safely transportable, deployable, and retrievable by end-users aboard an oceanographic vessel. The system shall include a shipboard DTU for data transfer from the DSU for archiving and evaluation and a serial communication port for an optional acoustic modem.
- 3.2 General Description. The components of the baseline SGAMS are a DAU module, DSU module, EU module, DTU module, and mechanical deployment hardware. The baseline DAU shall be designed to accept a minimum 64 channels of acoustic data and be upgradeable to 128 acoustic channels, in 32 channel increments. Inputs shall be provided for 4 engineering modules, each module containing up to six sensors for every 32 acoustic channels. The baseline DAU shall be designed to accept a minimum of eight (8) engineering modules. The DSU shall store all data collected on non-volatile media. The baseline DSU shall store a minimum 780 gigabytes of data. The EU shall provide all the energy required to operate the deployed system for a 7 day deployment. The EU shall be capable of being expanded to an energy capacity of at least one month (28 days). Deployment hardware shall consist of all mechanical components necessary for deployment of a baseline SGAMS. The DTU shall function as a system checkout/setup test instrument and shall enable at-sea transfer of DSU stored data without the requirement of opening the unit to archive collected data.
- 3.3 Data Acquisition Unit: The DAU module shall function as the collection point of all acoustic and engineering data to be collected. It shall interface to acoustic arrays, engineering sensors, receive its power from the EU, convert analog acoustic data to a digital form at an accurately controlled sample rate, and shall output a formatted data stream to the DSU. The DAU shall be programmable through a hardwired interface before deployment and shall be remotely programmable through an acoustic telemetry system after deployment.
- 3.3.1 Mechanical Requirements:
- a. Pressure housing: The DAU electronics shall be housed in a container with an operating depth in seawater of at least 1000 meters.

- b. Connectors: All connectors shall have a minimum operating depth in seawater greater than 1000 meters. Each connector shall be provided with a protective metal end cap rated to the pressure rating of the connector. All connectors shall have either a protective shield or be located such that they are protected from accidental damage during unit movement and deployment of the DAU. At each connector a method of strain relief shall be provided which minimizes the stress in the cable conductors and the connector. Each connector shall have a locking mechanism to prevent accidental disconnect.
- c. Seals: All pressure vessel joints shall have dual o-ring seals.
- d. Finish: All exposed surfaces of the DAU shall be designed to minimize deterioration of the structure by exposure to the ocean environment. As a minimum it shall have two coats of primer and be painted with an epoxy based paint.
- e. Attachment/lift points: The DAU or any framework it is mounted in shall be provided with a minimum of three mechanical attachment points for shipboard tie-down/storage and deployment/lifting. Lift points shall have an operating strength of at least 40,000 newtons.
- f. Purge Port: The pressure vessel shall have a purge system which allows the vessel to be filled with dry nitrogen. The system shall allow the nitrogen to displace the atmosphere in the pressure vessel.
- g. Corrosion Protection: The pressure vessel and any framework used to support it or attach it to other units shall use passive cathodic protection against corrosion. The protection method shall have minimum useful rated usage of one year.

3.3.2 General Requirements:

- a. Power: Because SGAMS primary mode of operation shall be battery powered the DAU shall be designed for minimum power usage. Power shall be provided from the EU Module when deployed, and from the DTU power supply for shipboard/laboratory checkout.
- b. Input Channels: The basic DAU shall accept 64 acoustic channels, 8 engineering modules (each engineering module can consist of up to six sensors).
- b. Acoustic Channel Calibration: The DAU shall have the capability to supply a sine-wave calibration signal simultaneously to the front end of each DAU channel. This signal shall be applied at the input of the DAU's first amplifier stage. The DAU shall supply a minimum of eight discrete frequencies, spread linearly in octave increments over a 10 Hz to 20 kHz band, signal amplitude shall apply the maximum input level at the maximum gain setting to the A/D input for the channel. The variation in amplitude shall be less than 0.1 dB. The signal shall be applied simultaneously to all channels. A similar signal shall be available from the DTU for use as a system calibration. The DTU signal shall be applied directly the array hydrophone.

- d. Array Connections Acoustic Channels: DAU acoustic channel connections shall be in 32 channel groups. The connection shall support the array specifications provided under section 4.10. Each acoustic channel connector shall be wired identically to facilitate trouble shooting.
- e. Array Test Leader: The offerer shall provide an unterminated test leader for all array input (acoustic and engineering) connectors. Each test leader shall consist of a connector which mates to the appropriate connector interface on the DAU housing and a minimum of 1.0 meter of unterminated wire. Each wire shall be labeled.
- f. Array Engineering Channels: For every 32 acoustic channels there shall be a minimum of 4 engineering modules, each with a capacity to support at least six sensors. Each engineering group of 4 modules shall have its own connector. Each engineering channel connector shall be wired identically to facilitate trouble shooting. The power for the engineering modules shall also be supplied through this connector.
- g. System Temperature Specifications: The system shall meet the following temperature requirements:

Operating: 5°C to 50°C
Storage: -30°C to 70°C

3.3.3 DAU System Requirements:

- 3.3.3.1 Remote Control and Monitoring Ports: The DAU shall have two serial ports to provide remote control and monitoring communications between the DAU and shipboard based DTU. Two serial ports are required to provide on-deck communications when an acoustic modem is connected.
 - a. Electrical Protocols: One serial port shall satisfy RS-232 protocols. The second serial port shall satisfy RS-422 protocols.
 - b. Baud Rate: Both serial ports shall support a minimum communication speed of 115 kilobaud. Both serial ports shall automatically adjust their baud rate to the device connected to the serial port (i.e., autobaud functionality).
 - c. Connectors: Each serial port shall have a separate connector which is accessible without opening the DAU pressure vessel. Each connector shall be pressure rated to an operational water depth of at least 1000 meters. Each connector shall have a locking mechanism to prevent accidental disconnect. Each connector shall be provided with a protective metal end-cap which is pressure rated to the rating of the connector.

- 3.3.3.2 User Programmable Parameters: The following DAU parameters shall be user configurable by the DTU via the RCM link.
- a. System Power On/Off: DAU, DSU, and array system power requirements shall be reduced to a minimum system maintenance level on command by the user via the DTU (when data acquisition is not desired) to conserve EU lifetime. System configuration parameters shall not be lost in this power down state. Full system power levels shall be restored at user command.
 - b. System Reboot: Any computer control in the DAU or DSU shall be user rebootable to the default state via the DTU.
 - c. Number of Acoustic Channels: The number of acoustic channels to be acquired and recorded shall be user selectable via the DTU. Active channels shall begin with channel 1 and continue for the number of channels selected. For example, in a 64 channel system, channels 1-16 or channels 1-48 could be active at user discretion.
 - d. Acoustic Channel Gain: The gain of each acoustic channel shall be user selectable via the DTU.
 - e. Hydrophone Sensitivity: The hydrophone sensitivity for each acoustic channel shall be user selectable via the DTU.
 - f. Acoustic Channel Pre-Emphasis In/Out: Application of the pre-emphasis filter to each channel shall be user selectable via the DTU.
 - g. Acoustic Channel Bandwidth and Center Frequency: If the Basebanding option is exercised (Section 4.9), then the bandwidth and center frequency for all acoustic channels shall be user selectable via the DTU.
 - h. Time/Date: The time and date shall be user settable via the DTU.
 - i. Sample Rate: The user shall be able to select the acoustic channel sample rate for the system, within the parameters specified in Section 3.3.6.
- 3.3.3.3 System Acquisition Schedule: The SGAMS system shall be capable of acquiring data on a user defined schedule to conserve power and recording capacities. This schedule shall be provided by the DTU. The schedule shall be defined by an absolute start time (e.g. JD 256, 1999, 13 hours, 27 minutes, 10.0000000 seconds), a power on (acquisition) duration (e.g. 7200 seconds), and a power off duration. Maximum power on/off duration shall be a minimum of 65,000 seconds. This schedule shall repeat until modified or turned off by user command via the DTU. The power off condition is defined in the previous section.
- 3.3.3.4 System Status Monitoring: DAU and DSU system status shall be monitored and displayed by the DTU. System status shall be refreshed whenever a change of state occurs and on user command. The following system status information shall be provided to the DTU.

- a. Acoustic Channel Levels: The power level for each acoustic channel shall be provided to the DTU for display. These acoustic levels are necessary for setting system gains and identifying dead channels. Power levels for all active acoustic channels shall be provided. Power levels shall be integrated over the user selected acoustic channel bandwidth.
- b. User Selectable Parameters: The state or value of all user selectable parameters shall be provided to the DTU for display.
- c. EU Power Level: The EU voltage level or estimated remaining battery life shall be provided to the DTU for display.
- d. DSU Recording Counter: The total amount of data recorded on the DSU or percentage of total recording capacity used to date shall be provided to the DTU for display.
- e. Leak Detectors: Sensors to detect water leaks in all pressure vessels shall be provided. Status of these leak detectors shall be provided to the DTU for display.
- f. System Diagnostics: The SGAM system shall perform system diagnostics on user command via the DTU. Results of diagnostic tests shall be provided to the DTU for display. Specific tests are at the discretion of the offerer, but should provided enough information to confirm proper SGAM system operation.

3.3.4 DAU System Timing Functions:

- a. Master System Clock: All DAU system timing and Time/Date functions shall be derived from the Master System Clock. The master system clock shall be accurate to better than 1 part in 10^{11} over a 1 day period.
- b. User Access to Master System Clock: Easy access to the DAU master system clock shall be provided to the user for synchronization of various measurement devices and to measure clock drift. This access point shall be buffered to prevent modification of clock operation by the user device.
- c. Time/Date: The DAU shall provide a Time/Date clock for system scheduling and for insertion into every data header. The Time/Date shall have a resolution of better than 1 microsecond.
- d. Time/Date Synchronization: The DAU time and date shall be user settable via the DTU. The time/date clock shall be triggered to run by a software command from the DTU or by a TTL pulse. The use of a TTL trigger shall allow multiple devices to be accurately synchronized in time (such as synchronizing an acoustic projector and the DAU for high accuracy acoustic time of flight measurements). The user supplied TTL signal shall be provided to the DAU through the RCM RS-422 serial communication port connector.

3.3.5 DAU Channel Requirements:

- a. Channel to Channel Crosstalk: Channel to channel crosstalk in the DAU shall be less than -75 dB as measured between any two input channels, either acoustic or engineering. The measurement shall be made by applying reference square waves of 500 Hz, 1 kHz, and 10 kHz at the maximum allowable input voltage of the A/D to the DAU array input. The recorded output voltage of all the acoustic channels in the DAU shall be individually compared to the input reference voltage to determine the crosstalk level in dB. This measurement shall be made at both the DAUs minimum and maximum gain settings.
- b. Acoustic Channel Signal Conditioner: Each channel shall have an amplifier with a programmable gain of 0 dB to a minimum of 42 dB in 6 dB steps.
- c. Acoustic Channel Spectral Noise: Each DAU channel shall have a maximum input noise level of 5 nanovolts per root-hertz, from 200 Hz to 20 kHz and 10 nanovolts per root-hertz from 5 Hz to 200 Hz. This measurement shall be made by using a spectrum analyzer to observe the input to the channel A/D. The measurement shall be made with the input of the channel being measured terminated to ground.
- d. CMRR: Between 5 Hz and 200 Hz CMRR shall be greater than 80 dB per channel. Between 200 Hz and 20 kHz CMRR shall be greater than 90 dB per channel.
- e. Acoustic Channel Pre-Emphasis: The DAU shall have for each channel a pre-emphasis filter which is user controllable (on/off) through the DTU. This filter is to flatten the noise spectra below 10 kHz so that a single gain setting can be used to record from 10 Hz to 10 kHz. The filter shall be a high pass filter with a break frequency of 300 Hz and a slope of 6 dB per octave.
- f. Engineering Channel Definition: For every 32 acoustic data channels there shall be at least 4 channels of engineering data. Each engineering channel shall record depth, two-axis tilt, magnetic heading, and support two additional sensor channels. Power for the engineering sensors shall be available from the EU through the DAU.
- g. Engineering Module Crosstalk: The engineering sensors, their power supply and their output shall not raise the noise floor of the acoustic channels. This measurement shall be made by comparing the DAU channel analog output levels, before the A/D, with and without the engineering module energized and during engineering module power up, if the offerer decides to cycle the engineering module power. This requirement applies to array cable crosstalk and DAU crosstalk requirements. Crosstalk from the engineering modules must be down at least 75 dB.

3.3.6 DAU Sample Requirements:

- a. Acoustic Channel Sample Rate: The sample rate for each channel shall be selectable starting in the range of 1000 to 1200 samples per second, doubling in rate until the next doubling exceeds the A/D sample rate. The final sample rate shall then be the maximum sample rate of the A/D.

- b. Acoustic Channel Sampling Rate Accuracy: Time variation in the sample initiation rate shall be less than ± 1 microsecond, measured between samples commands and shall drift no more than the drift rate of the master clock.
- c. Acoustic Channel Sampling Coherence: All channels shall be sampled simultaneously and synchronized to the same system clock.
- d. Acoustic Channel A/D Sampling Dynamic Range: The dynamic range of the A/D shall be equal to or greater than 117 dB. Audio Engineering Society AES17-1991, shall be used to determine the dynamic range of the A/D. Any amplifier gains prior to the A/D are excluded from this measurement.
- e. Acoustic Channel Sample Word Size: Word size shall be selectable by the user at 16 bits, and the maximum word size used by the A/D converter.
- f. Engineering Channel Sample Rate and Word Size: The sampling rate for the engineering sensors shall be greater than 1 sample per second per channel and less than the acoustic channel sampling rate divided by the number of engineering channels. The word size shall be recommended by the offerer based on the engineering sensor specifications in Section 4.8. The word size shall provide the necessary resolution required to meet the highest sensor resolution requirement.

3.4 Data Storage Unit (DSU):

3.4.1 Unit Definition: The Data Storage Unit (DSU) is defined to be that module which contains the media to which all the information collected by the DAU is stored. It shall interface with the DAU, the EU, the DTU, and with other DSUs in use. The DAU shall provide to the DSU a block formatted digital serial stream of data for storage. The EU shall provide the DSU all power necessary to perform its storage function. The DSU shall require minimum power to operate while deployed. The DSU shall support data uploading to the DTU while on a ship deck and while in a scientific laboratory.

3.4.2 Mechanical Requirements:

- a. Pressure housing: The DSU electronics shall be housed in a container with an operating depth in seawater of at least 1000 meters.
- b. Connectors: All connectors shall have a minimum operating depth in seawater greater than 1000 meters. Each connector shall be provided with a protective metal end cap rated to the pressure rating of the connector. All connectors shall have either a protective shield or be located such that they are protected from accidental damage during unit movement and deployment of the DSU. At each connector a method of strain relief will be provided which minimizes the stress in the cable conductors and the connector. Each connector shall have a locking mechanism to prevent accidental disconnect.
- c. Seals: All pressure vessel joints shall have dual o-ring seals.

- d. Finish: All exposed surfaces of the DAU shall be designed to minimize deterioration of the structure by exposure to the ocean environment. As a minimum it shall have two coats of primer and be painted with an epoxy based paint.
- e. Attachment/lift points: The DSU or any framework it is mounted in shall be provided with a minimum of three mechanical attachment points for shipboard tie-down/storage and deployment/lifting. . Lift points shall have an operating strength of at least 40,000 newtons.
- f. Purge Port: The pressure vessel shall have a purge system which allows the vessel to be filled with dry nitrogen. The system will allow the nitrogen to displace the atmosphere in the pressure vessel.
- g. Corrosion Protection: The pressure vessel and any framework used to support it or attach it to other units shall use passive cathodic protection against corrosion. The protection method shall have minimum useful rated usage of one year.

3.4.3 Storage Capacity:

- a. Initial Capacity: The initial capacity of a single DSU shall be a minimum of 780 gigabytes.
- b. Expansion Capacity: A single DSU shall be expandable to a minimum 1.8-Terrabytes in approximately 200-GB increments.

3.4.4 Expansion Capability: The deployment and operation of multiple DSUs shall be supported.

3.4.5 Connectivity:

- a. The DSU shall connect to the DAU via a single high-speed serial interface (minimum 15-MB/sec).
- b. Multiple DSU units shall be "daisy-chained" via a second high-speed serial interface (minimum 15-MB/sec).
- c. When multiple DSUs are deployed, only a single DSU shall be in operation at any given time.

3.4.6 Data Transfer Rate:

- a. The DSU shall accept and record data from the DAU at a minimum rate of 15 MB/second while deployed.
- b. The DSU shall retrieve and transfer data to the DTU at a minimum rate of 15 MB/second in the laboratory and on board ship.
- c. There shall be a single high-speed serial connection between the DSU and either the DAU or DTU.

3.5 Data Transfer Unit (DTU):

- 3.5.1 Unit Definition: The DTU is visualized as a high speed UNIX based or Microsoft Windows NT 4.x/5.x computer system with customized software and hardware interfaces.

- a. The DTU shall support shipboard/laboratory data download/transfer from the Data Storage Unit (DSU).
- b. The DTU system shall be capable of powering the entire SGAMS system (i.e., the DSU and the DAU) with out the use of the EU.
- c. The DTU shall connect to the DSU Data input/output interface.
- d. The DTU shall connect to the DAU Data input/output interface.
- e. The DTU shall connect to the DAU command and control interface.
- f. The DTU shall connect to the topside acoustic telemetry modem in order to send command and control operations to the deployed system.
- g. The DTU shall connect to the topside acoustic telemetry modem in order to receive data from the command and control interface of the deployed DAU.
- h. The DTU system shall include a shipboard deck leader(s) to connect all necessary interfaces between itself and other components of the SGAMS system:
 - power
 - high-speed serial data I/O
 - command and control interface
- i. The DTU shall be capable of downloading all of the recorded data or partial data sets from a single DSU and support storage on disk files, 4mm DAT, 8mm EXABYTE, DLT, and a NRL owned AMPEX DIS-120i tape drive. The AMPEX DIS-120i and documentation shall be provided by NRL to the contractor upon request.
- j. The DTU data format shall be identical to the DSU data format and shall support both big-endian and little-endian hardware architectures.
- k. All custom (i.e., non-commercial) software packages developed for the DTU shall include complete source codes, documentation, and all of the necessary development environments and tools required to modify/build the custom software and documentation.
- l. In addition to data transfer functions the DTU shall also perform system checkout and setup prior to deployment.
- m. After deployment the DTU shall interface with the acoustic telemetry system, generating all acoustic commands and decoding and displaying all received information.

3.5.2 Command and Control Functions: The DTU shall be the end-user interface to the deployed system. Through it all programmable system functions shall be addressable and all requested system status shall be displayed.

- a. Programmable Functions: The following operational parameters of the system shall be controllable by input to the DTU, which shall transfer them to the DAU by either a hardwired link(shipboard/laboratory only) or by the use of an acoustic telemetry link(deployed only): system power (on/off), channel sample rate, channel gain, system clock, hydrophone sensitivity, acoustic channel pre-emphasis (on/off), number of acoustic channels and engineering channels recorded. The operator shall be able to designate which acoustic and engineering channels are recorded.

- b. System Status Parameters: The following system status information shall at a minimum be available through both the hardwired link and the acoustic telemetry communication port: EU supply voltages, recorder usage percentage, detected faults in the DSU, status of all pressure vessel leak detectors, and readout of at least 10 seconds of data for any acoustic channel or engineering channel.
 - c. The DTU shall have the capability to supply a system calibration signal identical to that of Section 3.3.2.c. This signal shall be applied to the preamplifier of each hydrophone using a pair of input leads available at the hydrophone. A minimum of seven discrete frequencies spread over a 10 Hz to 20 kHz frequency range shall be available.
- 3.5.3 Expansion Options: The DTU shall be capable of being substituted for the DSU and connect directly to the DAU in a cable-to-shore based recording operation.
- 3.5.4 Mechanical Requirements: The DTU (computer, monitor, and remote system power supply) shall be enclosed in a ruggedized rack mountable chassis and include a portable equipment rack.
- 3.5.5 Stored Data Format:
- a. Acoustic data shall be stored in a blocked format.
 - b. All digitized data shall be packed to conserve storage space in the DSU and the DTU (e.g., four 24-bit data samples shall be stored in three 32-bit long words rather than four 32-bit long words; eight 20-bit data samples shall be stored in five 32-bit long words rather than eight 32-bit long words). An algorithm for packing and unpacking data shall be provided.
 - c. Engineering data shall be interleaved with the acoustic data blocks to conserve space.
 - d. Each data block shall contain an accurate Julian time/date stamp character string of the form (YYYYDDHMMSS.microsecond).
 - e. Each data block shall contain a time-stamp which allows digitized data to be referenced with a minimum 0.1 microsecond accuracy.
 - f. Each data block shall contain a channel header description consisting of the following information: hydrophone number or engineering sensor type and number, pre-amplifier gain, sample rate, number of data points in block, etc. When changes are commanded over the acoustic telemetry system, the changes shall be implemented at the beginning of a new data block.
 - g. The number of data points in each data block shall be a power of 2 per digitized channel.
- 3.6 Energy Unit:
- 3.6.1 Unit Definition: The Energy Unit shall be the main source of power for the SGAMS system. It shall provide all the voltages, at the required current capacities, for DAU, DSU, acoustic arrays and engineering sensors. The EU shall be modular, allowing the end-user to configure an energy package to support deployments from one week to one month.

3.6.2 Electrical Requirements:

- a. Capacity: The basic EU shall supply enough energy to operate a 64 channel SGAMS system for at least one (1) week. The EU may consist of several modules interconnected to provide the energy required for a week of operation. All modules shall be identical in size, in shape, and in electrical configuration.
- b. Expanded Capacity: The energy capacity of the EU shall be capable of being increased up to a one (1) month capacity. Modules used to increase the EUs capacity shall be identical to those in Section 3.6.2.a.
- c. Failsafe: Each basic unit/module shall contain circuitry to prevent an internal failure in one unit/module (low voltage, internal short) from effecting the ability of other units/modules to supply power to SGAMS.
- d. Refurbishment: The EU shall be refurbishable at-sea on the deployment vessel. Maximum refurbishment time of the EU shall be 12 hours.
- e. Cables: All cables necessary to configure an EU and connect it to a DAU and DSU shall be supplied. The cabling design shall support multiple DAU, EU and DSU modules.

3.6.3 Mechanical Requirements:

- a. Pressure housing: The EU electronics shall be housed in a container with an operating depth in seawater of at least 1000 meters.
- b. Connectors: All connectors shall have a minimum operating depth in seawater greater than 1000 meters. Each connector shall be provided with a protective metal end cap rated to the pressure rating of the connector. All connectors shall have either a protective shield or be located such that they are protected from accidental damage during unit movement and deployment of the EU. At each connector a method of strain relief will be provided which minimizes the stress in the cable conductors and the connector. Each connector shall have a locking mechanism to prevent accidental disconnect.
- c. Seals: All pressure vessel joints shall have dual o-ring seals.
- d. Finish: All exposed surfaces of the DAU shall be designed to minimize deterioration of the structure by exposure to the ocean environment. As a minimum it shall have two coats of primer and be painted with an epoxy based paint.
- e. Attachment/lift points: The EU or any framework it is mounted in shall be provided with a minimum of three mechanical attachment points for shipboard tie-down/storage and deployment/lifting. Lift points shall have an operating strength of at least 40,000 newtons.
- f. Purge Port: The pressure vessel shall have a purge system which allows the vessel to be filled with dry nitrogen. The system will allow the nitrogen to displace the atmosphere in the pressure vessel.
- g. Corrosion Protection: The pressure vessel and any framework used to support it or attach it to other units shall use passive cathodic protection against corrosion. The protection method shall have minimum useful rated usage of one year.

3.7 Test Plan:

- a. The contractor shall develop a Test Plan for system performance and acceptance testing. The test plan shall detail system testing at the contractor's manufacturing facility of all performance specifications in Sections 3.3 to 3.6.3.g inclusive, plus any specification in exercised options. The plan shall detail how the manufacturer intends to prove that the system meets the specifications as defined in the RFP.
- b. Testing of the following specifications and functions shall be incorporated in the test plan:
 - 1) Measurement of the power required to operate the procured DAU, DSU and arrays. This measurement shall include all voltages and currents from the EU to the DAU and DSU. The contractor is to define a minimum energy package which shall demonstrate that the EU supports the seven day deployment. This package shall be used to quantify the EU design. The package shall power the system for at least 12 hours continuously during the test.
 - 2) Measurement of the input noise level of the DAU. This measurement shall be made at both amplifier minimum gain and maximum gain for a DAU channel.
- c. The test plan shall be delivered to the COR for approval no later than 45 days prior to start of the factory test.
- d. The offerer shall provide training on the assembly, dis-assembly, configuration, and operation of all aspects of the SGAMS system for a group of seven (7) end-users at the factory acceptance test.

3.8 Deployment/Recovery Plan and Hardware:

- a. Deployment/Recovery: The contractor shall furnish a deployment/recovery plan for the basic one week system. The plan shall detail all hardware, procedures and specifications for any equipment identified as required to deploy a system in 200 meter water. The deployment shall consist of one vertical array, 185 meters in length, a horizontal array 200 meters in length, DAU, DSU and EU. The vertical array shall have a minimum line tension of 4500 newtons. The DAU and DSU shall be suspended in the water column, but the EU may set on the ocean floor, contractor choice. EU recovery is required. The plan shall contain the specifications for all equipment required for deployment and recovery of SGAMS.
- b. Deployment Hardware: A complete set of hardware required to deploy the system shall be supplied. This includes all floats, shackles and sacrificial anchors.

3.9 Documentation:

- a. Operation Manual: This manual shall describe in detail how to operate SGAMS. It shall contain the procedures to be used for predeployment checkout, hardware and system preparation, detail the sequence of events for a deployment and provide a system check list for all mechanical and electric connections required for a successful deployment. The manual shall describe what SGAMS functions are programmable over the hardwired DAU interface and acoustic communication port and shall provide a step by step description of how to program SGAMS for deployment. If the acoustic modem option is exercised, the manual shall include instructions for reprogramming SGAMS and command data transmission to the support ship.
- b. Technical Manual: Technical manual/manuals shall be provided for the DAU, DSU, EU and DTU. It is the manufacturers choice whether to provide one manual for the system or individual manuals for each unit. The manual/manuals shall describe in detail the design of each unit, its hardware and provide a functional description of all circuitry and software. Included shall be a detailed list of all parts/components used in SGAMS. The list shall identify all vendors, vendor part numbers, vendor addresses, telephone numbers and web sites.
- c. Software: Source code listings of software used in SGAMS shall be provided in both hard copy and electronic form. Copies of all custom software and its development system and all commercial software shall be provided.
- d. Technical Drawings: Detailed drawings shall be provided for all custom hardware required by SGAMS.
- e. Documentation Form: Three hard copies of each manual listed above shall be supplied, along with an electronic copy of each manual. Electronic copies shall be provided on 3.5 inch PC formatted disk or CDROM. Information provided in electronic form shall be a Microsoft Word 6.0 or higher document.

4.0 OPTION REQUIREMENTS

- 4.1 Acoustic Mooring Releases: The contractor shall provide as an option the acoustic releases and deck unit identified in the contractor provide deployment/recovery plan.
- 4.2 Acoustic Positioning System: The offerer is requested to propose a long baseline acoustic positioning system which shall be capable of providing the location of the deployed system with an rms accuracy of 20 meters in a 500 meter depth of water, when using Differential GPS as an aid. The system shall be capable of using GPS navigation as a reference to refine the geodetic location of SGAMS. At sea, the user shall supply either standard or differential GPS data in NEMA format for use by the acoustic positioning system. Integration of this requirement into the acoustic mooring release option is acceptable. The system shall have an operating depth greater than 1000 meters.
- 4.3 Acoustic Array Element Navigation: The acoustic array element navigation system shall operate in the 10 kHz to 16 kHz frequency region. Array element navigation shall be accomplished using a long baseline acoustic positioning system. The system shall consist of, at a minimum, three baseline transponders, one responder and a shipboard control unit. The shipboard control unit shall be able to interrogate the baseline transponders and establish their positions, it also shall be able to interrogate the responder to establish its position within the baseline net. The responder shall be able to operate in two modes: one, respond to interrogations from the shipboard unit; two, upon electronic command from SGAMS, initiate an interrogation of the baseline network. The offerer is not responsible for any array element navigation software. Implementation of this option shall require that a selected number of elements in the vertical array must have a fixed sample rate, set at the maximum sample rate of the A/D. For bidding use, the number of channels set to the higher sample rate shall be six. Integration of this requirement into the Acoustic Positioning System and/or Acoustic Mooring Releases is acceptable.
- 4.4 Acoustic Telemetry: The system shall support bidirectional data transmission rates at 2400 baud minimum and operate in the 25 kHz to 40 kHz frequency band to prevent interference with the ocean acoustic measurements. The system shall provide user selectable modulation schemes, which may reduce the baud rate, but increase data transfer reliability. The system shall also have a transmission mode for use in high multi-path environments which allows delays between data packet transmissions. The system shall interface with the DAU through an RS-232 serial communication port. This port shall be bi-directional, allowing remote programming of selected system functions from a support vessel and enable transfer of data from SGAMS to the support vessel. The system shall include both the underwater unit and the deck equipment needed to communicate with the underwater unit. The deck unit shall interface with the DTU for command and control functions.

- 4.5 Storage Capacity Up-grade: The contractor shall provide an up-grade to increase the storage capacity of the DSU in storage increments greater than 180 gigabytes. It is recognized that the upper boundary may be set by the storage media type and system. The up-grade shall include all electronic hardware, cabling, additional connectors, and pressure vessels.
- 4.6 EU Capacity Up-grade: The Contractor shall provide an energy up-grade for SGAMS which shall increase the energy capacity in one week increments to 28 days.
- 4.7 Engineering Modules: Vertical arrays shall have positions for four engineering modules. Location along the array shall be provided by the COR upon exercise of an array option.
- 4.8 Basic Vertical Array Engineering Module: Each basic vertical array engineering module shall consist of a depth sensor, a compass, and a two-axis tilt sensor. All engineering sensors shall be sampled at a minimum 1 Hz rate. Data from all engineering modules shall be multiplexed into the acoustic data stream for storage in the DSU.
- a. Depth Sensor: Depth sensor resolution shall be less than 0.05 meters with an accuracy of 0.3 meters over the full operating depth of SGAMS.
 - b. Compass: A compass shall be provided which shall provide a measurement of heading to an accuracy of ± 1 degree minimum through a tilt angle of ± 45 degrees.
 - c. Tilt Sensor: A two-axis tilt sensor shall be provided for each engineering module. Minimum tilt measurement accuracy in each axis shall be ± 0.5 -degrees with operating angle of ± 45 -degrees.
- 4.9 DAU Basebanding Option: Basebanding high frequency limited bandwidth acoustic signals is a method of reducing the data transfer rate and the amount of data to be stored. Because of the end use of the recorded data, any basebanding used by SGAMS shall result in a quadrature detected output capable of reconstructing the phase and amplitude the original signal.
- a. Basebanding Increments: The basebanding process shall have a programmable center frequency, selectable in approximately 1 kHz increments, over the frequency span of 1 kHz to 20 kHz. Also, bandpass filters of 1 kHz, 2 kHz, 4 kHz and 5 kHz, centered at the selected center frequency shall be user selectable. The basebanding process shall also not aliases any out of band signals.
 - b. Low Pass filters: Each quadrature detector shall have an output lowpass filter with selectable bandwidths of 1 kHz, 2 kHz, 4 kHz and 5 kHz. The bandwidth of the filter shall be software selectable. The filter rolloff at the selected frequency shall be down no more than 3 dB and the filter skirt shall have slope of at least 30 dB per octave.
 - c. Noise Floor: The basebanding process shall not raise the noise floor of the processed signal more than 3 dB, referenced to the signal to noise ratio of basebanded signal.

- d. Channel and Word Size Requirements: The basebanding process shall be capable of processing 64 channels at the maximum sample rate of the A/D, without loss of data or throughput capacity.
- e. Word Size: The output word from each quadrature detector shall have the same number of bits as the word selected for the A/D output.
- f. Bandpass Data Format: When quadrature detection is used the data shall be packed as a double word with the sine component (Real) first and the cosine component (Imaginary) second.
- g. Basebanding Command and Control: All programmable parameters of the basebanding process shall be controllable through the remote control and monitoring ports.

4.10 Vertical Array Option 1:

- a. Number of Hydrophones: The array shall have no fewer than 32 hydrophones.
- b. Array length: The length of the array, measured from the DAU connector to the supporting float will not be less than 50 meters and will not exceed 185 meters. The length will be provided by the COR upon exercise of the option.
- c. Hydrophone positions and spacing: The location of each of the hydrophones along the array will be specified by the COR upon exercise of the option. The sensing elements of the hydrophones will be located at these positions to a tolerance of ± 5 centimeters.
- d. Operational Depth: The array shall function and meet all specifications when deployed in the ocean to any depth less than or equal to 500 meters.
- e. Inter-channel crosstalk: The signal crosstalk figure measured between any pair of acoustic or engineering signal channels shall be no greater than -60 decibels. Thus if a 1 volt root mean square signal is supplied by a sensor on any signal channel with no signals applied by the sensors on other channels, the crosstalk to these other channels shall be no greater than - 60 dB re 1 volt root mean square. The measurement shall be made with the system fully assembled and test signals used shall be continuous wave signals at any frequency throughout the operating range of the system. The signal input measurement point shall be at the sensor location and the signal output point shall be at the input to the analog-to-digital converter. The array and other components of the system shall be constructed so that this measurement can be made in a laboratory benchtop environment.
- f. Fairing: The array shall be faired along its entire length with a haired fairing. The length of this fairing strands shall be at least 4 times the cable diameter. The linear density of the fairing shall conform to customary industry practice for effective reduction of current-induced strum.

4.10.1 Array Electromechanical Cable:

a. Mechanical Strength: The array shall have a working strength of at least 20,000 newtons force and a breaking strength of at least 40,000 newtons force. The array cable shall not be damaged electrically or mechanically by being deployed through a sheave of diameter 75 centimeters under conditions of a 90 degree cable bend with a cable tension of 20,000 newtons.

b. Mechanical Terminations: Separate electrical and mechanical terminations shall be used to provide strain relief for the electrical connector and to enable the electrical connector(s) to be connected and disconnected while maintaining a working strength tension on the assembled mechanical terminations. Mechanical terminations shall be provided at both ends of the array.

c. Electrical Terminations: The array shall be connected electrically to the DAU via one or more waterproof multipin electrical connectors. This connector shall have a screw-on or twist-lock strain relief cap to prevent disconnection of the connector(s) due to a tension of 1000 newtons when the unit is assembled.

4.10.2 Hydrophones.

4.10.2.1 Attachment to the array: The hydrophones shall be mounted external to the array cable and shall be designed so they are readily removable from and replaceable onto the array for purposes of testing and repair. The mechanical attachment shall be of a shock-mount type and shall conform to standard industry practice for shock-mounting hydrophones. Electrical attachment to the array shall be made by using waterproof electrical connectors which have strain relief caps. These strain relief caps will withstand a force of 500 newtons without disconnecting the connector or compromising its electrical integrity.

4.10.2.2 Hydrophone sensitivity and electrical performance.

a. Preamplifiers: The hydrophone units shall have signal preamplifiers with a current-source output. Conversion of the current-source signal to a voltage signal (for instance, by a resistor) shall take place within the DAU signal conditioning electronics unit.

b. Sensitivity: The nominal sensitivity of the hydrophone sensors measured at the current-to-voltage converter shall be at least -180 decibels relative to 1 volt per micropascal acoustic signal pressure. The hydrophone sensitivity shall be selectable between this nominal sensitivity and a 40 decibel lower sensitivity (for use with high-level acoustic signals) by reversal of the preamplifier power supply polarity. The absolute sensitivity calibration (referred to 1 micropascal) of each hydrophone to an accuracy of 0.5 decibels shall be provided over the frequency range 20 Hz to 5 kHz in intervals no larger than 1/3 octave intervals. This information shall be provided in a word-

processing compatible table and in hard-copy form. This calibration data shall contain information necessary to associate the data with each of the corresponding hydrophones via indelible marks on the exterior of the hydrophone units.

c. Passband Flatness and channel-to-channel uniformity: As measured at the current-to-voltage converter within the DAU, each hydrophone shall have a constant sensitivity to:

- 1) within ± 1 dB over the acoustic signal frequency range 20 Hz to 1.5 kHz,
- 2) within ± 3 dB over the acoustic signal frequency range 1.5 kHz to 5 kHz, and
- 3) within ± 6 dB over the acoustic signal frequency range 5 kHz to 10 kHz.

d. The differences in sensitivity of any acoustic channel, with decibel sensitivity values averaged over the linearly-weighted frequency band, to the similarly-averaged sensitivity of any other acoustic channel shall not vary by more than:

- 1) ± 1 dB when averaged over the acoustic signal frequency range 20 Hz to 1.5 kHz,
- 2) ± 3 dB when averaged over the acoustic signal frequency range 1.5 kHz to 5 kHz, and
- 3) ± 6 dB when averaged over the acoustic signal frequency range 5 kHz to 10 kHz.

e. Laboratory calibration signal: A provision shall be made for injecting a user-provided calibration signal through each and every one of the hydrophone preamplifiers (i.e., one at a time and all simultaneously) with the array connected electrically to the DAU and the amplifiers powered by the DAU electronics in a laboratory setting. For each of the hydrophones, the calibration signal shall be applied to the preamplifier input in series with the hydrophone crystal element.

f. Hydrophone self noise: The electrical self-noise of the assembled hydrophones/preamplifier/array/DAU system, when operated in the system's highest gain state, shall be sufficiently low that this self noise, as measured at the input to the analog-to-digital converter within the DAU, shall not exceed the following equivalent acoustic noise levels when the electrical amplification gains and hydrophone sensitivities are accounted for. The levels are: 45 decibels relative to 1 micropascal-squared per Hz throughout the frequency range 50 Hz to 500 Hz and 25 decibels relative to 1 micropascal-squared per Hz throughout the frequency range 500 Hz to 10 kHz.

4.11 Vertical Array Option #2:

a. Number of Hydrophones: The array shall have no fewer than 64 hydrophones. The number of hydrophones is the principal difference between the specifications for Vertical Array #1 and Vertical Array #2

b. Array length: The length of the array, measured from the DAU connector to the supporting float will not be less than 50 meters and will not exceed 185 meters. The length will be provided by the COR upon exercise of the option.

c. Hydrophone positions and spacing: The location of each of the hydrophones along the array will be specified by the COR upon exercise of the option. The sensing elements of the hydrophones will be located at these positions to a tolerance of ± 5 centimeters.

d. Operational Depth: The array shall function and meet all specifications when deployed in the ocean to any depth less than or equal to 500 meters.

e. Inter-channel crosstalk: The signal crosstalk figure measured between any pair of acoustic or engineering signal channels shall be no greater than -60 decibels. Thus if a 1 volt root mean square signal is supplied by a sensor on any signal channel with no signals applied by the sensors on other channels, the crosstalk to these other channels shall be no greater than - 60 dB re 1 volt root mean square. The measurement shall be made with the system fully assembled and test signals used shall be continuous wave signals at any frequency throughout the operating range of the system. The signal input measurement point shall be at the sensor location and the signal output point shall be at the input to the analog-to-digital converter. The array and other components of the system shall be constructed so that this measurement can be made in a laboratory benchtop environment.

f. Fairing: The array shall be faired along its entire length with a haired fairing. The length of this fairing strands shall be at least 4 times the cable diameter. The linear density of the fairing shall conform to customary industry practice for effective reduction of current-induced strum.

4.11.1 Array Electromechanical Cable:

a. Mechanical Strength: The array shall have a working strength of at least 20,000 newtons force and a breaking strength of at least 40,000 newtons force. The array cable shall not be damaged electrically or mechanically by being deployed through a sheave of diameter 75 centimeters under conditions of a 90 degree cable bend with a cable tension of 20,000 newtons.

b. Mechanical Terminations: Separate electrical and mechanical terminations shall be used to provide strain relief for the electrical connector and to enable the electrical connector(s) to be connected and disconnected while maintaining a working strength tension on the assembled mechanical terminations. Mechanical terminations shall be provided at both ends of the array.

c. Electrical Terminations: The array shall be connected electrically to the DAU via one or more waterproof multipin electrical connectors. This connector shall have a screw-on or twist-lock strain relief cap to prevent disconnection of the connector(s) due to a tension of 1000 newtons when the unit is assembled.

4.11.2 Hydrophones

4.11.2.1 Attachment to the array: The hydrophones shall be mounted external to the array cable and shall be designed so they are readily removable from and replaceable onto the array for purposes of testing and repair. The mechanical attachment shall be of a shock-mount type and shall conform to standard industry practice for shock-mounting hydrophones. Electrical attachment to the array shall be made by using waterproof electrical connectors which have strain relief caps. These strain relief caps will withstand a force of 500 newtons without disconnecting the connector or compromising its electrical integrity.

4.11.2.2 Hydrophone sensitivity and electrical performance

a. Preamplifiers: The hydrophone units shall have signal preamplifiers with a current-source output. Conversion of the current-source signal to a voltage signal (for instance, by a resistor) shall take place within the DAU signal conditioning electronics unit.

b. Sensitivity: The nominal sensitivity of the hydrophone sensors measured at the current-to-voltage converter shall be at least -180 decibels relative to 1 volt per micropascal acoustic signal pressure. The hydrophone sensitivity shall be selectable between this nominal sensitivity and a 40 decibel lower sensitivity (for use with high-level acoustic signals) by reversal of the preamplifier power supply polarity. The absolute sensitivity calibration (referred to 1 micropascal) of each hydrophone to an accuracy of 0.5 decibels shall be provided over the frequency range 20 Hz to 5 kHz in intervals no larger than 1/3 octave intervals. This information shall be provided in a word-processing compatible table and in hard-copy form. This calibration data shall contain information necessary to associate the data with each of the corresponding hydrophones via indelible marks on the exterior of the hydrophone units.

c. Passband Flatness and channel-to-channel uniformity: As measured at the current-to-voltage converter within the DAU, each hydrophone shall have a constant sensitivity to:

- 1) within ± 1 dB over the acoustic signal frequency range 20 Hz to 1.5 kHz,
- 2) within ± 3 dB over the acoustic signal frequency range 1.5 kHz to 5 kHz, and
- 3) within ± 6 dB over the acoustic signal frequency range 5 kHz to 10 kHz.

d. The differences in sensitivity of any acoustic channel, with decibel sensitivity values averaged over the linearly-weighted frequency band, to the similarly-averaged sensitivity of any other acoustic channel shall not vary by more than:

- 1) ± 1 dB when averaged over the acoustic signal frequency range 20 Hz to 1.5 kHz,
- 2) ± 3 dB when averaged over the acoustic signal frequency range 1.5 kHz to 5 kHz, and
- 3) ± 6 dB when averaged over the acoustic signal frequency range 5 kHz to 10 kHz.

e. Laboratory calibration signal: A provision shall be made for injecting a user-provided calibration signal through each and every one of the hydrophone preamplifiers (i.e., one at a time and all simultaneously) with the array connected electrically to the DAU and the amplifiers powered by the DAU electronics in a laboratory setting. For each of the hydrophones, the calibration signal shall be applied to the preamplifier input in series with the hydrophone crystal element.

f. Hydrophone self noise: The electrical self-noise of the assembled hydrophones/preamplifier/array/DAU system, when operated in the system's highest gain state, shall be sufficiently low that this self noise, as measured at the input to the analog-to-digital converter within the DAU, shall not exceed the following equivalent acoustic noise levels when the electrical amplification gains and hydrophone sensitivities are accounted for. The levels are: 45 decibels relative to 1 micropascal-squared per Hz throughout the frequency range 50 Hz to 500 Hz and 25 decibels relative to 1 micropascal-squared per Hz throughout the frequency range 500 Hz to 10 kHz.

4.12 Horizontal Array Option 1:

a. Number of Hydrophones: The array shall have no fewer than 32 hydrophones.

b. Array length: The length of the array, measured from the DAU connector to the mechanical termination at the opposite end will not be less than 50 meters and will not exceed 200 meters. The length will be provided by the COR upon exercise of the option.

c. Hydrophone positions and spacing: The location of each of the hydrophones along the array will be specified by the COR upon exercise of the option. The sensing elements of the hydrophones will be located at these positions to a tolerance of ± 5 centimeters.

d. Operational Depth: The array shall function and meet all specifications when deployed in the ocean to any depth less than or equal to 500 meters.

e. Inter-channel crosstalk: The signal crosstalk figure measured between any pair of acoustic or engineering signal channels shall be no greater than -60 decibels. Thus if a 1 volt root mean square signal is supplied by a sensor on any signal channel with no signals applied by the sensors on other channels, the crosstalk to these other channels shall be no greater than - 60 dB re 1 volt root mean square. The measurement shall be made with the system fully assembled and test signals used shall be continuous wave signals at any frequency throughout the operating range of the system. The signal input measurement point shall be at the sensor location and the signal output point shall be at the input to the analog-to-digital converter. The array and other components of the system shall be constructed so that this measurement can be made in a laboratory benchtop environment.

4.12.1 Array Electromechanical Cable:

a. Mechanical Strength: The array shall have a working strength of at least 20,000 newtons force and a breaking strength of at least 40,000 newtons force. The array cable shall not be damaged electrically or mechanically by being deployed through a sheave of diameter 75 centimeters under conditions of a 90 degree cable bend with a cable tension of 20,000 newtons.

b. Mechanical Terminations: Separate electrical and mechanical terminations shall be used to provide strain relief for the electrical connector and to enable the electrical connector(s) to be connected and disconnected while maintaining a working strength tension on the assembled mechanical terminations. Mechanical terminations shall be provided at both ends of the array.

c. Electrical Terminations: The array shall be connected electrically to the DAU via one or more waterproof multipin electrical connectors. This connector shall have a screw-on or twist-lock strain relief cap to prevent disconnection of the connector(s) due to a tension of 1000 newtons when the unit is assembled.

4.12.2 Hydrophones

4.12.2.1 Attachment to the array: The hydrophones shall be mounted external to the array cable and shall be designed so they are readily removable from and replaceable onto the array for purposes of testing and repair. The mechanical attachment shall be of a shock-mount type and shall conform to standard industry practice for shock-mounting hydrophones. Electrical attachment to the array shall be made by using waterproof electrical connectors which have strain relief caps. These strain relief caps will withstand a force of 500 newtons without disconnecting the connector or compromising its electrical integrity.

4.12.2.2 Hydrophone sensitivity and electrical performance

- a. Preamplifiers: The hydrophone units shall have signal preamplifiers with a current-source output. Conversion of the current-source signal to a voltage signal (for instance, by a resistor) shall take place within the DAU signal conditioning electronics unit.
- b. Sensitivity: The nominal sensitivity of the hydrophone sensors measured at the current-to-voltage converter shall be at least -180 decibels relative to 1 volt per micropascal acoustic signal pressure. The hydrophone sensitivity shall be selectable between this nominal sensitivity and a 40 decibel lower sensitivity (for use with high-level acoustic signals) by reversal of the preamplifier power supply polarity. The absolute sensitivity calibration (referred to 1 micropascal) of each hydrophone to an accuracy of 0.5 decibels shall be provided over the frequency range 20 Hz to 5 kHz in intervals no larger than 1/3 octave intervals. This information shall be provided in a word-processing compatible table and in hard-copy form. This calibration data shall contain information necessary to associate the data with each of the corresponding hydrophones via indelible marks on the exterior of the hydrophone units.
- c. Passband Flatness: As measured at the current-to-voltage converter within the DAU, each hydrophone shall have a constant sensitivity to:
- 1) within ± 1 dB over the acoustic signal frequency range 20 Hz to 1.5 kHz,
 - 2) within ± 3 dB over the acoustic signal frequency range 1.5 kHz to 5 kHz, and
 - 3) within ± 6 dB over the acoustic signal frequency range 5 kHz to 10 kHz.
- d. Laboratory calibration signal: A provision shall be made for injecting a user-provided calibration signal through each and every one of the hydrophone preamplifiers (i.e., one at a time and all simultaneously) with the array connected electrically to the DAU and the amplifiers powered by the DAU electronics in a laboratory setting. For each of the hydrophones, the calibration signal shall be applied to the preamplifier input in series with the hydrophone crystal element.
- e. Hydrophone self noise: The electrical self-noise of the assembled hydrophones/preamplifier/array/DAU system, when operated in the system's highest gain state, shall be sufficiently low that this self noise, as measured at the input to the analog-to-digital converter within the DAU, shall not exceed the following equivalent acoustic noise levels when the electrical amplification gains and hydrophone sensitivities are accounted for. The levels are: 45 decibels relative to 1 micropascal-squared per Hz throughout the frequency range 50 Hz to 500 Hz and 25 decibels relative to 1 micropascal-squared per Hz throughout the frequency range 500 Hz to 10 kHz.

4.13 Horizontal Array Option 2:

- a. Number of Hydrophones: The array shall have no fewer than 96 hydrophones.
- b. Array length: The length of the array, measured from the DAU connector to the mechanical termination at the opposite end will not be less than 200 meters and will not exceed 1500 meters. The length will be provided by the COR upon exercise of the option.
- c. Hydrophone positions and spacing: The location of each of the hydrophones along the array will be specified by the COR upon exercise of the option. The sensing elements of the hydrophones will be located at these positions to a tolerance of ± 5 centimeters.
- d. Operational Depth: The array shall function and meet all specifications when deployed in the ocean to any depth less than or equal to 500 meters.
- e. Inter-channel crosstalk: The signal crosstalk figure measured between any pair of acoustic or engineering signal channels shall be no greater than -60 decibels. Thus if a 1-volt root mean square signal is supplied by a sensor on any signal channel with no signals applied by the sensors on other channels, the crosstalk to these other channels shall be no greater than -60 dB re 1 volt root mean square. The measurement shall be made with the system fully assembled and test signals used shall be continuous wave signals at any frequency throughout the operating range of the system. The signal input measurement point shall be at the sensor location and the signal output point shall be at the input to the analog-to-digital converter. The array and other components of the system shall be constructed so that this measurement can be made in a laboratory benchtop environment.

4.13.1 Array Electromechanical Cable:

- a. Mechanical Strength: The array shall have a working strength of at least 20,000 newtons force and a breaking strength of at least 40,000 newtons force. The array cable shall not be damaged electrically or mechanically by being deployed through a sheave of diameter 75 centimeters under conditions of a 90-degree cable bend with a cable tension of 20,000 newtons.
- b. Mechanical Terminations: Separate electrical and mechanical terminations shall be used to provide strain relief for the electrical connector and to enable the electrical connector(s) to be connected and disconnected while maintaining a working strength tension on the assembled mechanical terminations. Mechanical terminations shall be provided at both ends of the array.

c. Electrical Terminations: The array shall be connected electrically to the DAU via one or more waterproof multi-pin electrical connectors. This connector shall have a screw-on or twist-lock strain relief cap to prevent disconnection of the connector(s) due to a tension of 1000 newtons when the unit is assembled.

4.13.2 Hydrophones

4.13.2.1 Attachment to the array: The hydrophones shall be mounted external to the array cable and shall be designed so they are readily removable from and replaceable onto the array for purposes of testing and repair. The mechanical attachment shall be of a shock-mount type and shall conform to standard industry practice for shock-mounting hydrophones. Electrical attachment to the array shall be made by using waterproof electrical connectors which have strain relief caps. These strain relief caps will withstand a force of 500 newtons without disconnecting the connector or compromising its electrical integrity.

4.13.2.2 Hydrophone sensitivity and electrical performance

a. Preamplifiers: The hydrophone units shall have signal preamplifiers with a current-source output. Conversion of the current-source signal to a voltage signal (for instance, by a resistor) shall take place within the DAU signal conditioning electronics unit.

b. Sensitivity: The nominal sensitivity of the hydrophone sensors measured at the current-to-voltage converter shall be at least -180 decibels relative to 1 volt per micropascal acoustic signal pressure. The hydrophone sensitivity shall be selectable between this nominal sensitivity and a 40 decibel lower sensitivity (for use with high-level acoustic signals) by reversal of the preamplifier power supply polarity. The absolute sensitivity calibration (referred to 1 micropascal) of each hydrophone to an accuracy of 0.5 decibels shall be provided over the frequency range 20 Hz to 5 kHz in intervals no larger than 1/3 octave intervals. This information shall be provided in a word-processing compatible table and in hard-copy form. This calibration data shall contain information necessary to associate the data with each of the corresponding hydrophones via indelible marks on the exterior of the hydrophone units.

c. Passband Flatness: As measured at the current-to-voltage converter within the DAU, each hydrophone shall have a constant sensitivity to:

- 1) within ± 1 dB over the acoustic signal frequency range 20 Hz to 1.5 kHz,
- 2) within ± 3 dB over the acoustic signal frequency range 1.5 kHz to 5 kHz, and
- 3) within ± 6 dB over the acoustic signal frequency range 5 kHz to 10 kHz.

d. Laboratory calibration signal: A provision shall be made for injecting a user-provided calibration signal through each and every one of the hydrophone preamplifiers (i.e., one at a time and all simultaneously) with the array connected electrically to the DAU and the amplifiers powered by the DAU electronics in a laboratory setting. For each of the hydrophones, the calibration signal shall be applied to the preamplifier input in series with the hydrophone crystal element.

e. Hydrophone self noise: The electrical self-noise of the assembled hydrophones/preamplifier/array/DAU system, when operated in the system's highest gain state, shall be sufficiently low that this self noise, as measured at the input to the analog-to-digital converter within the DAU, shall not exceed the following equivalent acoustic noise levels when the electrical amplification gains and hydrophone sensitivities are accounted for. The levels are: 45 decibels relative to 1 micropascal-squared per Hz throughout the frequency range 50 Hz to 500 Hz and 25 decibels relative to 1 micropascal-squared per Hz throughout the frequency range 500 Hz to 10 kHz.

- 4.14 Increased array depth: Options to increase the specified depth from 500 to 1000 meters in sections 4.10 through 4.13 inclusive.
- 4.15 Vertical Array Cable: Provide an option to purchase at least 2 kilometers of vertical cable.
- 4.16 Horizontal Array Cable: Provide an option to purchase at least 2 kilometers of horizontal cable.
- 4.17 Maintenance and Services Support: The Contractor shall provide maintenance and service support as an available option for the life of the contract, date of award through two years. This service shall provide, as required, repair and refurbishment to any modules or contractor furnished equipment supplied under this contract into a sea-going state.

CONTRACT DATA REQUIREMENTS LIST

(2 Data Items)

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 220 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO. 0001		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____			
D. SYSTEM / ITEM			E. CONTRACT / PR NO. N00173-98-R-SE03		F. CONTRACTOR (to be provided at time of award)		
1. DATA ITEM NO. A003	2. TITLE OF DATA ITEM Test Plan			3. SUBTITLE			
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE CLIN 000105 and Attc (1) Section 3.7		6. REQUIRING OFFICE NRL-DC		
7. DD 250 REQ DD	8. DIST STATEMENT REQUIRED	10. FREQUENCY One Time	12. DATE OF FIRST SUBMISSION See Blk 16		14. DISTRIBUTION		
8. APP CODE	11. AS OF DATE See Blk 16	13. DATE OF SUBSEQUENT SUBMISSION N/A		a. ADDRESSEE	b. COPIES		
16. REMARKS The Contractor shall delivery a Test Plan for system performance and acceptance in accordance with Attachment (1) Section 3.7, at least 45 days prior to scheduled start of the factory test. Complete documented results of the Acceptance Test will be provided to the Government upon completion of the factory test.				See Section F.3	Draft	Final	
					Reg	Repro	
15. TOTAL →							

1. DATA ITEM NO. A004	2. TITLE OF DATA ITEM Deployment/Recovery Plan			3. SUBTITLE			
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE CLIN 000106 and Attc (1) Section 3.8		6. REQUIRING OFFICE NRL-DC		
7. DD 250 REQ	8. DIST STATEMENT REQUIRED	10. FREQUENCY One Time	12. DATE OF FIRST SUBMISSION See Blk 16		14. DISTRIBUTION		
8. APP CODE	11. AS OF DATE See Blk 16	13. DATE OF SUBSEQUENT SUBMISSION N/A		a. ADDRESSEE	b. COPIES		
16. REMARKS The Contractor shall provide a Deployment/Recovery Plan for the basic one week SGAMS system. The plan shall be delivered to the COR at the factory acceptance testing.				See Section F.3	Draft	Final	
					Reg	Repro	
15. TOTAL →							
0	3	0					

G. PREPARED BY		H. DATE	I. APPROVED BY		J. DATE
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17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

**ENCLOSURE (1) TO DD FORM 1423
INSTRUCTIONS FOR DISTRIBUTION**

DISTRIBUTION OF TECHNICAL REPORTS

The minimum distribution of technical reports and the final report submitted in connection with this contract is as follows:

ADDRESSEE	DODAAD CODE	NUMBER OF COPIES	
		UNCLASSIFIED/ UNLIMITED	UNCLASSIFIED/LIMITED AND CLASSIFIED
COR Naval Research Laboratory Attn: * Code: * 4555 Overlook Ave., S.W. Washington, DC 20375-5320	N00173	1	1
Administrative Contracting Officer *	*	1	1
Director Naval Research Laboratory ATTN: Code: 5227 4555 Overlook Ave., S.W. Washington, DC 20375-5326	N00173	1	1
Defense Technical Information Center (DTIC) 8725 John J. Kingman Rd. Suite #0944 Fort Belvoir, VA 22060-6218	S47031	4	2

DISTRIBUTION OF NON-TECHNICAL REPORTS

The minimum distribution of non-technical reports submitted in connection with this contract is as follows:

ADDRESSEE	DODAAD CODE	NUMBER OF COPIES	
		UNCLASSIFIED/ UNLIMITED	UNCLASSIFIED/LIMITED AND CLASSIFIED
COR	N00173	1	1
Administrative Contracting Officer (DCMAO)	*	1	1

*-TO BE PROVIDED AT TIME OF AWARD