

SOLICITATION, OFFER AND AWARD		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		RATING	PAGE OF PAGES 1 58
2. CONTRACT NUMBER	3. SOLICITATION NUMBER N00173-10-R-SK04	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	5. DATE ISSUED 4/01/2011	6. REQUISITION/PURCHASE NUMBER 61-0266-10	

7. ISSUED BY CONTRACTING OFFICER NAVAL RESEARCH LABORATORY ATTN: CODE: 3220.SK WASHINGTON, DC 20375-5326	CODE N00173	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 <u>4</u> 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 <u>See Section L-2</u> until <u>12:00 PM</u> local time <u>03 May 11</u> <small>(Hour) (Date)</small>
--

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-1. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME Susan Kelly	B. TELEPHONE (NO COLLECT CALLS)		C. E-MAIL ADDRESS sue.kelly@nrl.navy.mil
		AREA CODE 202	NUMBER 767-6815	EXT.

11. TABLE OF CONTENTS							
(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES			
<input checked="" type="checkbox"/>	A	SOLICITATION/CONTRACT FORM	1	<input checked="" type="checkbox"/>	I	CONTRACT CLAUSES	23-28
<input checked="" type="checkbox"/>	B	SUPPLIES OR SERVICES AND PRICES/COSTS	2-7	PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
<input checked="" type="checkbox"/>	C	DESCRIPTION/SPECS./WORK STATEMENT	8	<input checked="" type="checkbox"/>	J	LIST OF ATTACHMENTS	29
<input checked="" type="checkbox"/>	D	PACKAGING AND MARKING	9	PART IV - REPRESENTATIONS AND INSTRUCTIONS			
<input checked="" type="checkbox"/>	E	INSPECTION AND ACCEPTANCE	10	<input checked="" type="checkbox"/>	K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	30-40
<input checked="" type="checkbox"/>	F	DELIVERIES OR PERFORMANCE	11	<input checked="" type="checkbox"/>	L	INSTRS., CONDS., AND NOTICES TO OFFERORS	41-55
<input checked="" type="checkbox"/>	G	CONTRACT ADMINISTRATION DATA	12-15	<input checked="" type="checkbox"/>	M	EVALUATION FACTORS FOR AWARD	56-58
<input checked="" type="checkbox"/>	H	SPECIAL CONTRACT REQUIREMENTS	16-22				

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 <small>(See Section I, Clause No. 52.232-8)</small>	<input type="checkbox"/> 10 CALENDAR DAYS (%)	<input type="checkbox"/> 20 CALENDAR DAYS (%)	<input type="checkbox"/> 30 CALENDAR DAYS (%)	<input type="checkbox"/> CALENDAR DAYS (%)
14. ACKNOWLEDGMENT OF AMENDMENTS <small>(The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated):</small>	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER <small>(Type or print)</small>
15B. TELEPHONE NUMBER AREA CODE NUMBER EXT.	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE. <input type="checkbox"/>		17. SIGNATURE
			18. OFFER DATE

AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION
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) <input type="checkbox"/> ITEM	
24. ADMINISTERED BY (If other than Item 7) CODE	25. PAYMENT WILL BE MADE BY CODE	
26. NAME OF CONTRACTING OFFICER (Type or print)	27. UNITED STATES OF AMERICA <i>(Signature of Contracting Officer)</i>	28. AWARD DATE

PART I - THE SCHEDULE

SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

B-1 SUPPLIES/SERVICES AND COSTS

CONTRACT LINE ITEM NUMBER (CLIN)	SUPPLIES / SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
0001	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.1.	\$	\$	\$
0002	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.2.	\$	\$	\$
0003	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.3.	\$	\$	\$
0004	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.4.	\$	\$	\$
0005	Data in accordance with Exhibit A (DD Form 1423)		NSP	
Total Cost Plus Fixed Fee (CPFF)		\$	\$	\$

OPTION 1:

CONTRACT LINE ITEM NUMBER (CLIN)	SUPPLIES / SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
0006	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.1.	\$	\$	\$
0007	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.2.	\$	\$	\$
0008	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.3.	\$	\$	\$
0009	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.4.	\$	\$	\$
0010	Data in accordance with Exhibit A (DD Form 1423)	NSP		
Total Cost Plus Fixed Fee (CPFF)		\$	\$	\$

OPTION 2:

CONTRACT LINE ITEM NUMBER (CLIN)	SUPPLIES / SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
0011	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.1.	\$	\$	\$
0012	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.2.	\$	\$	\$
0013	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.3.	\$	\$	\$
0014	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.4.	\$	\$	\$
0015	Data in accordance with Exhibit A (DD Form 1423)	NSP		
Total Cost Plus Fixed Fee (CPFF)		\$	\$	\$

OPTION 3:

CONTRACT LINE ITEM NUMBER (CLIN)	SUPPLIES / SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
0016	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.1.	\$	\$	\$
0017	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.2.	\$	\$	\$
0018	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.3.	\$	\$	\$
0019	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.4.	\$	\$	\$
0020	Data in accordance with Exhibit A (DD Form 1423)	NSP		
Total Cost Plus Fixed Fee (CPFF)		\$	\$	\$

OPTION 4:

CONTRACT LINE ITEM NUMBER (CLIN)	SUPPLIES / SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
0021	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.1.	\$	\$	\$
0022	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.2.	\$	\$	\$
0023	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.3.	\$	\$	\$
0024	The Contractor shall conduct research (to include all labor, subcontracts, materials, ODCs and travel) in accordance with the Statement of Work (SOW), Paragraph 3.4.	\$	\$	\$
0025	Data in accordance with Exhibit A (DD Form 1423)	NSP		
Total Cost Plus Fixed Fee (CPFF)		\$	\$	\$

- *Not Separately Priced*

B-2 OPTION TO EXTEND THE TERM

The Government may unilaterally, by the date specified, exercise the below options by adding the cost of the exercised amount to the Total Contract Amount for Awarded CLINs above.

OPTION NUMBER	CLIN	OPTION EXERCISE DATE
1	0006-0010	xx MMM 2012
2	0011-0015	xx MMM 2013
3	0016-0020	xx MMM 2014
4	0021-0025	xx MMM 2015

NOTICE TO OFFERORS: Insert the estimated cost and fixed fee for the base year in B-1 and any optional year(s) in B-2.

SECTION C
DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK

C-1 STATEMENT OF WORK

The work and services to be performed hereunder shall be subject to the requirements and standards contained in Attachment (1), Statement of Work, Exhibit A, Contract 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 8 December 2008 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/15onsite.htm>

C-3 SUBCONTRACTING PLAN

Subcontracting Plan _____ dated _____ is attached as Attachment J-#. {FILL IN ACTUAL ATTACHMENT #}#

*(*this clause will be included and completed at time of award, if applicable)*

**SECTION D
PACKAGING AND MARKING**

D-1 PACKAGING AND MARKING

All unclassified data shall be preserved, packaged, packed and marked and must conform to normal commercial packing standards to assure safe delivery at destination. Classified reports, data, and documentation shall be prepared for shipment in accordance with National Industrial Security Program Operating Manual (NISPOM), DOD 5220.22-M dated February 28, 2006 and the DD 254 - Contract Security Classification Specification.

**SECTION E
INSPECTION AND ACCEPTANCE**

E-1 INSPECTION AND ACCEPTANCE CLAUSES INCORPORATED BY REFERENCE

FAR CLAUSE TITLE

52.246-9 - Inspection of Research and Development (Short Form) (APR 1984)

DFARS CLAUSE TITLE

252.246-7000 - Material Inspection and Receiving Report (MAR 2008)

E-2 INSPECTION AND ACCEPTANCE

Inspection and 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. Inspection and acceptance will be performed at the Naval Research Laboratory, Washington DC 20375-5320.

**SECTION F
DELIVERIES OR PERFORMANCE**

F-1 DELIVERIES OR PERFORMANCE CLAUSES INCORPORATED BY REFERENCE:

FAR CLAUSE TITLE

52.242-15 - Stop-Work Order (AUG 1989) - Alternate I (APR 1984)
52.247-34 - F.O.B. Destination (NOV 1991)

F-2 PERIOD OF PERFORMANCE

The term of this contract is from date of contract award through 12 (twelve) months thereafter, with four (4) options that will extend the period of performance for an additional 12 (twelve) months each, if exercised.

F-3 PLACE OF PERFORMANCE

The principal place of performance of this contract shall be NRL, Washington, D.C.

SECTION G
CONTRACT ADMINISTRATION DATA

G-1 POINTS OF CONTACT

In order to expedite administration of the 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.

a. Contractor Inquiries:

Administrative Contracting Officer (ACO) - See Block 6 of Standard Form 26

b. Administrative Contracting Officer Inquiries:

Contract Specialist – Susan Kelly, sue.kelly@NRL.NAVY.MIL, (202) 767-6815

Security Matters - Contracting Officer for Security, Code 1226, (202) 767-2240, DSN 297-2240, email security-group@nrl.navy.mil

Safety Matters - Head Safety Branch, Code 3540, (202) 767-2232, DSN 297-2232, email safety@nrl.navy.mil

Patent Matters - Associate Counsel (Intellectual Property), Code 1008.2, (202) 404-1552, DSN 297-1552, email patents@nrl.navy.mil

Release of Data - Public Affairs Officer, Code 1030 (202) 767-2541, DSN 297-2541, email publicaffairs@nrl.navy.mil

G-2 CONTRACTING OFFICER'S REPRESENTATIVE (COR) - FUNCTIONS AND LIMITATIONS

* **{FILL IN official name, CODE, TELEPHONE #- email }**@nrl.navy.mil is hereby designated the cognizant COR who will represent the Contracting Officer in the technical monitoring and administration of this contract. In accordance with Section E, the COR will accomplish inspection and acceptance of deliverables under this contract. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The COR 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 the statement of work, a modification must be issued in writing and signed by the Contracting Officer. Unless terminated sooner, this appointment is effective for the period of performance of this contract including any options, if exercised. COR authority may not be redelegated. No change in COR assignment shall be made without written notice by the Contracting Officer, who will modify the contract to reflect the change of COR assignment.

*(* To be completed at time of award)*

G-3 TECHNICAL DIRECTION MEMORANDUM (TDM)

- (a) For the purposes of this clause, technical direction includes the following:
- (1) Direction to the Contractor which shifts work emphasis between work areas or tasks, requires pursuit of certain lines of inquiry, fills in details or otherwise describes work which will accomplish the objectives described in the statement of work;
 - (2) Guidelines to the Contractor, which assist in interpretation of drawings, specifications or technical portions of, work description.
- (b) Technical instructions must be within the scope of work stated in the contract. Technical instructions may not be used to:
- (1) Assign additional work under the contract;
 - (2) Direct a change as defined in the contract clause entitled "Changes";
 - (3) Increase or decrease the estimated contract cost, the fixed fee, or the time required for contract performance; or
 - (4) Change any of the terms, conditions or specifications of the contract
- (c) The TDM shall be written by the Contracting Officer's Representative (COR), with the original given to the Contractor and a copy retained in the CORs file. Technical direction may be issued orally only in emergency situations. If technical direction is issued orally, a TDM must follow within two (2) working days from the date of the oral direction. Amendments, corrections, or changes to TDMs shall also be in written format and shall include all the information set forth in paragraph (e) below.
- (d) A TDM shall be considered issued when the Government deposits it in the mail, or if transmitted by other means, when it is physically delivered to the contractor.
- (e) TDMs shall include, but not be limited to, the following information:
- (1) Date of TDM,
 - (2) Contract Number,
 - (3) Reference to the relevant portion or item in the Statement of Work,
 - (4) The specific technical direction or clarification, and
 - (5) The signature of the COR.
- (f) CORs shall retain all files containing TDMs for a period of two (2) years after the final contract completion date.
- (g) The only individual authorized in any way to amend or modify any of the terms of this contract shall be the Contracting Officer. When, in the opinion of the Contractor, any technical direction calls for effort outside the scope of the contract or inconsistent with this special clause, the Contractor shall notify the Contracting Officer in writing within ten (10) working days after its receipt.

G-4 SUBCONTRACTORS/CONSULTANTS

Advance notification or requests for consent pursuant to the contract clause entitled "Subcontracts" (FAR 52.244-2) shall be directed to the cognizant administrative contracting officer (ACO).

G-5 INCREMENTAL FUNDING

Pursuant to the Limitation of Funds clause (FAR 52.232-22), the total amount allotted to this contract is \$* **{FILL IN}** and it is estimated that this amount is sufficient for contract performance through ***{FILL IN}** .

*(*this clause will be included and completed at time of award, if applicable)*

G-6 INFORMATIONAL SUBLINE ITEMS

It is anticipated that the research and development services performed under this contract will be paid for from multiple sources of funds. Informational subline items will be established as necessary to identify each accounting citation classification.

G-7 PAYMENT INSTRUCTIONS FOR MULTIPLE ACCOUNTING CLASSIFICATION CITATIONS (COST-REIMBURSEMENT)

If there is more than one ACRN within a contract line item, the payment office will make payment using the ACRN(s) cited on the contractor's invoice.

G-8 PAYMENT AND VOUCHER INSTRUCTIONS

In accordance with the contract clause, *Electronic Submission of Payment Requests and Receiving Reports* (DFARS 252.232-7003), the contractor must submit requests for payment electronically in the Wide Area Workflow (WAWF). It may be accessed at its homepage <https://wawf.eb.mil/>. If the contractor has not registered with WAWF, instructions for doing so may be accessed at: <https://wawf.eb.mil/vreg.htm>. The designated Electronic Business (EB) point of contact in the Central Contractor Registration (CCR) is the person responsible for activating the company's CAGE code in WAWF by calling 1-866-618-5988.

Wide Area Work Flow (WAWF) has been designated as the Department of Defense standard for electronic invoicing and payment. The Office of Naval Research will utilize the WAWF system. This web based system, located at <https://wawf.eb.mil>, provides the technology for government contractors and authorized Department of Defense (DoD) personnel to generate, capture and process receipt and payment-related documentation in a paperless environment. **Payment Requests/Invoices for supplies/services rendered under this contract shall be submitted electronically through WAWF. Submission of hard copy DD250/invoices will no longer be accepted for payment.**

The following information is applicable to vouchers submitted under this contract using WAWF:

Under "Create New Document" select "Cost Voucher". When you enter the contract number, some of the other fields in the document may fill out automatically.

Use the appropriate Item Number stated in Section B of the contract (e.g., 0001, 0002 or 0001AA, 0001AB, etc).

If the contract contains multiple accounting classification reference numbers (ACRNs), the ACRN(s) from which payment is to be made must be cited on the voucher. If more than one ACRN is cited, the voucher must indicate the amounts to be paid from each.

Special Payment Instructions for CLIN/SLINs with Multiple ACRNs/Lines of Accounting:

(Note - since WAWF does not accept the use of multiple ACRNs with the same AAA or SDN for any single CLIN or SLIN on one invoice; multiple invoices may have to be used. Please contact the ADMINISTERED BY Office listed on page one of the award document for additional instructions.)

For all invoices submitted against CLINs with multiple Accounting Classification Reference Numbers (ACRNs), the billing shall be paid from the earliest Fiscal Year (FY) appropriation first. Fiscal Year is determined from the 3rd character in the "Appropriation (Critical)" part (Block 6B) of the Line of Accounting on the Financial Accounting Data Sheet of the contract (e.g., 1781319 for FY 2008 and 1791319 for FY 2009). In the event there are multiple ACRNs with the same FY of appropriation, billings shall be proportionally billed to all ACRNs for that FY in the same ratio that the ACRNs are obligated.

ROUTING TABLE DATA REQUIRED FOR SUBMISSION OF INVOICE TO WAWF	
Document Type	Cost Voucher
Contract Number	N00173-11-C-
Issued By DoDAAC	N00173
Admin By DoDAAC	
Pay DoDAAC	
Ship To DoDAAC	N00173 Extension
Service Acceptor	N00173 Extension
DCAA Auditor DoDAAC	
CAGE Code	

IMPORTANT REQUIREMENT: When submitting vouchers using WAWF, the Contractor shall utilize the **"Send More Email Notifications"** function in WAWF. This additional notification is important to ensure the Government Acceptor is aware that the invoice documents have been submitted into the WAWF system.

Send More Email Notifications	
Acceptor email	{FILL IN COR/ACCEPTOR} **@nrl.navy.mil

Pursuant to DFARS 242.803(b)(i)(c), if the cognizant Government auditor has notified the contractor of its authorization to do so, the contractor may submit vouchers under this contract direct to the payment office. Such authorization does not extend to the first and final vouchers.

For additional clarification on the correct Codes to use or on proper invoicing procedures, contact the ADMINISTERED BY Office listed on page one of the award document.

For payment status questions, contact the PAYMENT WILL BE MADE BY Office listed on page one of the award document or visit the DFAS My Invoice system (<https://myinvoice.csd.disa.mil>).

For assistance with the WAWF system, you may contact the Navy WAWF Assistance Line: 1-800-251-WAWF(9293).

**SECTION H
SPECIAL CONTRACT REQUIREMENTS**

H-1 TYPE OF CONTRACT

This is a * **{FILL IN at award}**

*(*To be completed at time of award)*

H-2 ONR 5252.237-9705 - KEY PERSONNEL (DEC 88)

(a) The Contractor agrees to assign to the contract tasks those persons whose resumes were submitted with its proposal and who are necessary to fulfill the requirements of the contract as "key personnel". No substitutions may be made except in accordance with this clause.

(b) The Contractor understands that during the first ninety (90) days of the contract performance period, no personnel substitutions will be permitted unless these substitutions are unavoidable because of the incumbent's sudden illness, death or termination of employment. In any of these events, the Contractor shall promptly notify the Contracting Officer and provide the information described in paragraph (c) below. After the initial ninety (90) day period the Contractor must submit to the Contracting Officer all proposed substitutions, in writing, at least thirty (30) days in advance (sixty (60) days if security clearance must be obtained) of any proposed substitution and provide the information required by paragraph (c) below.

(c) Any request for substitution must include a detailed explanation of the circumstances necessitating the proposed substitution, a resume for the proposed substitute, and any other information requested by the Contracting Officer. Any proposed substitute must have qualifications equal to or superior to the qualifications of the incumbent. The Contracting Officer or his/her authorized representative will evaluate such requests and promptly notify the Contractor of his/her approval or disapproval thereof.

(d) In the event that any of the identified key personnel cease to perform under the contract and the substitute is disapproved, the contract may be immediately terminated in accordance with the Termination clause of the contract.

The following are identified as key personnel: *

*(*To be completed at time of award)*

Labor Category	First/M/Last Name
Program Manager	
Senior Scientist/ Engineer	
Scientist/Engineer	

H-3 LEVEL OF EFFORT

1. Initially contracted level of effort

(a) The Contractor agrees to provide the total level of effort specified in the next sentence in performance of the work described in this contract. The total level of effort for performance of this contract shall be 38,630 total hours of direct labor, including subcontractor direct labor for the Base year and for each Option year, if exercised. A breakdown of labor categories and hours is set forth in paragraph (j) below.

(b) It is anticipated that the level of effort for this contract shall be expended at an average rate of 3,219 hours per month for the Base year and for each Option year, if exercised. It is understood and agreed that the rate of hours per month may fluctuate in pursuit of the technical objective, provided such fluctuation does not result in the use of the total hours of effort prior to the expiration of the term of the contract.

(c) The Contractor shall notify the Contracting Officer in writing when any of the following situations occur, or are anticipated to occur:

1. If during any three consecutive months the monthly average is exceeded by 25%; or,
2. If at any time it is forecast that during the last three months of the contract less than 50% of the monthly average will be used during any given month; or,
3. When 85% of the total level of effort has been expended.

(d) If, during the term of the contract, the Contractor finds it necessary to accelerate the expenditure of direct labor to such an extent that the total hours of effort specified would be used prior to the expiration of the term, the Contractor shall notify the Contracting Officer in writing, setting forth the acceleration required, the probable benefits which would result, and an offer to undertake the acceleration at no increase in the estimated cost or fixed fee together with an offer setting forth a proposed level of effort, cost breakdown, and proposed fixed fee for continuation of the work until expiration of the term hereof. The offer shall provide that the work proposed will be subject to the terms and conditions of this contract and any additions or changes required by then current law, regulations, or directives, and that the offer, with a written notice of acceptance by the Contracting Officer, shall constitute a binding contract. The Contractor shall not accelerate any effort until receipt of such written approval by the Contracting Officer. Any agreement to accelerate will be formalized by contract modification and be within the terms specified in paragraph (2) of this clause.

(e) The Contracting Officer may, by written order, direct the Contractor to accelerate the expenditure of direct labor such that the total hours of effort specified in paragraph (a) above would be used prior to the expiration of the term. This order shall specify the acceleration required and the resulting revised term. The Contractor shall acknowledge this order within five days of receipt.

SOW Paragraph 3.3 – MATERIALS

Labor Category	Base Yr Hours	Option 1 Hours	Option 2 Hours	Option 3 Hours	Option 4 Hours	Total Hours
Program Manager	200	200	200	200	200	1000
Senior Scientist/Engineer	4160	4160	4160	4160	4160	20800
Scientist/Engineer	4160	4160	4160	4160	4160	20800
TOTAL	8520	8520	8520	8520	8520	42600

SOW Paragraph 3.4 – Development, Analysis and Modeling of UXO Sensors

Labor Category	Base Yr Hours	Option 1 Hours	Option 2 Hours	Option 3 Hours	Option 4 Hours	Total Hours
Program Manager	390	390	390	390	390	1950
Senior Scientist/Engineer	2080	2080	2080	2080	2080	9000
Scientist/Engineer	2080	2080	2080	2080	2080	9000
TOTAL	4550	4550	4550	4550	4550	22750

2. Increase in Level of Effort

(a) In addition to any other option rights that may be provided to the Government by this contract, the Government shall have the right, within any given contract period established in Section C of this contract, to increase the level of effort by up to **thirty percent (30%)** of the total level of effort for that period at the same labor mix as proposed in the contract for that period. The Contractor agrees to accept such increase in the level of effort at an increase in the estimated cost and an increase in the fixed fee which are calculated as follows:

$$IEC = (ILOE/LOE) \times EC$$

$$IFF = (ILOE/LOE) \times FF$$

Where

IEC = The increase in the estimated cost.

ILOE = The increase in the level of effort.

LOE = The level of effort contracted for the contract year in which the level of effort is increased.

EC = The estimated cost contracted for in the contract year in which the level of effort is increased.

IFF = The increase in the fixed fee.

FF = The fixed fee contracted for in the contract year in which the level of effort is increased.

(b) This option may be exercised at any time or times prior to the end of the affected period provided however, that the exercise of such option must give the Contractor sufficient time to provide all of the labor hours for that period, including the increase, by the end of the affected period.

(c) Any exercise by the Government of its option rights under this clause shall be effected by written notice from the Contracting Officer.

(d) The exercise of the aforementioned option shall be formally reflected by a modification to this contract increasing the estimated cost and fixed fee and adjusting the Level of Effort clause for the affected contract period.

H-4 ONR 5252.235-9714 - REPORT PREPARATION (JUL 2005)

Scientific or technical reports prepared by the Contractor and deliverable under the terms of this contract will be prepared in accordance with format requirements contained in ANSI/NISO Z39.18-2005, Scientific and Technical Reports: Elements, Organization, and Design.

[NOTE: All NISO American National Standards are available as free, downloadable pdf(s) at <http://www.niso.org/standards/index.html>. NISO standards can also be purchased in hardcopy form from NISO Press Fulfillment, P. O. Box 451, Annapolis Junction, MD 20701-0451 USA. Telephone U.S. and Canada: (877) 736-6476; Outside the U.S. and Canada: 301-362-6904 fax: 301-206-9789.]

H-5 ELECTRONIC AND INFORMATION TECHNOLOGY (EIT)

In accordance with Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d), all EIT supplies and services provided under this contract must comply with the applicable accessibility standards issued by the Architectural and Transportation Barriers Compliance Board at 36 CFR part 1194 (see FAR Subpart 39.2). Electronic and information technology (EIT) is defined at FAR 2.101.

H-6 REPRESENTATIONS AND CERTIFICATIONS

The Contractor's ORCA Representations and Certifications valid from **{FILL IN}** to **{FILL IN}** are incorporated herein by reference.

H-7 PROTECTION OF HUMAN SUBJECTS

Any collection or analysis of data from human subjects must not commence until the contractor provides the following information per SECNAV 3900.39D 8.d. (1):

- (a) An appropriate DoD Navy Assurance or a Federalwide Assurance (FWA) with a DoD Navy addendum to the FWA, or an application for a DoD Navy Assurance.
- (b) Documentation of the Institutional Review Board's (IRBs) initial and continuing review and approval.
- (c) IRB-approved informed consent form, except when not required consistent with law and regulation.
- (d) IRB-approved research protocol.
- (e) Documentation that research ethics and human subject protections training has been completed by the contractor's principle investigators.

The contractor has responsibility for certain reporting requirements per SECNAV 3900.39D 8.d. (2).

H-8 ORGANIZATIONAL CONFLICT OF INTEREST – NON-DISCLOSURE OF INFORMATION

In the performance of the contract, the Contractor may have access to information of a sensitive nature including, but not limited to, other organizations' proprietary information, Government procurement sensitive information, source selection information (see Federal Acquisition Regulation 2.101, 3.104-4 and 9.505-4), information subject to the Privacy Act, and information designated For Official Use Only. The Contractor agrees that such information will be accessed only to the extent necessary to perform the contract and further agrees that such information will not be disclosed or released to only person or other entity, either within or outside of the United States Government, except as necessary to perform the contract or as expressly authorized in writing by the contracting Officer.

In the event of unauthorized disclosure or release of any such information described herein, the Contractor agrees to advise the Contracting Officer's Representative (identified elsewhere in the contract) of the disclosure or release as soon as practicable. That advice shall identify the person or other entity to which the information was disclosed or released and the content of that information.

Following completion of the contract, the contractor shall have a continuing obligation not to disclose or release such information obtained there under.

H-9 COMPUTER SOFTWARE AND/OR COMPUTER DATABASE(S) DELIVERED TO AND/OR RECEIVED FROM THE GOVERNMENT

(a) The Contractor agrees to test for viruses all computer software and/or computer databases, as defined in the e clause entitled "RIGHTS IN NONCOMMERCIAL COMPUTER SOFTWARE AND NONCOMMERCIAL COMPUTER SOFTWARE DOCUMENTATION" (DFARS 252.227-7014), before delivery of that computer software or computer database in whatever media and on whatever system the software is delivered. The Contractor warrants that any such computer software and/or computer database will be free of viruses when delivered.

(b) The Contractor agrees to test any computer software and/or computer database(s) received from the Government for viruses prior to use under this contract.

(c) Unless otherwise agreed in writing, any license agreement governing the use of any computer software to be delivered as a result of this contract must be paid-up and perpetual, or so nearly perpetual as to allow the use of the computer software or computer data base with the equipment for which it is obtained, or any replacement equipment, for so long as such equipment is used. Otherwise the computer software or computer database does not meet the minimum functional requirements of this contract. In the event there is any routine to disable the computer software or computer database in the future, that date certain shall not be less than 25 years after the delivery date of the computer software or computer database.

(d) No copy protection devices or systems shall be used in any computer software or computer database delivered under this contract to restrict or limit the Government from making copies. This does not prohibit license agreements from specifying the maximum amount of copies that can be made.

(e) Delivery by the Contractor to the Government of certain technical data and other data is now frequently required in digital form rather than as hard copy. Such delivery may cause confusion between data rights and computer software rights. It is agreed that, to the extent that any such data is computer software by virtue of its delivery in digital form, the Government will be licensed to use that digital-form data with exactly the same rights and limitations as if the data had been delivered as hard copy.

(f) Any limited rights legends or other restrictive legends placed by a Contractor on technical data or other data delivered in digital form shall be digitally included on the same media as the digital-form data and must be associated with the corresponding digital-form technical data to which the legends apply to the extent possible. Such legends shall also be placed in human readable form on a visible surface of the media carrying the digital-form data as delivered, to the extent possible.

H-10 OPTION TO EXTEND SERVICES

The Government may require continued performance of any services specified in the contract. This option clause may be exercised more than once, but the total extension of performance hereunder shall not exceed 1 year. The Contracting Officer may exercise the option by written notice to the Contractor prior to completion of the performance of the contract.

PART II - CONTRACT CLAUSES

SECTION I CONTRACT CLAUSES

I-1 FAR 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.acqnet.gov/far>

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

a. FEDERAL ACQUISITION REGULATION CLAUSES

FAR CLAUSE TITLE

- 52.202-1 - Definitions (JUL 2004)
- 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 (SEP 2006)
- 52.203-7 - Anti-Kickback Procedures (Oct 2010)
- 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 (Oct 2010)
- 52.203-13 - Contractor Code Of Business Ethics And Conduct (Apr 2010)
- 52.203-14 - Display Of Hot-line Poster(s) (DEC 2007) Fill in for paragraph (b)(3): DoD Inspector General, ATTN: Defense Hotline, 400 Army Navy Drive, Washington, DC 22202-2884.
- 52.204-2 - Security Requirements (AUG 1996)
- 52.204-4 - Printed Or Copied Double-Sided On Recycled Paper (AUG 2000)
- 52.204-7 - Central Contractor Registration (JUL 2010)
- 52.204-9 - Personal Identity Verification Of Contractor Personnel (SEP 2007)
- 52.209-6 - Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (SEP 2006)
- 52.211-15 - Defense Priority And Allocation Requirements (APR 2008)
- 52.215-2 - Audit And Records-Negotiation (OCT 2010)
- 52.215-8 - Order Of Precedence - Uniform Contract Format (OCT 1997)
- 52.215-10 - Price Reduction For Defective Cost Or Pricing Data (OCT 2010)
- 52.215-11 - Price Reduction For Defective Cost Or Pricing Data - Modifications (OCT 2010)
- 52.215-12 - Subcontractor Cost Or Pricing Data (OCT 2010)
- 52.215-13 - Subcontractor Cost Or Pricing Data Modifications (OCT 2010)
- 52.215-15 - Pension Adjustments And Asset Reversions (OCT 2010)
- 52.215-17 - Waiver Of Facilities Capital Cost Of Money (OCT 1997)
(will be included if the successful offeror does not propose facilities capital cost of money)

- 52.215-18 - Reversion Or Adjustment Of Plans For Post-Retirement Benefits (PRB) Other Than Pensions (JUL 2005)
- 52.215-19 - Notification Of Ownership Changes (OCT 1997)
- 52.215-21 - Requirements For Cost Or Pricing Data Or Information Other Than Cost Or Pricing Data -Modifications (OCT 2010) - Alternate III (OCT 1997)
- 52.215-22 - Limitations On Pass-Through Charges--Identification Of Subcontract Effort (Oct 2009)
- 52.215-23 - Limitations on Pass-Through Charges. (OCT 2009)
- 52.216-7 - Allowable Cost And Payment (DEC 2002) (fill in 30th)
- 52.216-8 - Fixed-Fee (MAR 1997)
- 52.219-4 - Notice Of Price Evaluation Preference For HUBZone Small Business Concerns (JUL 2005) Offeror elects to waive the evaluation preference.
- 52.219-8 - Utilization Of Small Business Concerns (MAY 2004)
- 52.219-9 - Small Business Subcontracting Plan (APR 2008) - Alternate II (OCT 2001)
- 52.219-16 - Liquidated Damages-Subcontracting Plan (JAN 1999)
- 52.222-2 - Payment For Overtime Premiums (JUL 1990) -The Use Of Overtime Is Authorized Under This Contract If The Overtime Premium Does Not Exceed "0"
- 52.222-21 - Prohibition Of Segregated Facilities (FEB 1999)
- 52.222-26 - Equal Opportunity (MAR 2007)
- 52.222-35 - Equal Opportunity For Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (SEP 2006)
- 52.222-36 - Affirmative Action For Workers With Disabilities (OCT 2010)
- 52.222-37 - Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (SEP 2006)
- 52.222-50 - Combating Trafficking In Persons (FEB 2009)
- 52.222-54 - Employment Eligibility Verification (JAN 2009)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)
- 52.223-5 - Pollution Prevention And Right-To-Know Information (AUG 2003)
- 52.223-6 - Drug-Free Workplace (MAY 2001)
- 52.223-14 - Toxic Chemical Release Reporting (AUG 2003)
- 52.223-15 - Energy Efficiency In Energy-Consuming Products (DEC 2007)
- 52.225-13 - Restrictions On Certain Foreign Purchases (JUNE 2008)
- 52.227-1 - Authorization And Consent (DEC 2007)- Alternate I (DEC 2007)
- 52.227-2 - Notice And Assistance Regarding Patent And Copyright Infringement (DEC 2007)
- 52.227-11 - Patent Rights - Ownership by the Contractor (DEC 2007)
- 52.228-7 - Insurance - Liability To Third Persons (MAR 1996)
- 52.230-2 - Cost Accounting Standards (OCT 2010)
- 52.230-3 - Disclosure And Consistency Of Cost Accounting Practices (OCT 2008)
- 52.230-6 - Administration Of Cost Accounting Standards (Jun 2010)
- 52.232-17 - Interest (OCT 2010)
- 52.232-20 - Limitation Of Cost (APR 1984) (*Applicable when the contract or task order is fully funded*)
- 52.232-22 - Limitation Of Funds (APR 1984) (*Applicable when the contract or task order is not fully funded*)

- 52.232-23 - Assignment Of Claims (JAN 1986) Alternate I (APR 1984)
- 52.232-25 - Prompt Payment (OCT 2008)
- 52.232-25 - Prompt Payment (OCT 2008) Alternate I(FEB 2002)
- 52.232-33 - Payment By Electronic Funds Transfer-Central Contractor Registration (OCT 2003)
- 52.233-1 - Disputes (JUL 2002)
- 52.233-3 - Protest After Award (AUG 1996) - Alternate I (JUN 1985)
- 52.233-4 - Applicable Law For Breach Of Contract Claim (OCT 2004)
- 52.237-2 - Protection Of Government Buildings, Equipment And Vegetation (APR 1984)
- 52.242-1 - Notice Of Intent To Disallow Costs (APR 1984)
- 52.242-3 - Penalties For Unallowable Costs (MAY 2001)
- 52.242-4 - Certification of Final Indirect Costs (JAN 1997)
- 52.242-13 - Bankruptcy (JUL 1995)
- 52.243-2 - Changes - Cost-Reimbursement (AUG 1987) - Alternate V (APR 1984)
- 52.243-7 - Notification Of Changes (APR 1984)fill in 30
- 52.244-2 - Subcontracts (OCT 2010) - Alternate I (JUN 2007)
- 52.244-5 - Competition In Subcontracting (DEC 1996)
- 52.244-6 - Subcontracts For Commercial Items (OCT 2010)*Alternate I (Jun 2010).*
- 52.245-1 - Government Property (AUG 2010)
- 52.245-9 - Use And Charges (AUG 2010)
- 52.246-23 - Limitation Of Liability (FEB 1997)
- 52.246-25 - Limitation Of Liability - Services (FEB 1997)
- 52.247-1 - Commercial Bill Of Lading Notations (FEB 2006)
- 52.247-63 - Preference For U. S. Flag Air Carriers (JUN 2003)
- 52.249-6 - Termination (Cost-Reimbursement) (MAY 2004)
- 52.249-14 - Excusable Delays (APR 1984)
- 52.251-1 - Government Supply Sources (AUG 2010)
- 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)

b. DEPARTMENT OF DEFENSE FEDERAL ACQUISITION REGULATION CLAUSES

DFARS CLAUSE TITLE

- 252.201-7000 - Contracting Officer's Representative (DEC 1991)
- 252.203-7001 - Prohibition On Persons Convicted Of Fraud Or Other Defense Contract Related Felonies (DEC 2008)
- 252.203-7002 - Requirement To Inform Employees Of Whistleblower Rights (JAN 2009)
- 252.204-7000 - Disclosure Of Information (DEC 1991)
- 252.204-7003 - Control Of Government Personnel Work Product (APR 1992)
- 252.204-7004 - Alternate A Central Contractor Registration (SEP 2007)
- 252.204-7005 - Oral Attestation Of Security Responsibilities (NOV 2001)
- 252.204-7008 - Export-Controlled Items. (Apr 2010)
- 252.204-7010 - REQUIREMENT FOR CONTRACTOR TO NOTIFY DOD IF THE CONTRACTOR'S ACTIVITIES ARE SUBJECT TO REPORTING UNDER THE U.S.-INTERNATIONAL ATOMIC ENERGY AGENCY ADDITIONAL PROTOCOL (JAN 2009)
- 252.205-7000 - Provision Of Information To Cooperative Agreement Holders (DEC 1991)

- 252.209-7004 - Subcontracting With Firms That Are Owned Or Controlled By The Government Of A Terrorist Country (DEC 2006)
- 252.211-7003 - Item Identification And Valuation (AUG 2008) (*fill in none* in (c)(1)(ii) and (c)(1)(iii))
- 252.211-7007 - Reporting of Government-Furnished Equipment in the DoD Item Unique Identification (IUID) Registry (NOV 2008)
- 252.215-7000 - Pricing Adjustments (DEC 1991)
- 252.215-7002 - Cost Estimating System Requirements (DEC 2006)
- 252.219-7003 - Small Business Subcontracting Plan (DoD Contracts) (APR 2007)
- 252.222-7006 - Restrictions on the Use of Mandatory Arbitration Agreements (DEC 2010)
- 252.222-7999 - Additional Requirements and Responsibilities Restricting the Use of Mandatory Arbitration Agreements (FEB 2010)
- 252.223-7004 - Drug-Free Work Force (SEP 1988)
- 252.223-7006 - Prohibition On Storage And Disposal Of Toxic And Hazardous Materials (APR 1993)
- 252.225-7004 - Report Of Intended Performance Outside The United States And Canada- Submission After Award (Oct 2010)
- 252.225-7006 - Quarterly Reporting Of Actual Contract Performance Outside The United States (Oct 2010)
- 252.225-7012 - Preference For Certain Domestic Commodities (DEC 2008)
- 252.225-7013 - Duty Free Entry (Dec 2009)
- 252.226-7001 - Utilization of Indian Organizations, Indian-Owned Economic Enterprises, And Native Hawaiian Small Business Concerns (SEP 2004)
- 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)
- 252.227-7030 - Technical Data--Withholding Of Payment (MAR 2000)
- 252.227-7037 - Validation Of Restrictive Markings On Technical Data (SEP 1999)
- 252.227-7038 - Patent Rights-Ownership By The Contractor (Large Business) (DEC 2007)
- 252.227-7039 - Patents--Reporting Of Subject Inventions (APR 1990)
- 252.231-7000 - Supplemental Cost Principles (DEC 1991)
- 252.232-7003 - Electronic Submission of Payment Requests and Receiving Reports (MAR 2008)
- 252.232-7010 - Levies On Contract Payments (DEC 2006)
- 252.235-7010 - Acknowledgment Of Support And Disclaimer (MAY 1995)
- 252.235-7011 - Final Scientific Or Technical Report (NOV 2004)
- 252.237-7023 - Continuation of Mission Essential Functions .(MAR 2010)
- 252.242-7004 - Material Management And Accounting System (Jul 2009)
- 252.243-7002 - Requests For Equitable Adjustment (MAR 1998)
- 252.244-7000 - Subcontracts For Commercial Items And Commercial Components (DoD Contracts) (NOV 2009)
- 252.247-7023 - Transportation Of Supplies By Sea (MAY 2002)
- 252.247-7024 - Notification Of Transportation Of Supplies By Sea (MAR 2000)
(*will be included if the successful offeror made a negative response to the inquiry at DFARS 252.247-7022*)

I-2 FAR 52.217-9 - OPTION TO EXTEND THE TERM OF THE CONTRACT (MARCH 2000)

This contract shall be renewable at the unilateral option of the Government by the Contracting Officer giving written notice of renewal to the Contractor within the existing term of the contract. The Government may exercise its option to renew the contract a total of [as indicated in Section B](#) times and each such renewal shall extend the term of the contract [as indicated in Section B](#). The Contractor agrees that performance under each such renewal shall be accomplished in accordance with all of the terms and conditions of this contract.

I-3 FAR 52.219-28 - POST-AWARD SMALL BUSINESS PROGRAM REREPRESENTATION (APR 2009-05-13)

(a) Definitions. As used in this clause—

Long-term contract means a contract of more than five years in duration, including options. However, the term does not include contracts that exceed five years in duration because the period of performance has been extended for a cumulative period not to exceed six months under the clause at 52.217-8, Option to Extend Services, or other appropriate authority.

Small business concern 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 13 CFR Part 121 and the size standard in paragraph (c) of this clause.

(b) If the Contractor represented that it was a small business concern prior to award of this contract, the Contractor shall rerepresent its size status according to paragraph (e) of this clause or, if applicable, paragraph (g) of this clause, upon the occurrence of any of the following:

(1) Within 30 days after execution of a novation agreement or within 30 days after modification of the contract to include this clause, if the novation agreement was executed prior to inclusion of this clause in the contract.

(2) Within 30 days after a merger or acquisition that does not require a novation or within 30 days after modification of the contract to include this clause, if the merger or acquisition occurred prior to inclusion of this clause in the contract.

(3) For long-term contracts—

(i) Within 60 to 120 days prior to the end of the fifth year of the contract; and

(ii) Within 60 to 120 days prior to the exercise date specified in the contract for any option thereafter.

(c) The Contractor shall rerepresent its size status in accordance with the size standard in effect at the time of this rerepresentation that corresponds to the North American Industry Classification System (NAICS) code assigned to this contract. The small business size standard corresponding to this NAICS code can be found at

<http://www.sba.gov/services/contractingopportunities/sizestandardstotics/>.

(d) The small business size standard for a Contractor providing a product which it does not manufacture itself, for a contract other than a construction or service contract, is 500 employees.

(e) Except as provided in paragraph (g) of this clause, the Contractor shall make the rerepresentation required by paragraph (b) of this clause by validating or updating all its representations in the Online Representations and Certifications Application and its data in the Central Contractor Registration, as necessary, to ensure they reflect current status. The Contractor shall notify the contracting office by e-mail, or otherwise in writing, that the data have been validated or updated, and provide the date of the validation or update.

(f) If the Contractor represented that it was other than a small business concern prior to award of this contract, the Contractor may, but is not required to, take the actions required by paragraphs (e) or (g) of this clause.

(g) If the Contractor does not have representations and certifications in ORCA, or does not have a representation in ORCA for the NAICS code applicable to this contract, the Contractor is required to complete the following rerepresentation and submit it to the contracting office, along with the contract number and the date on which the rerepresentation was completed:

The Contractor represents that it is, is not a small business concern under NAICS Code _____ assigned to contract number _____.

[Contractor to sign and date and insert authorized signer's name and title].

I-4 FAR 52.223-11 - OZONE-DEPLETING SUBSTANCES (MAY 2001)

(a) *Definitions.* "Ozone-depleting substance", as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR Part 82 as –

- (1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or
- (2) Class II, 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).*

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

SECTION J LIST OF ATTACHMENTS

- J-1** Attachment (1) - Statement Of Work - 21 Pages, With Exhibit A - DD Form 1423, Contract Data Requirements List, 3 Pages.
- J-2** Attachment (3) – Personnel Qualifications, 4 Pages.
- J-3** Attachment (*) – Small Business Plan, dated {FILL IN}.
- J-4** Attachment (*) – Accounting and Appropriation Data- * page.
(To be included at time of award)*

PART IV - REPRESENTATIONS AND INSTRUCTIONS

SECTION K REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS

K-1 REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS

In accordance with FAR 4.1201, prospective contractors must complete electronic annual representations and certifications via the Online Representations and Certifications Application (ORCA) at <http://orca.bpn.gov> in conjunction with required registration in the Central Contractor Registration (CCR) at <http://www.ccr.gov> database. The representations and certification must be updated as necessary, but at least annually, to ensure they are kept current, accurate and complete.

In addition, each offeror must complete the additional contract specific representations and certifications below:

K-2 52.204-8 -- ANNUAL REPRESENTATIONS AND CERTIFICATIONS (OCT 2010)

(a)

(1) The North American Industry classification System (NAICS) code for this acquisition is SEE SECTION K-3 *[insert NAICS 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)

(1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (d) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (d) of this provision instead of completing the corresponding individual representations and certification in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

(i) Paragraph (d) applies.

(ii) Paragraph (d) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(c)

(1) The following representations or certifications in ORCA are applicable to this solicitation as indicated:

(i) 52.203-2, Certificate of Independent Price Determination. This provision applies to solicitations when a firm-fixed-price contract or fixed-price contract with economic price adjustment is contemplated, unless—

(A) The acquisition is to be made under the simplified acquisition procedures in Part 13;

(B) The solicitation is a request for technical proposals under two-step sealed bidding procedures; or

(C) The solicitation is for utility services for which rates are set by law or regulation.

(ii) 52.203-11, Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions. This provision applies to solicitations expected to exceed \$150,000.

(iii) 52.204-3, Taxpayer Identification. This provision applies to solicitations that do not include the clause at 52.204-7, Central Contractor Registration.

(iv) 52.204-5, Women-Owned Business (Other Than Small Business). This provision applies to solicitations that—

(A) Are not set aside for small business concerns;

(B) Exceed the simplified acquisition threshold; and

(C) Are for contracts that will be performed in the United States or its outlying areas.

(v) 52.209-5, Certification Regarding Responsibility Matters. This provision applies to solicitations where the contract value is expected to exceed the simplified acquisition threshold.

(vi) 52.214-14, Place of Performance--Sealed Bidding. This provision applies to invitations for bids except those in which the place of performance is specified by the Government.

(vii) 52.215-6, Place of Performance. This provision applies to solicitations unless the place of performance is specified by the Government.

(viii) 52.219-1, Small Business Program Representations (Basic & Alternate I). This provision applies to solicitations when the contract will be performed in the United States or its outlying areas.

(A) The basic provision applies when the solicitations are issued by other than DoD, NASA, and the Coast Guard.

(B) The provision with its Alternate I applies to solicitations issued by DoD, NASA, or the Coast Guard.

(ix) 52.219-2, Equal Low Bids. This provision applies to solicitations when contracting by sealed bidding and the contract will be performed in the United States or its outlying areas.

(x) 52.222-22, Previous Contracts and Compliance Reports. This provision applies to solicitations that include the clause at 52.222-26, Equal Opportunity.

(xi) 52.222-25, Affirmative Action Compliance. This provision applies to solicitations, other than those for construction, when the solicitation includes the clause at 52.222-26, Equal Opportunity.

(xii) 52.222-38, Compliance with Veterans' Employment Reporting Requirements. This provision applies to solicitations when it is anticipated the contract award will exceed the simplified acquisition threshold and the contract is not for acquisition of commercial items.

(xiii) 52.223-1, Biobased Product Certification. This provision applies to solicitations that require the delivery or specify the use of USDA-designated items; or include the clause at 52.223-2, Affirmative Procurement of Biobased Products Under Service and Construction Contracts.

(xiv) 52.223-4, Recovered Material Certification. This provision applies to solicitations that are for, or specify the use of, EPA- designated items.

(xv) 52.225-2, Buy American Act Certificate. This provision applies to solicitations containing the clause at 52.225-1.

(xvi) 52.225-4, Buy American Act--Free Trade Agreements--Israeli Trade Act Certificate. (Basic, Alternate I, and Alternate II) This provision applies to solicitations containing the clause at 52.225- 3.

(A) If the acquisition value is less than \$25,000, the basic provision applies.

(B) If the acquisition value is \$25,000 or more but is less than \$50,000, the provision with its Alternate I applies.

(C) If the acquisition value is \$50,000 or more but is less than \$67,826, the provision with its Alternate II applies.

(xvii) 52.225-6, Trade Agreements Certificate. This provision applies to solicitations containing the clause at 52.225-5.

(xviii) 52.225-20, Prohibition on Conducting Restricted Business Operations in Sudan--Certification.

(xix) 52.226-2, Historically Black College or University and Minority Institution Representation. This provision applies to—

(A) Solicitations for research, studies, supplies, or services of the type normally acquired from higher educational institutions; and

(B) For DoD, NASA, and Coast Guard acquisitions, solicitations that contain the clause at 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns.

(2) The following certifications are applicable as indicated by the Contracting Officer:

[Contracting Officer check as appropriate.]

___ (i) 52.219-19, Small Business Concern Representation for the Small Business Competitiveness Demonstration Program.

___ (ii) 52.219-21, Small Business Size Representation for Targeted Industry Categories Under the Small Business Competitiveness Demonstration Program.

___ (iii) 52.219-22, Small Disadvantaged Business Status.

___ (A) Basic.

___ (B) Alternate I.

___ (iv) 52.222-18, Certification Regarding Knowledge of Child Labor for Listed End Products.

___ (v) 52.222-48, Exemption from Application of the Service Contract Act to Contracts for Maintenance, Calibration, or Repair of Certain Equipment Certification.

___ (vi) 52.222-52 Exemption from Application of the Service Contract Act to Contracts for Certain Services--Certification.

___ (vii) 52.223-9, with its Alternate I, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (Alternate I only).

___ (viii) 52.223-13, Certification of Toxic Chemical Release Reporting.

___ (ix) 52.227-6, Royalty Information.

___ (A) Basic.

___ (B) Alternate I.

___ (x) 52.227-15, Representation of Limited Rights Data and Restricted Computer Software.

(d) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at <http://orca.bpn.gov> . After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in paragraph (c) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below *[offeror to insert changes, identifying change by clause number, title, date]*. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of Provision)

K-3 FILL IN FOR FAR 52.219-1 - SMALL BUSINESS PROGRAM REPRESENTATIONS (MAY 2004)

The fill in information is as follows:

- (a) (1) The NAICS code for this acquisition is 541712.
- (2) The small business size standard is 500 employees.

K-4 52.209-7 –INFORMATION REGARDING RESPONSIBILITY MATTERS (APR 2010)

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

“Administrative proceeding” means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative Proceedings, Civilian Board of Contract Appeals Proceedings, and Armed Services Board of Contract Appeals Proceedings). This includes administrative proceeding at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include agency actions such as contract audits, site visits, corrective plans, or inspection of deliverables.

“Federal contracts and grants with total value greater than \$10,000,000” means—

- (1) The total value of all current, active contracts and grants, including all priced options;
- and

(2) The total value of all current, active orders including all priced options under indefinite-delivery, indefinite-quantity, 8(a), or requirements contracts (including task and delivery and multiple-award Schedules).

(b) The offeror has does not have current active Federal contracts and grants with total value greater than \$10,000,000.

(c) If the offeror checked “has” in paragraph (b) of this provision, the offeror represents, by submission of this offer, that the information it has entered in the Federal Awardee Performance and Integrity Information System (FAPIS) is current, accurate, and complete as of the date of submission of this offer with regard to the following information:

(1) Whether the offeror, and/or any of its principals, has or has not, within the last five years, in connection with the award to or performance by the offeror of a Federal contract or grant, been the subject of a proceeding, at the Federal or State level that resulted in any of the following dispositions:

(i) In a criminal proceeding, a conviction.

(ii) In a civil proceeding, a finding of fault and liability that results in the payment of a monetary fine, penalty, reimbursement, restitution, or damages of \$5,000 or more.

(iii) In an administrative proceeding, a finding of fault and liability that results in—

(A) The payment of a monetary fine or penalty of \$5,000 or more; or

(B) The payment of a reimbursement, restitution, or damages in excess of \$100,000.

(iv) In a criminal, civil, or administrative proceeding, a disposition of the matter by consent or compromise with an acknowledgment of fault by the Contractor if the proceeding could have led to any of the outcomes specified in paragraphs (c)(1)(i), (c)(1)(ii), or (c)(1)(iii) of this provision.

(2) If the offeror has been involved in the last five years in any of the occurrences listed in (c)(1) of this provision, whether the offeror has provided the requested information with regard to each occurrence.

(d) The offeror shall enter the information in paragraphs (c)(1)(i) through (c)(1)(iv) of this provision in FAPIS as required through maintaining an active registration in the Central Contractor Registration database at <http://www.ccr.gov> (see 52.204-7).

“Principal” means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a division or business segment; and similar positions).

(End of provision)

K-5 FAR 52.230-1 COST ACCOUNTING STANDARDS NOTICES AND CERTIFICATION (OCT 2008)

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 \$650,000 resulting from this solicitation 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 or

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 the required 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 prime contracts and subcontracts subject to CAS totaling \$50 million or more 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 Officer 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 a revised certificate to the Contracting Officer, in the form specified under subparagraph (c)(1) or (c)(2) of Part I of this provision, as appropriate, to verify submission of a completed Disclosure Statement.

Caution: Offerors currently required to disclose because they were awarded a CAS-covered prime contract or subcontract of \$50 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 \$50 million in awards of CAS-covered prime contracts and subcontracts. 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 \$50 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 \$50 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 subparagraph (a)(3) of the Cost Accounting Standards clause, require a change in established cost accounting practices affecting existing contracts and subcontracts.

* yes * no

(End of Provision)

K-6 FAR 52.230-7 PROPOSAL DISCLOSURE—COST ACCOUNTING PRACTICE CHANGES (APR 2005)

The offeror shall check “yes” below if the contract award will result in a required or unilateral change in cost accounting practice, including unilateral changes requested to be desirable changes.

[] Yes [] No

If the offeror checked “Yes” above, the offeror shall—

- (1) Prepare the price proposal in response to the solicitation using the changed practice for the period of performance for which the practice will be used; and
- (2) Submit a description of the changed cost accounting practice to the Contracting Officer and the Cognizant Federal Agency Official as pricing support for the proposal.

K-7 252.204-7007 ALTERNATE A, ANNUAL REPRESENTATIONS AND CERTIFICATIONS. (MAY 2010)

As prescribed in 204.1202, substitute the following paragraph (d) for paragraph (d) of the provision at FAR 52.204-8:

(d) The offeror has completed the annual representations and certifications

electronically via the Online Representations and Certifications Application (ORCA) website at <https://orca.bpn.gov/>. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer, and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [*offeror to insert changes, identifying change by clause number, title, date*]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR/DFARS Clause #	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

K-8- 252.225-7031 SECONDARY ARAB BOYCOTT OF ISRAEL (JUN 2005)

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

(1) “Foreign person” means any person (including any individual, partnership, corporation, or other form of association) other than a United States person.

(2) “United States” means the 50 States, the District of Columbia, outlying areas, and the outer Continental Shelf as defined in 43 U.S.C. 1331.

(3) “United States person” is defined in 50 U.S.C. App. 2415(2) and means—

(i) Any United States resident or national (other than an individual resident outside the United States who is employed by other than a United States person);

(ii) Any domestic concern (including any permanent domestic establishment of any foreign concern); and

(iii) Any foreign subsidiary or affiliate (including any permanent foreign establishment) of any domestic concern that is controlled in fact by such domestic concern.

(b) *Certification.* If the offeror is a foreign person, the offeror certifies, by submission of an offer, that it—

(1) Does not comply with the Secondary Arab Boycott of Israel; and

(2) Is not taking or knowingly agreeing to take any action, with respect to the Secondary Boycott of Israel by Arab countries, which 50 U.S.C. App. 2407(a) prohibits a United States person from taking.

(End of provision)

SECTION L
INSTRUCTIONS CONDITIONS AND NOTICES
TO OFFERORS OR RESPONDENTS

L-1 FAR 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.acqnet.gov/far>

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

FAR CLAUSE TITLE

52.215-1	-	Instructions To Offerors - Competitive Acquisition (JAN 2004)
52.215-16	-	Facilities Capital Cost Of Money (JUN 2003)
52.219-9	-	Small Business Subcontracting Plan (OCT 2010)
52.222-24	-	Preaward On-Site Equal Opportunity Compliance Evaluation (FEB 1999)
52.237-10	-	Identification Of Uncompensated Overtime (OCT 1997)

DFARS CLAUSE TITLE

252.209-7001-	Disclosure Of Ownership Or Control By The Government Of A Terrorist Country (JAN 2009)
252.215-7003 -	Excessive Pass-Through Charges—Identification Of Subcontract Effort (MAY 2008)
252.225-7003 -	Report Of Intended Performance Outside The United States And Canada – Submission With Offer (DEC 2006)

L-2 INSTRUCTIONS FOR SUBMISSION OF PROPOSALS/OFFERS

All proposals shall be submitted in accordance with FAR 52.215-1- *Instructions to Offerors- Competitive Acquisition*. Proposals/offers submitted in paper media through the United States Postal Service (USPS) or delivery services shall be addressed:

Contracting Officer, ATTN: Code 3220.SK

RFP No. N00173-11-R-SK04

Closing Date: 5/03/2011

Time: 12:00 Noon EST

Naval Research Laboratory

4555 Overlook Avenue, S.W.

Washington, D.C. 20375

Proposals may be hand delivered to the Contracting Office, NRL, 4555 Overlook Avenue, S.W., Washington, D.C. 20375, Building 222, Room 115 between the hours of 8AM until 4PM, Eastern time, excluding weekends and federal holidays. NRL is a controlled-access facility. Photo identification will be required. Report first to Building 72, Visitor Control for access to NRL. After receiving a Visitor Pass, proceed directly to Building 222, Room 115, Contracting Office Receptionist to deliver the proposal. All offerors shall allow sufficient time for delivery of their proposal to the Contracting Office prior to the closing date and time announced in the solicitation. Directions and additional information about NRL is available at <http://www.nrl.navy.mil/content.php?P=PLANNINGVISIT> .

Facsimile proposals are not authorized.

L-3 FAR 52.211-14 - NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE, EMERGENCY PREPAREDNESS, AND ENERGY PROGRAM USE (APR 2008)

Any contract awarded as a result of this solicitation will be DX rated order; DO rated order certified for national defense, emergency preparedness, and energy program use under the Defense Priorities and Allocations System (DPAS) (15 CFR 700), and the Contractor will be required to follow all of the requirements of this regulation.

L-4 FAR 52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 2010) ALTERNATE III (OCT 1997)

(a) *Exceptions from cost or pricing data.* (1) In lieu of submitting cost or pricing data, offerors may submit a written request for exception by submitting the information described in the following subparagraphs. The Contracting Officer may require additional supporting information, but only to the extent necessary to determine whether an exception should be granted, and whether the price is fair and reasonable.

(i) *Identification of the law or regulation establishing the price offered.* If the price is controlled under law by periodic rulings, reviews, or similar actions of a governmental body, attach a copy of the controlling document, unless it was previously submitted to the contracting office.

(ii) *Commercial item exception.* For a commercial item exception, the offeror shall submit, at a minimum, information on prices at which the same item or similar items have previously been sold in the commercial market that is adequate for evaluating the reasonableness of the price for this acquisition. Such information may include--

(A) For catalog items, a copy of or identification of the catalog and its date, or the appropriate pages for the offered items, or a statement that the catalog is on file in the buying office to which the proposal is being submitted. Provide a copy or describe current discount policies and price lists (published or unpublished), e.g., wholesale, original equipment manufacturer, or reseller. Also explain the basis of each offered price and its relationship to the established catalog price, including how the proposed price relates to the price of recent sales in quantities similar to the proposed quantities.

(B) For market priced items, the source and date or period of the market quotation or other basis for market price, the base amount, and applicable discounts. In addition, describe the nature of the market.

(C) For items included on an active Federal Supply Service Multiple Award Schedule contract, proof that an exception has been granted for the schedule item.

(2) The offeror grants the Contracting Officer or an authorized representative the right to examine, at any time before award, books, records, documents, or other directly pertinent records to verify any request for an exception under this provision, and the reasonableness of price. For items priced using catalog or market prices, or law or regulation, access does not extend to cost or profit information or other data relevant solely to the offeror's determination of the prices to be offered in the catalog or marketplace.

(b) *Requirements for cost or pricing data.* If the offeror is not granted an exception from the requirement to submit cost or pricing data, the following applies:

(1) The offeror shall prepare and submit cost or pricing data and supporting attachments in accordance with Table 15-2 of FAR 15.408.

(2) As soon as practicable after agreement on price, but before contract award (except for unpriced actions such as letter contracts), the offeror shall submit a Certificate of Current Cost or Pricing Data, as prescribed in FAR 15.406-2.

(c) Submit the cost portion of the proposal via the following electronic media: Computer CD (disk) containing files that are compatible with Microsoft Office 2003.

(d) Your attention is drawn to the clause in Section H of this RFP, COMPUTER SOFTWARE AND/OR COMPUTER DATABASE (S) DELIVERED TO AND/OR RECEIVED FROM THE GOVERNMENT. Should an offeror's disk be found to contain a virus, the Government is not obligated to evaluate the contents of the infected disks.

L-5 FAR 52.216-1 - TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a Cost-Plus Fixed Fee Term contract resulting from this solicitation.

L-6 FAR 52.233-2 - SERVICE OF PROTEST (SEP 2006)

(a) Protests, as defined in Section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the Government Accountability 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-7 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-8 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-9 GOVERNMENT-FURNISHED PROPERTY

No material, labor, or facilities will be furnished by the Government unless requested by the Contractor and provided for in the contract.

L-10 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 10 of the Standard Form 33, *Solicitation, Offer and Award*. Offerors are cautioned against directing any questions concerning this RFP to technical personnel at the Naval Research Laboratory. The Contracting Officer must receive any questions concerning the RFP no later than seven (7) business days before the response date of this solicitation. Approximately once per week, any questions received and their answers will be posted to the web site at:

<http://heron.nrl.navy.mil/contracts/RFP/09sc01.htm> .

L-11 PROPOSAL ORGANIZATION

a. Each offeror must: 1) submit a Legal Written Offer; 2) submit Technical/Management proposal; and, 3) submit supporting Cost Data in the Business Proposal. The degree to which an offeror follows these instructions may be considered indicative of the Contractor's ability or willingness to execute contract requirements. No attempt is made to restrict the proposal format and style. However, the proposal should be written and organized so as to be compatible with the RFP, the Statement of Work, company's organization and accounting structure, and proposed cost estimate. The length of the Technical/Management Proposal, exclusive of resumes and biographical information is limited to a total of no more than **30** sequentially numbered pages. Proposals not conforming to the length restriction may be excluded from consideration. Offerors are encouraged to use recycled paper and maximize the use of double sided copying when preparing responses to solicitations.

b. Each offer shall be submitted in 3 separate Volumes:

- Volume I Legal Written Offer (See L-12)
- Volume II Technical/Management proposal (See L-13)
- Volume III Business Proposal (See L-14)

c. The number of copies required of each volume is:

Copies Required

VOLUME	TITLE	ORIGINALS	ADD'L COPIES	DISKS
I	Legal Written Offer	1	1	1
II	Technical/Management Proposal	1	4	2
III	Business Proposal	1	4	2

Note: All original and copies are paper copies.

Each volume shall be bound separately in three ring binders (to permit removal of sections) with each major part tabbed. All volume pages and paragraphs shall be numbered so its location is traceable to the appropriate volume and page. The complete set of volumes will be accompanied by a cover letter (letter of transmittal) prepared on the company's letterhead stationery. Each disk shall be labeled with the Offeror's name, corresponding proposal Volume Number, and Solicitation number.

L-12 VOLUME I – LEGAL WRITTEN OFFER

The Legal Written Offer consists of and must include the following:

- a. **Standard Form 33, "Solicitation, Offer and Award,"** with blocks 12 through 18 completed by the offeror. Offerors shall acknowledge receipt of any amendments to the solicitation in this section.
- b. **Response to RFP - Sections B through L.** The offeror shall submit all appropriate information required by the RFP in sections B through L.

The completion and submission to the Government of the above items will constitute an offer and will indicate the offeror's unconditional assent to the terms and conditions in this RFP and in any attachments hereto. Any objection to any of the terms and conditions of this RFP will make the offer unacceptable and will constitute a counteroffer which cannot be accepted without discussions and revisions of the RFP Terms and Conditions. **The Government intends to award a contract without discussions, as permitted by FAR 15.306(a)(3) and 52.215-1(f)(4).** However, the Government reserves the right to conduct discussions and to permit offerors to revise their proposals.

L-13 TECHNICAL/MANAGEMENT PROPOSAL

(1) The offeror must propose the labor categories in accordance with the Level of Effort Breakdown in Section H. If the offeror uses labor category terminology other than that used in Section H, the offer must provide a matrix clearly relating their proposed labor categories to those stated.

(2) The following information is required for evaluation of your technical/management proposal:

A. Personnel Experience And Qualifications

The offeror must provide resumes of key personnel that demonstrate their educational qualifications, their publication records and their current/recent experience relevant to this effort as listed below and set forth in the Statement of Work (SOW).

1. Demonstrate that the key personnel meet the personnel qualification and are technically competent to accomplish the statement of work (SOW).
2. Demonstrate that the key personnel are individually available to support the effort on a full-time permanent basis.
3. Demonstrate that the qualifications of the technical team span the total breadth of requirements of the statement of work.
4. Demonstrate that the designated project manager is qualified to address the total scope of work.

B. Technical Approach

Demonstrate recent experience in successfully performing projects and tasks relevant to those described in the Statement of Work. The proposal must demonstrate and provide examples of the extent of their corporate experience in performing, accomplishing, and managing R&D projects related specifically to the tasks such as those set forth in this Statement of Work as well as the reporting requirements set forth in the solicitation. The offeror must provide information to show the organizational structure of support staff and demonstrate their ability to provide the experience required to support NRL's requirements under this effort as listed below.

1. Demonstrate an understanding of the requirements of the tasks, the technical issues critical to success, and the complex nature of the efforts required.
2. Demonstrate that the proposed technical approach is sound.
3. Demonstrate that the proposal and the proposed staff have the experience required to successfully address the technical issues.
4. Demonstrate a fully developed and competent approach to address each of the technical requirements specified in the statement of work rather than simply playing back the words of the SOW.

C. Management/Corporate Experience and Facilities

Demonstrate assignment of personnel, define their roles in accomplishing the project, and assure adequate resources to guarantee effective continuity of effort throughout the duration of the project(s). Establish the means for project monitoring and control. Demonstrate the contractor's ability to identify delays, problem areas, and develop contingency plans or alternative courses of action promptly in order to ameliorate possible roadblocks/delays to accomplishing the project. Demonstrate facilities are available to provide timely support in conjunction with assigned tasks.

1. Demonstrate a corporate technical base to support the proposed effort including potential expansion of the level of effort within the scope of work and in accordance with the Level of Effort Clause in Section H.
2. Demonstrate the corporate experience and maturity required to successfully manage the proposed effort.
3. Demonstrate that there are adequate facilities available to support the in-house component of the proposed effort.

D. Past Performance

PAST PERFORMANCE INFORMATION

(a) 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 four (4) contracts or subcontracts completed by the offeror or predecessor companies during the past five (5) years for services similar in nature to this requirement. Include in the list of four (4) contracts or subcontracts 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's name and telephone number

(b) 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 electronically in full text at http://heron.nrl.navy.mil/contracts/4335_1.pdf 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.

(c) 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.

L-14 VOLUME II - BUSINESS PROPOSAL**(1) COST PROPOSAL**

(a) The offeror shall submit a business proposal that includes a cost proposal with supporting information for each cost element consistent with offeror's cost accounting system. The supporting breakdown should include such elements as materials, direct labor, indirect cost, and other costs such as travel. The offeror shall provide exhibits as necessary to substantiate each cost element. Should rates be used in the proposal which are not DCAA approved, the offeror shall provide complete documentation and the rationale for their use at time of proposal submission. However, offerors are advised to use actual labor rates of proposed personnel as the basis for estimating labor costs when practicable.

(b) Cost data submitted on disks shall use Microsoft EXCEL 2003 or compatible. The Government is not responsible for any errors in data conversion. The proposed cost/prices in the hard copy formats must equal the cost/prices on the disk copies. **In case of data discrepancies between the paper and disk copy formats, the disk copy will take precedence.** Spreadsheet(s) at the Summary Level shall not contain links to any other information nor be password protected. Stand-alone numbers in the summary spreadsheet(s) shall be supported by back-up spreadsheets. All dollars shall be shown with two places to the right of the decimal but should be rounded only at the bottom line.

(c) The contractor shall furnish a copy of the cost proposal to their cognizant DCAA office. The cover page of the proposal shall clearly indicate the RFP Number, the Contracting Officer's name and phone number and the following statement:

“The Contracting Officer has directed that this advance copy be sent to you in anticipation of the RATE CHECK that will be requested in order to determine cost realism in accordance with FAR 15.305 and 15.404(d). Please contact Susan Kelly, Contract Specialist, at 202-767-6815 or sue.kelly@nrl.navy.mil with the name and contact information of the auditor assigned to this action.”

(2) SMALL BUSINESS PARTICIPATION

(a) In addition to complying with the clause at FAR 52.219-9, Small Business Subcontracting Plan (OCT 2010) with its Alternate II (OCT 2001), proposals must include information to permit evaluation of the extent of participation of small businesses and historical black colleges or universities and minority institutions in performance of the contract. Participation to be identified may be in the form of a joint venture, teaming arrangement, or subcontract. Small business concerns that are not required by FAR 52.219-9 to submit a subcontracting plan must indicate the extent to which proposed joint ventures, teaming arrangements, or subcontracts are with historically black colleges or universities and minority institutions. Information provided should include the extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

(b) Proposals must also include information to permit evaluation of the extent of participation of small disadvantaged business concerns in performance of the contract. See the provision at FAR 52.219-24, Small Disadvantaged Business Participation Program--Targets (OCT 2000), and the clause at 52.219-25, Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting (OCT 1999). Any targets will be incorporated into and become part of any resulting contract. Information provided should include the extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

(3) OTHER INFORMATION

The following information shall be included in this section, for the offeror and each proposed Subcontractor:

- a. Address and telephone # of the cognizant ACO
- b. Address and telephone # of the cognizant DCAA office
- c. CAGE Code Number
- d. Tax Identification Number (TIN)
- e. DUNS Number
- f. Source of approval and the latest date of approval of the offeror's Accounting System
- g. Source of approval and the latest date of approval of the offeror's Purchasing System
- h. Source of approval and latest date of determination of adequacy of the offeror's Disclosure Statement pursuant to FAR 30.202-7.
- i. Copy of current Contractor Central Registration with expiration date shown
- j. Copy of current Online Representation and Certification Application (ORCA) with certification validity dates shown
- k. For each proposed Subcontractor – the extent to which the offeror evaluated the subcontractor's proposal for reasonableness.

L-15 TRAVEL ESTIMATE

The Travel estimates for the Base year and each option year, if exercised, set forth below must be priced and included in each offeror's cost proposal. During the term of the contract, the contractor will be reimbursed actual and allowable expenses.

ANTICIPATED TRAVEL REQUIREMENTS

Contractor employees will be required to travel to complete the requirements of this contract. Travel may be for the purposes of 1) reviewing contract progress in meetings at NRL, 2) supporting NRL staff in reviewing program progress in sponsor program reviews and meetings, 3) attending national or international meetings to present scholarly papers documenting the R&D accomplishments under contract, and 4) supporting (for extended periods and at various locations) field studies and/or demonstrations of the hardware and software developed under this contract. The location of these field operations is currently unspecified, but may be at remote locations outside the US. It is assumed that all travel originates at the Contractor's facility.

Anticipated Contractor Travel Requirements:

SOW Para	Year	No. Trips	No. People	No. Days	Probable Destination
3.1	1	1	3	5	San Antonio, Texas
3.1	1	1	2	5	Jacksonville, FL
3.1	1	1	1	5	Chicago, IL
3.1	1	1	1	5	Charleston, SC
3.1	1	1	2	5	San Diego, CA
3.1	1	1	2	5	Salt Lake City, UT
3.1	2	1	3	5	Baltimore, MD
3.1	2	1	1	5	Denver, CO
3.1	2	1	1	5	Orlando, FL
3.1	2	1	2	5	San Francisco, CA
3.1	2	1	2	5	Boston, MA
3.1	2	1	2	5	Seattle, WA
3.1	3	1	1	5	Long Beach, CA
3.1	3	1	1	5	New Orleans, LA
3.1	3	1	2	5	Nashville, TN
3.1	3	1	3	5	Baltimore, MD
3.1	3	1	2	5	Chicago, IL
3.1	3	1	2	5	Honolulu, HI
3.1	4	1	2	5	San Antonio, Texas
3.1	4	1	2	5	Jacksonville, FL
3.1	4	1	3	5	San Diego, CA
3.1	4	1	3	5	Salt Lake City, UT
3.1	4	1	1	5	Orlando, FL
3.1	5	1	3	5	Baltimore, MD
3.1	5	1	2	5	San Francisco, CA
3.1	5	1	3	5	Boston, MA
3.1	5	1	2	5	Seattle, WA
3.1	5	1	1	5	Chicago, IL

SOW Para	Year	No. Trips	No. People	No. Days	Probable Destination
3.2	1	1	2	5	Seattle, WA
3.2	1	1	2	10	Anchorage, AK
3.2	2	1	2	5	Long Beach, CA
3.2	2	1	2	5	New Orleans, LA
3.2	3	1	2	5	Baltimore, MD
3.2	3	1	2	10	Santiago, Chile
3.2	4	1	2	5	Seattle, WA
3.2	4	1	2	10	Anchorage, AK
3.2	5	1	2	5	Honolulu, HI
3.2	5	1	2	5	Boston, MA

SOW Para	Year	No. Trips	No. People	No. Days	Probable Destination
3.3	1	1	1	5	Santa Barbara, CA
3.3	2	1	1	5	Albuquerque, NM
3.3	3	1	1	5	Nashville, TN
3.3	4	1	1	5	Tampa, FL
3.3	5	1	1	5	Long Beach, CA
3.3	1	1	1	5	San Diego, CA
3.3	2	1	1	5	Salt Lake City, UT
3.3	3	1	1	5	Baltimore, MD
3.3	4	1	1	5	San Francisco, CA
3.3	5	1	1	5	Boston, MA

SOW Para	Year	No. Trips	No. People	No. Days	Probable Destination
3.4	1	1	4	5	Atlanta, GA
3.4	1	1	4	5	San Diego, CA
3.4	1	1	5	8	San Diego, CA
3.4	1	1	4	5	Yuma, AZ
3.4	2	1	3	5	Atlanta, GA
3.4	2	1	5	10	San Diego, CA
3.4	2	1	3	5	Yuma, AZ
3.4	2	1	3	10	Yuma, AZ
3.4	3	1	3	10	Atlanta, GA
3.4	3	1	3	5	Seattle, WA
3.4	3	1	2	5	Seattle, WA
3.4	3	1	2	10	Seattle, WA
3.4	4	1	2	3	San Luis Obispo, CA
3.4	4	1	5	5	San Luis Obispo, CA
3.4	4	1	5	5	San Luis Obispo, CA
3.4	5	1	4	3	Atlanta, GA
3.4	5	1	6	5	Atlanta, GA
3.4	5	1	4	7	Seattle, WA
3.4	5	1	4	7	Seattle, WA
3.4	5	1	3	5	Yuma, AZ
3.4	5	1	4	7	Yuma, AZ

L-16 MATERIAL AND OTHER DIRECT COST ESTIMATE

The Material and Other Direct Cost (ODC) estimates set forth below **must be included in each offeror's cost proposal for evaluation purposes only**. During the term of the contract, the contractor will be reimbursed actual and allowable expenses. The Material and ODC estimates are direct costs and **the offeror should add applicable indirect costs, if any**.

ESTIMATED OTHER DIRECT COST REQUIREMENTS

For the purposes of preparing their proposals, offerors shall use the following estimates for anticipated Other Direct Cost requirements. Specific requirements will vary depending upon the approaches the contractor proposes, the requirements of specific sponsor projects undertaken, and the nature of field operations and demonstrations required.

SOW Paragraph 3.1 – ANALYSIS AND SENSORS

Materials costs for SOW Paragraph 3.1 are expected to include items such as general laboratory materials such as petri dishes, pipettes, vials, other glass and plastic labware, etc, solid-phase extraction media, expendable chemicals and biochemicals, GC and LC columns, machining, computer hardware, software licenses, printers, electronics and test equipment, office supplies, and other miscellaneous items. In addition, it is anticipated that collaborations with academic and/or industrial institutions will be an integral part of this effort, specifically related to the manufacture and testing of sensor components.

Materials Costs Per Year, SOW Paragraph 3.1:\$170,000

SOW Paragraph 3.2 - CARBON CYCLING IN AQUATIC, MARINE AND TERRESTRIAL ECOSYSTEMS

Materials costs for SOW Paragraph 3.2 are expected to include items such as general laboratory materials such as petri dishes, pipettes, vials, other glass and plastic labware, etc, solid-phase extraction media, expendable chemicals and biochemicals, GC and LC columns, machining, computer hardware, software licenses, printers, electronics and test equipment, office supplies and other miscellaneous items.

Materials Costs Per Year, SOW Paragraph 3.2:\$30,000

SOW Paragraph 3.3 - MATERIALS

Materials costs for SOW Paragraph 3.3 are expected to include items such as general laboratory materials such as glass and plastic labware, expendable solvents and chemicals, electronic materials and components, machining, computer hardware, software licenses, printers, electronics and test equipment, office supplies and other miscellaneous items. In addition, it is anticipated that collaborations with academic and/or industrial institutions will be an integral part of this effort, specifically related to the manufacture and testing of sensor components.

Materials Costs Per Year, SOW Paragraph 3.3:\$80,000

SOW Paragraph 3.4 – DEVELOPMENT, ANALYSIS AND MODELING OF UXO SENSORS

Materials costs for SOW Paragraph 3.4 are expected to include items such as general laboratory materials such as glass and plastic labware, expendable solvents and chemicals, electronic materials and components, machining, computer hardware, software licenses, printers, electronics and test equipment, office supplies and other miscellaneous items. The possibility exists that short term needs for consultants with expertise in battery and fuel cell manufacturing and development, materials compatibility, and electrochemistry may be required. In addition, it is anticipated that collaborations with academic and/or industrial institutions will be an integral part of this effort, specifically related to the manufacture and testing of sensor components.

Materials Costs Per Year, SOW Paragraph 3.4:\$25,000

SECTION M EVALUATION FACTORS FOR AWARD

M-1 EVALUATION

Award will be made to that offeror whose proposal is determined to be the best value to the Government, evaluated cost and other factors considered. The Government reserves the right to make award to other than the low offeror. The technical considerations are more important than the cost factor. The closer the technical scores of the various proposals are to one another, the more important the cost considerations become. The Technical factor is significantly more important than the Cost factor.

M-2 EVALUATION FACTORS FOR AWARD

Proposals will be evaluated in accordance with the following criteria. The technical factor is significantly more important than the cost factor.

M-2-1. TECHNICAL

1. Personnel Experience And Qualifications

Experience - Personnel proposed will be evaluated on general experience and specific experience relating to the task requirements given in the Statement of Work. Education - Personnel proposed will be evaluated on education and training. Proposals will be evaluated on the basis of how they answer the following questions:

- Are the offeror's key personnel technically competent to accomplish the statement of work (SOW), as demonstrated by their resumes, experience and publication records?
- Are the offeror's key personnel individually available to support the effort on a full-time permanent basis?
- Does the offeror's technical team span the total requirements of the statement of work? Is the designated project manager qualified to address the total scope?

2. Technical Approach

The proposal will be evaluated on the complete understanding of the task requirements and understanding of the statement of work. The proposed will be evaluated on the soundness of approach by a feasible and workable program for each task requirement. The proposal will be evaluated on experience in similar research and development required by the tasks in the statement of work; relevance of prior work to proposed work and past performance on same/similar work for the Government. The proposal will be evaluated on the credibility, realism and logic to the proposed

tasking requirements and required deliverables. The soundness of the Offeror's technical approach, including the Offeror's understanding of the technical requirement. Proposals will be evaluated on the basis of how they answer the following questions:

- Is the offeror's proposed technical approach sound? Does the proposal demonstrate that the offeror understands the requirements of the tasks, the technical issues critical to success, and the complex nature of the efforts required?
- Does the proposal and the proposed staff demonstrate the experience required to successfully address the technical issues?
- Does the proposal fully develop and present a competent approach to address each of the technical requirements specified in the statement of work rather than simply playing back the words of the SOW?

3. Management/Corporate Experience and Facilities

Management/Corporate Experience will be evaluated on the proposed project organization as it demonstrates assignment of personnel, defines their roles in accomplishing the project, and assures adequate resources to guarantee effective continuity of effort throughout the duration of the project(s). The proposed management plan establishes the means for project monitoring and control. The proposal demonstrates the contractor's ability to identify delays, problem areas, and develop contingency plans or alternative courses of action promptly in order to ameliorate possible roadblocks/delays to accomplishing the project. The proposal demonstrates facilities available to provide timely support in conjunction with assigned tasks. Proposals will be evaluated on the basis of how they answer the following questions:

- Does the offeror provide a corporate technical base to support the proposed effort including potential expansion of the level of effort within the scope of work?
- Does the offeror demonstrate experience and maturity required to successfully manage the proposed effort?
- Are the offeror's facilities adequate and appropriate to support the in-house component of the proposed effort?

4. 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. The evaluation will take into account past performance information regarding predecessor companies, subcontractors that will perform major or critical aspects of the requirement, and/or the proposed project manager or key personnel responsible for major or critical aspects of the requirement. 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)(iv).

M-2-2 COST TO THE GOVERNMENT

The Government may adjust the proposed cost for purposes of evaluation based upon an evaluation of cost realism. Cost Realism means that the costs in an offeror's proposal are realistic for the work to be performed; reflect a clear understanding of the requirements; and are consistent with the various elements of the offeror's technical proposal. The cost realism evaluation includes an analysis of the adequacy of the hours, labor mix, and other direct costs to perform the work as proposed in the technical proposal as well as the proposed labor and indirect rates. It also includes evaluation of the likelihood that the risks inherent in the offeror's technical approach will result in higher actual costs than anticipated.

M-3 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).

STATEMENT OF WORK

1.0 INTRODUCTION

The Naval Research Laboratory (NRL) is the Navy's corporate laboratory. NRL conducts a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, system, and ocean, atmospheric, and space sciences and related technologies. The NRL Chemistry Division conducts multidisciplinary research and development programs in biotechnology, chemical dynamics and diagnostics, materials chemistry, corrosion science and engineering, surface chemistry including nanometer-scale science and technology, and fire and combustion research.

Primary research areas of expertise in the Chemical Dynamics and Diagnostics Branch (CDDB) include chemical and biological detection associated with industrial processes and terrorism. Development of detection devices such as laboratory-on-a-chip, DNA- and antigen-based assays is complimented by strong efforts in data mining and chemometric tools. Both intrusive and non-intrusive sensing capabilities also are developed for environmental applications requiring site characterization for chemicals and other toxic/hazardous materials including unexploded ordnance (UXO) associated with Navy and other DoD active, dormant, and transferring ranges. Analytical expertise is directly applicable to combustion diagnostics, infrared decoy performance, explosives detection, and atmospheric life support systems. An ultra fast dynamics group uses laser probes to characterize chemical processes and reactions taking place on the femtosecond time scale.

The CDDB has very strong capabilities in analytical methods and techniques development. This analytical chemistry expertise, which is focused upon the detection, identification and quantification of hazardous/toxic materials, forms the basis for the CDDB being recognized as a center of expertise for monitoring workplace gas phase hazards and as a National center of expertise for enclosed life support systems. In addition to gas phase programs, scientific expertise is also focused on trace metal specification in complex solutions including sea water. The use of novel trace metal sequestering agents and fiber optics allows for specificity and *in-situ* sampling.

The CDDB has a strong commitment to a wide range of microbiology and molecular biological thrusts. We conduct basic and applied research in: 1) biogeochemical influence on methane hydrate formation and carbon cycling in fresh, estuarine and littoral marine environments; 2) biological contribution to organic contaminant natural attenuation in military and industrial harbors; 3) organic contaminant source and fate; 4) deep ocean carbon sequestration, and; 5) microbial influences corrosion and metal reduction.

The CDDB is a center of expertise for a number of national and international efforts including the development of biological-based sensors and components, strategies for long-term storage and stability of biologics and biomaterials, environmental and strategic security of hazardous materials and air and water compliance efforts within the DoD.

The Surface Chemistry Branch conducts experimental and theoretical S&T programs to study surfaces and solids including the properties of the gas-solid, liquid-solid, and solid-solid interface. These programs develop a fundamental understanding of the properties and behavior of surfaces and solids through composition, structure and dynamics measurements taken under a variety of conditions (temperature, environment, ionizing radiation, and electron/photon excitation). This knowledge is then used to develop new or improved surfaces, coatings and materials for Naval applications. Examples of the research programs include developing sensitive and quantitative techniques for surface and interface analysis, some with nanometer- scale spatial resolution; developing improved fluid and solid lubricants; modifying surfaces to reduce friction, wear, erosion, corrosion, and adhesion or to improve adhesion; developing new film deposition technologies to tailor surface properties using plasma, chemical vapor, electrochemical, Langmuir-Blodgett, and other deposition technologies; understanding the chemical reaction dynamics on surfaces as they pertain to film deposition, etching, corrosion and catalysis; using lasers to probe sub-nanosecond phenomena in solids as well as to produce electronic and structural excitations; developing microsensors for the rapid and sensitive detection of chemical, biological and radioactive species in air and fluids; and improving electrochemical power sources such as fuel cells and batteries. The CDDB also uses its expertise and analytical techniques to help the Navy solve interface- and coatings-related problems. Areas of expertise include solid and liquid lubrication, surface modification to reduce wear or corrosion or prevent marine fouling, advanced coatings, fuel cells, batteries, thermoelectric and electronic materials, electro-catalytic surfaces for environment and contaminant control, nanofabrication, nanolithography, chemical sensors, biological sensors, radiation sensors, microfluidics, waste remediation, and pollution prevention. The personnel in the Surface Chemistry Branch have an understanding of Navy problems and a reputation for working with the SYSCOMS, Naval repair facilities and fleet with problems relating to interface phenomena. CDDB personnel also work with industrial partners to transfer Navy technologies to commercial applications and new products.

2.0 SCOPE

This contract seeks the assistance of highly skilled and technically qualified contractor scientists and engineers to carry out the mission of the NRL Chemistry Division with particular focus of the activities within the Chemical Dynamics and Diagnostics Branch and the Surface Chemistry Branch. The range of skills required include laser expertise; optical, surface and interface spectroscopies including near-field and scanned probe microscopies; mass spectrometry; reaction kinetics and mechanisms; solid-state mechanics and processes including friction and wear; coating and thin film technologies; electrochemistry including materials and processes for energy storage, conversion and generation; corrosion science and engineering applications; environmental science and engineering including remediation activities; modern instrumental analysis technique development and applications; biological and microbiological analysis capabilities including drug analysis; advanced chemical, biological and radiation sensor development; computer modeling and graphics; software development; sophisticated data reduction and analysis; generation of briefings and reports; and hardware design and system engineering experience.

The contractor shall conduct laboratory research and develop research programs to provide specified biochemical, engineering and computational expertise in areas as described below. The contractor shall carry out laboratory research and development studies of emerging biochemical, medical, environmental technologies. In conjunction with Government scientists, and coordinated with the COR, transition these R&D efforts into breadboard demonstrations, and as indicated, into prototype devices. Other devices and applications may be proposed by the contractor or identified by the COR.

These R&D requirements include tasks that vary considerably in their scope and in the complexity of the deliverable products. However, the tasks are interrelated in that they support the central mission of NRL Chemistry Division and must be coordinated.

3.0 TASK DESCRIPTIONS

The task areas are described below.

3.1 ANALYSIS AND SENSING

3.1.1 Analysis And Control Of Airborne And Waterborne Chemicals

3.1.1.1 Background

The analysis of airborne and waterborne chemicals is a subject of Navy R&D for several reasons. The measurement of toxic industrial chemicals and chemical agents in both air and water is an important component of force protection and homeland defense, both from the perspective of direct measurements and in support of sensor research. Measurement of airborne and waterborne compounds is also an important element of Navy environmental issues, particularly where related to remediation of shipboard waste streams. Direct measurement of environmental contaminants in waste streams or the field is critical for understanding remediation processes, either artificial or natural. Such measurements are also made in the laboratory in support of sensor development for feedback monitoring of waste streams.

NRL is involved in efforts to use available and new techniques to characterize chemical components in water and air. These measurements are used to obtain information directly about the sample, air or water, and to provide baseline information about the environment or process of concern. In some cases, well-verified standard methods are used, with standard quality control procedures, so that the recorded data are thoroughly validated. In other cases, particularly in support of sensor development, new methods may be developed and employed to assist in the research process. In the case of submarine atmosphere analysis, new methods for measurement of both life gases and trace constituents are being developed. There is significant continuing effort to develop new real-time atmosphere analyzers, to characterize more thoroughly the submarine atmosphere, and to assist the Navy medical and industrial hygiene community in developing methods for long-term, fleet wide monitoring of atmospheric constituents aboard submarines. These efforts will provide important baseline information that will be used to characterize the performance of atmosphere control equipment, as well as serve as the beginning of a Navy database for submarine atmosphere compositions and the associated medical and health issues related to the crew. Techniques and capabilities developed specifically for water and atmospheric analysis in the fleet will have widespread applications ashore and in the civilian community.

3.1.1.2 Technical Requirements

1) The contractor, using standard analytical methods and techniques, shall characterize permanent gases, inorganic compounds and trace organic components from water and air samples. These samples may be taken from the environment, shipboard waste streams or may be samples taken from special environments such as the submarine atmosphere. Typical water analysis studies involve collection of samples

from the environment or a shipboard process using the appropriate sampling method, including solid phase microanalysis (SPME) and grab samples. Samples may be cleaned up and concentrated over appropriate solid-phase extraction media or treated by solvent extraction/concentration. Samples are analyzed by a variety of methods including gas chromatography (GC) with flame ionization (FID), electron capture (ECD), thermal conductivity detection (TCD), or gas chromatography/mass spectrometry (GC/MS). For aqueous samples, membrane introduction or purge and trap interfaces are combined with GC/MS. For air samples, canister sampling is used to collect whole air samples, or samples are acquired by passing air over adsorbent materials such as Tenax and Carbotrap. Sampling media employing reactive substrates shall also be used in the characterization of compounds such as aldehydes and ketones. In some cases, diffusive sampling media may be employed. Standard methods for analysis of these samples include thermal desorption/cryogenic trapping combined with gas chromatography and various hybrid mass spectrometry techniques. Other analytical approaches that will be employed include extraction, followed by liquid chromatography analysis with UV detection, and gas chromatography with flame ionization detection. The contractor shall make modifications to these techniques and shall develop new techniques where necessary. Commercial instrumentation will be provided by the Government or acquired by the contractor for the government as directed by the COR. The contractor shall evaluate analytical protocols and techniques for accuracy, precision, applicability and performance over time. Air sampling techniques will be used to characterize submarine air samples and will also be employed in the characterization of other materials and processes related to submarine atmosphere control, as necessary.

2) The contractor shall perform studies in which the solution and gas phase products from Navy shipboard waste remediation processes are analyzed in order to better understand, monitor and control these processes. These will include characterization of volatile and non-volatile components of products from bioreactors and plasma reactors being developed for waste stream treatment aboard maritime platforms and shore-based facilities resulting from naval activities. The results of these studies will be used to understand and control the process, and will be used to inform selection of sensors that can provide real-time information about the process. As sensors are selected, standard sampling and analysis methods will be used to verify the output of sensors.

3) Techniques developed in this effort will be tested at field sites, as specified by the COR, to evaluate their performance. The contractor shall design test protocols, support field studies, evaluate results and draft reports describing performance.

3.1.2 Chemical Analysis And Chemical Sensor Development

3.1.2.1 Background

Naval vessels are facing ever-increasing restrictions to operations at sea, in shallow water environments, and even at dock. Control of both solid and liquid wastes is subject to a myriad of complex, and often conflicting, requirements. The holding capacity of tanks for both gray and black water wastes is inadequate for legal operation in many scenarios and technologies are not available for timely volume reduction of these wastes. New techniques are required for treating both solid and liquid wastes onboard the surface fleet to allow unrestricted operation and access to all friendly ports. An ability to analyze in the field the contents of the liquid waste streams (gray water, black water and bilge water) is an immediate requirement. NRL is involved in efforts to develop new sensors and portable instrumentation that will be useful in the analysis of wastewater streams from Navy ships. This involves monitors based on conventional instrumentation such as mass spectrometers, as well as emerging techniques such as sensor array or lab-on-a-chip technologies based on surface acoustic wave and other chemical sensor devices. Conventional analytical techniques are also used to characterize these waste streams so that new sensor systems can be compared with approved protocols.

In fact, the principle functions of the Bio/Analytical Chemistry and the Chemical Sensing and Chemometrics Sections are to conduct research that will lead to new and basic understanding of chemical reactions as applied to chemical sensing and detection. Projects include the study of trace metal speciation, luminescence, chemical & biological detection, lab-on-a-chip, hazardous chemical detection, chemometrics applied to sensor systems and analytical methods. This program consists of research projects involving novel state-of-the-art methods for hazardous chemical and fire detection. These R&D projects require expertise in basic chemical analysis, instrument design, method development, computational modeling, and system verification. The research areas address environmental and workplace chemical detection needs using chemical sensors, personal dosimeters, and area monitoring. Design and development of individual sensors and sensor arrays is the emphasis of the research. One of the major areas of research is the application of artificial intelligence techniques to data interpretation problems associated with hazardous material detection. A key focus of this research is the analysis of sensor array data using statistical multivariate methods such as pattern recognition methods and neural networks. A significant function of the section is in the development of novel spectrometric methods and analytical methodologies, and in the synthesis of new materials that can ultimately be used in sensor system(s). The use of sophisticated state-of-the-art instrumentation such as "laboratory-on-a-chip", micro-capillary electrophoresis, computer controlled miniaturized flow systems are a major emphasis.

NRL is also involved in efforts directed toward the characterization of effluent streams. Standard air sampling and analysis techniques, sensors and instrument-based monitors all can play a role in their characterization. Such techniques can also be useful to characterize effluents from a variety of processes including pollution and atmosphere control equipment.

NRL conducts projects to develop, validate, and apply state-of-the-art measurement techniques, sensors, and mathematical models required for analysis, control and optimization of industrial processes. NRL's research seeks to develop a fundamental understanding of, and generate critical data pertinent to, plasma processing used in semiconductor manufacturing and other industries, chemical sensor technology for chemical process, environmental, and health care applications.

3.1.2.2 Technical Requirements

- 1) The contractor shall employ standard techniques and modifications of standard techniques to characterize water from shipboard waste streams. These techniques include purge and trap/gas chromatography analysis. Other methods including solid-phase extraction and solid-phase microextraction will be investigated. The precision, accuracy and long-term reliability of these techniques must be considered. After suitable development and evaluation, these techniques will be employed in the characterization of unknown samples. These data will be used for comparison with data obtained from other types of sensors.
- 2) The contractor shall explore and develop new technologies to characterize water from shipboard waste streams. These techniques will ultimately form the basis of potential shipboard monitors for wastewater streams and will include membrane introduction mass spectrometry, sensor arrays based on surface acoustic wave devices or electrochemical cells, and immunoassay techniques. Investigations of the precision, accuracy and long-term reliability will be used to compare these portable sensors to the results from more conventional techniques.
- 3) Some techniques developed in this effort will be selected by the Government for testing at field sites to evaluate their performance. The contractor shall design and support field test protocols. The contractor shall compile and analyze data, prepare reports and briefings on results, as directed. As required, the contractor shall organize and provide support for meetings, workshops and conferences to disseminate this information. Government personnel shall conduct these meetings.
- 4) The contractor shall evaluate and use available sampling and analysis capabilities to characterize solid, liquid and gas samples from sites of Navy environmental interest. These analyses will include methods based on standard EPA protocols for the analysis of water, solid waste and air. The methods used will principally employ gas chromatography with flame ionization and electron capture detection, gas

chromatography/mass spectrometry and liquid chromatography. Samples may include soil, sediment and water samples from environmental sites of interest. Principal targets of analysis include volatile and semi-volatile organic compounds including benzene, toluene, ethyl benzene and xylene (BTEX) and PAHs.

5) The contractor shall develop trace analytical and other chemical analysis methods to meet specific Navy needs. Several examples include: 1) The use of atomic emission, electroanalytical, fluorescence, ion and liquid chromatography and other methods to detect trace metal specification and chlorinated hydrocarbons in the ocean environment. These efforts include development of highly selective chelating resins. 2) The development of a new class of radionuclide and heavy metal complexation agents that are tagged with near-infrared dyes and therefore can be extended to the implementation of a compact and portable "laboratory-on-a-chip" operable in the stringent field requirements of DOE site characterization and remediation. 3) The development of a capillary electrophoresis (CE) microchip sensor for the real-time, sensitive and selective detection of energetic explosives in seawater that capitalizes on the miniaturization, high speed, inherent selectivity, high sensitivity, versatility, and negligible reagent features of the "laboratory-on-a-chip" technology. 4) The development of a spectrophotometric field test to determine if a jet fuel contains a sufficient amount of copper to adversely affect thermal stability.

6) The contractor shall assist NRL to create, evaluate, and deploy a highly integrated, self-contained, portable/field-deployable, multi-channel microanalyzer, based on advanced 'Lab-on-a-Chip' technology and novel detection chemistries/biochemistries. The microanalyzer will provide early/rapid/timely, reliable and simultaneous identification and quantification of nitroaromatic and ionic explosives and organophosphate nerve agents.

7) The contractor shall provide technical support in the evaluation of sensor and defense science technology. In the wake of recent terrorist attacks on the United States and with the continuing threat of such attacks of a chemical and biologic (such as toxins) nature, the evaluation of sensor technologies in the current development pipeline is required. Testing and evaluation of detection technologies to determining air and water quality conditions in confined and non-confined areas for chemical and biologics are likely to be similar based on the current known "state-of-technology." Evaluation will be limited to some laboratory testing and comparison of emerging technologies with existing technologies and military requirements.

8) The contractor shall provide technical support in the evaluation of new detection methods for sensors and monitors of effluent streams, including: ship waste, manufacturing or plant production waste, and air emission as related to potential terrorist attacks and scale-up or co-location of materials for chemical, biological or nuclear threats. Evaluation is limited to some laboratory testing and comparison of emerging technologies with existing technologies and military requirements.

9) The contractor shall investigate methods for the detection of surfactants, and surface-active water-soluble polymers and biopolymers in solutions based on thin film and MEMS device technologies. Fast transient heating phenomena will be the focus of this work to characterize hydrophobic and hydrophilic self-assembled monolayer surfaces and to develop new approaches to liquid phase sensing in microfluidic systems. Vapor-Liquid phenomena, particularly heterogeneous nucleation at smooth surfaces will be investigated for dependencies associated with liquid phase materials and upon rationally prepared surfaces. The contractor will prepare, or contribute to the preparation of, manuscripts and presentations describing the results of these experimental investigations.

10) The contractor shall investigate development of microsensor platforms for detection of extraterrestrial gaseous analytes and monitoring of spacecraft cabin environments. A major task of this study is the development of micro-hotplate arrays for pre-concentration and subsequent detection of analytes of interest. Critical to this task is the development and application of chemically sensitive polymer thin films that will be married to microsensor platforms. Expertise with conducting polymer films having controlled functionalization and the electrochemical methods necessary for their use is required. Additionally, integration of polymer sensing films with metal oxide sensing films in array formats is necessary to develop prototype chemical sensing arrays with multi-analyte detection capabilities. The contractor will prepare, or contribute to the preparation of, manuscripts and presentations describing the results of these experimental investigations.

3.1.3 Biotechnology And Biosensor Development

3.1.3.1 Background

The NRL has an established history of collaborative research and development efforts within the Navy, the DoD and other government agencies. The results of these efforts have effectively established the mechanisms to evaluate emerging technologies and to rapidly initiate research and development efforts that allow the government to assess their potential for DoD and dual-use applications. Several projects have moved through advanced development into production applications for the fleet. These emerging technology investigations encompass a diverse technical spectrum within the physical, chemical, biological, and environmental arenas. Examples of biotechnologies include but are not limited to biological sensors, genetic engineering of biomaterials, cell biology, molecular recognition and identification, self-assembled films and patterning on such films, novel devices and microelectrodes, blood surrogates, liquid crystal technologies, and biomedical applications utilizing encapsulated therapeutic compounds. The object of the sensor studies is primarily the detection, identification,

and quantification of trace chemical and biological species. These species may be trace-level single-component items of concern, or may be incorporated in complex mixtures of gases, liquids or solids such as, biological fluids, food, bilge/ocean/potable water, and soil/sediment samples. This task addresses emerging technologies specifically relating to biological sensor technologies.

Drug abuse is one example of a serious problem for our society. The Navy has an extensive program to combat the problem including analysis of various body fluids for evidence of drug use. The demands on analytical chemistry placed by many drugs of abuse are very severe. New techniques are needed to improve selectivity and sensitivity. NRL is developing procedures for the detection of various biomolecules in a variety of matrices, with emphasis on the detection of drugs of abuse in human urine, saliva, sweat, breath, and hair. The mechanisms of binding of drugs to hair and skin and the potential for passive incorporation of drugs to hair and skin from the external environment are being investigated with emphasis on differences between cultural groups. These matrices are also being compared in military and drug addict populations to ascertain which methods are the most effective in detecting drug use. Furthermore, hair has the potential for providing some drug use history that will allow a more informed decision on inducting an individual into the service. Likewise, saliva, sweat and breath are being explored as adjuncts to urine testing for drug screening/detection under certain field scenarios.

Wearable sensors and sensors packages are also being developed for the continuous, non-invasive, remote monitoring of the drug use status of an individual. This technology has applications mainly in the criminal justice environment. However, similar technology could be employed for fitness of duty monitoring and stress monitoring of individuals in the field and in combat operations. In addition, this technology will provide much more information on the health status of an individual than the current occasional testing. Recently, NRL has begun to transition this human biosensor technology to remotely monitor environmental aqueous media.

NRL is involved in the development of specific measurements and standards associated with the use of biotechnology on various commercial processes. Two of these areas include the development of biocatalysts and the use of DNA-based identification procedures. Biocatalysts may be genetically engineered organisms or enzymes that facilitate the synthesis or breakdown of chemicals, and are, therefore, useful in a variety of industrial situations. The structure and activity of such materials are studied in order to understand their mechanisms of action, and thus provide a basis for modifying the enzymes to improve their activity or extend their application. DNA-based identification procedures are widely used by both the medical and forensic communities. Methods and standards are being developed to accurately characterize DNA profiles for forensic and other uses. For these communities, the cloning, sequencing and preparation of standard reference DNA material are studied. This work involves critical fine-tuning of

molecular biology techniques in order to consistently produce high quality reference material. Research has led to the next generation of DNA profiling standard based on polymerase chain reaction (PCR) technology. New methods are being developed for rapid DNA extraction, amplification, separation, and computer imaging. Work is progressing towards a mitochondrial DNA standard.

3.1.3.2 Technical Requirements

- 1) The contractor shall conduct a laboratory research and development program primarily on-site at NRL and other government facilities to provide high level R&D support in the development of biologically based sensors for detection, identification and quantification of single-component and or mixtures of analytes in gas, liquid or solid forms. Biologically-based sensors and assays will include technologies based on biomolecular recognition, e.g., antibodies, DNA and PNA probes, enzymes, aptamers, cells, and other biomolecules, that can be incorporated into biosensors as the recognition element. These sensors shall be used for the detection of drugs of abuse, explosives, pollutants and other environmental contaminants, pathogenic organisms, chemical/biological warfare agents, and other analytes.
- 2) In conjunction with 1) above, the contractor shall participate in studies with other NRL components for the purpose of developing new chemical and biological sensing concepts and devices as required. The contractor shall support NRL in the development of reagentless detection systems and label-free high-density sensors that do not rely on the addition of reagent or labels to the analyte solution to indicate when the desired interaction has occurred.
- 3) In conjunction with 1) above, the contractor shall support NRL to develop novel Micro Electrical-Mechanical Systems (MEMS) and Nano Electrical-Mechanical Systems (NEMS) devices that incorporate physical, chemical and/or biological sensing elements. The contractor shall also support NRL initiatives in the development of nano-technologies (such as carbon nano-tubes) that may be incorporated into sensing elements for Naval applications. The contractor shall provide engineering support in microfluidics and electronics for breadboard and prototype development. The fluidic systems may involve innovative engineering and lithography methods to develop micropumps, valves, and mixers, along with the means to actuate these devices. The contractor shall support NRL to develop new techniques for the analysis of drugs and/or drug metabolites in urine, hair, sweat, saliva, and other matrices. The contractor shall also help to develop new techniques from screening and confirmation of drugs and/or drug metabolites in body fluids. The contractor shall help to develop methods for the remote, real-time monitoring of drug use status of an individual at his/her location.
- 4) The contractor shall support NRL and the Navy Drug Screening Laboratories by providing consultation and review of laboratory procedures and protocols.

5) The contractor will investigate quantum mechanical, molecular dynamics and continuum fluid dynamics computational methods to develop a multi-scale understanding of biomolecular/particulate adsorption, desorption and transport at model environmental surfaces in water and air. Non-equilibrium molecular dynamics computations will be used to investigate the effects on biomolecular transport in flowing electrolyte solutions due to a range of nanosensor variables such as flow rate, solution salt concentration, nanosurface roughness and charge distribution, and a distribution of wall-tethered biomolecules.

3.1.4 COMPUTERIZED CALIBRATION OF INSTRUMENTS

3.1.4.1 Background

NRL is engaged in autonomous systems research which will require automated measurement devices and procedures to ensure data analysis capabilities on an around-the-clock basis. A critical step in meeting this goal is the development of new hardware and software for various computer, instrumentation, and sensor systems for conducting specialized data analysis.

3.1.4.2 Technical Requirements

1) The contractor shall develop new software for various computer systems involved in conducting the specialized data storage and analysis required for the automation of systems. In addition, the contractor shall design and adapt various hardware systems associated with various measurement standards and instrumentation systems. Examples of instruments that require computerized calibration include spinning rotor vacuum gauge, pressure sensors, sensors for density/specific gravity/concentration measurements, gas manifold valving, robotic systems, mass spectrometers, and ring-down time measurement systems.

2) The contractor will develop software algorithms to compare spectral data acquired on field Raman spectrometers with reference data using mathematical programming languages such as Matlab. As part of the development of these algorithms, it is expected that Raman spectral data will be acquired on lab and field based instrumentation. It will be necessary to calibrate and develop new methodologies for calibration of Raman spectral instrumentation. It is anticipated that the effort will contribute to a validated Raman spectral database and a web based Raman spectral library will be made

3.2 CARBON CYCLING IN AQUATIC, MARINE AND TERRESTRIAL ECOSYSTEMS

3.2.1 Background

In coastal watersheds, the activities of naturally occurring bacteria and higher organisms result in the metabolism and cycling of organic matter. Inputs of organic matter to the watershed can be natural terrestrial (allocthonous), anthropogenic (contaminants), or produced in the water column or sediments (autocthonous). Proving the existence of these processes in a given site and determining the rate of which these processes occur is exceedingly difficult given the current state of analytical methodologies and the dynamic nature of many ecosystems. For instance, the ambient level of anthropogenic organics (i.e. petroleum hydrocarbons) in natural samples is the result of fluxes into the site, historical inputs, and degradation (biological, as well as chemical). In the natural environment, these processes are subject to changing environmental controls (seasonal, tidal, episodic meteorological events) that complicates the extrapolation of measured processes. Despite these difficulties, the need to understand contaminant and ecosystem dynamics is critical to reducing the health risk to military and civilian personnel; to the adequate protection of the environment; and to the efficient and effective operation of the Navy within their battlespace environments.

The Naval Research Laboratory is involved in field efforts to determine point and non-point sources of organic matter, measure the impact of organics to aquatic, marine and terrestrial ecosystems, develop strategies to manage watershed restoration, and predictive models for changes in organic matter character and quality. Understanding the environmental control and regulation of the biological and chemical processes that impact the cycling of organic matter in nature will lead to: the ecologically appropriate use or non-use of engineering solutions to ameliorate environmental impact; the development of improved technologies for Naval operations in aquatic and marine battlespace environments; and, the modeling of anthropogenic impacts to coastal watersheds.

3.2.2 The majority of the effort will be accomplished in the field sites and at NRL facilities. Access to field sites may require appropriate training, personal protective gear, and HAZWOPR certification.

3.2.3 Technical Requirements

- 1) The contractor, shall develop protocols for sampling and characterization of organic and inorganic matter (including contaminants) in marine and aquatic sediment and water samples from a variety of field sites using standard methods and techniques. The field sites include coastal estuaries, rivers, tributaries and creeks and the terrestrial and groundwater media that provide the source organic material for these environments. Organic matter includes compounds and classes of materials that impact the water quality and character of coastal ecosystems such as terrestrially derived organics (i.e. lignin, humics, polysaccharides), anthropogenic organics (i.e. hydrocarbons, PAHS, PCBs) and co-contaminants (i.e. pesticides, heavy metals) and autochthonous material (i.e. phytoplankton derived or methanogenesis in marine sediments).
- 2) The contractor shall conduct groundwater assessments in organic impacted watersheds, including measurements of ground water flow, contaminant movement and contaminant degradation, and tidal intrusion from adjacent waterways. Groundwater conductivity measurements shall be carried out using standard geoprobe techniques.
- 3) The contractor shall assist in river studies that characterize sedimentation rates contaminant transport, and chemical risk assessment.
- 4) The contractor shall conduct measurements to identify and quantify natural bacterial assemblages (i.e. Fluorescent *In Situ* Hybridization) and infaunal macrobiota in coastal sediments.
- 5) The contractor shall develop and conduct measurements to characterize biological and photochemical changes in organic matter suspended in coastal waters and colored dissolved organic matter (CDOM).
- 6) The contractor shall investigate and develop new techniques for assessing intrinsic bioremediation and engineering-enhanced bioremediation in terrestrial and aquatic waters and sediments. The contractor shall implement some of these techniques in field studies. The data generated in field studies by the contractor shall be shared with and integrated into a coordinated research effort between NRL employees, academia and other contractors. Proprietary techniques developed in the task are protected as set forth in other clauses in the contract.
- 7) The contractor shall assist in the collection and analysis of methane hydrate samples from marine sediment interface and/or which are embedded in cores, and are collected from marine cruises and other field trips. The analyses will consist of standard gas chromatography, gas chromatography/mass spectrometry, ion chromatography and/or other analytical chemistry procedures. Data reduction and analysis/interpretation shall be accomplished using standard data analysis programs or other novel data reduction techniques.

8) The contractor shall organize and participate in shipboard field investigations of coastal ecosystems. This includes support for logistics, sample processing and shipment, data processing and interpretation, and presentation of results at scientific and regulatory meetings.

9) The contractor shall organize meetings, workshops and conferences to relate field data and findings to Remedial Program Managers, stakeholders and regulators and in support of Navy environmental programs and other related projects at the NRL, as directed by the COR. Government personnel will conduct these meetings.

3.3 MATERIALS

3.3.1 Synthesis, Modification and Characterization of Surfaces, Interfaces and Materials

3.3.1.1 Background

NRL is responsible for conducting both basic and applied research focusing on the development and application of new materials and devices for DOD applications. Fundamental research includes studies of ion-solid, laser-solid, and plasma-solid interactions; ion-, laser-, and flame-assisted thin film growth; defects in films and materials; and structure/film property relationships. Analysis of surfaces by ion, electron and photon beams is used extensively in materials research to characterize the surfaces/interfaces of solids and thin films with respect to their geometric structure and electronic, magnetic, optical and mechanical properties. NRL conducts research that addresses fundamentally new approaches to surface/interface analysis and materials characterization. The NRL Chemistry Division and Surface Chemistry Branch maintain state-of-the-art experimental and computational facilities including four beam lines at the National Synchrotron Light Source at Brookhaven National Laboratory. Examples of the surface and materials analysis techniques found in the Branch include scanning tunneling microscopy, atomic force microscopy, lateral force microscopy, scanning Auger microprobe, high resolution electron energy loss spectroscopy, low energy electron diffraction, X-ray photoelectron spectroscopy, Fourier transform infrared spectroscopy, micro-Raman spectroscopy, ellipsometry, electroanalytical techniques, impedance spectroscopy, scanning electron microscopy, surface area and porosimetry, X-ray absorption spectroscopy, X-ray fluorescence spectroscopy, X-ray diffractometry, micro- and nano-indentation instrumentation, hardness tester, adhesion and scratch testers, lubrication and wear testers, atomic absorption spectroscopy, and mass spectrometry.

These new surface analysis and materials characterization techniques are applied to DOD problems in surface modification to reduce wear or corrosion, advanced coatings, fuel cells, batteries, thermoelectric and electronic materials, electro-catalytic surfaces for environment and contaminant control, nanofabrication, nanolithography, and other areas. The Navy currently spends billions of dollars maintaining and replacing critical Naval components subject to wear and corrosion. These components and platforms are expected to see increasingly adverse conditions as the performance requirements for systems are extended. Research is needed to develop new, high-performance materials and/or coating technologies that protect or extend the life of existing materials. Besides characterizing surface/interface phenomena, considerable attention is paid to modifying surfaces to achieve desired physical/chemical/electrical properties. To this end, techniques involving Chemical Vapor Deposition (CVD), high temperature environments, photon-assisted processes, and plasma processing and plasma deposition/etching are applied. These modified surfaces/interfaces impact a broad array of DOD-related problems/applications including plasma modification, processing electronic devices, protective coatings, corrosion, and synthetic metastable materials. Thin film or coating deposition technologies include (but are not limited to) ion implantation, ion beam enhanced deposition, laser melting, physical and chemical vapor deposition, thermal and plasma spray techniques, self-assembly films, etc. New solid-state materials such as diamond-like carbon films are used to increase load carrying capacity, lower friction, reduce wear, and improve the surface mechanical properties of surfaces and interfaces. Metal, ceramics and polymeric surfaces will be subjected to novel treatments. High temperature tribomaterials will be an important part of this work. Growth, deposition or lithography of nanoscale materials and devices will have a prominent role.

Specifically, the Nanomaterial Interfaces and Devices Section (NIDS) conducts fundamental and applied research directed toward the growth and surface chemistry of advanced materials such as diamond, cubic boron nitride, aluminum nitride, gallium nitride, silicon carbide, and III-V materials. The Molecular Interfaces and Tribology Section addresses a range of fundamental and applied problems in the highly interdisciplinary field of tribology and coatings including (1) reduction of friction and wear by coatings and surface modification of metals, ceramics and polymers; (2) relationship between tribological behavior, surface mechanical properties and surface composition and structure; (3) nanomechanics and nanotribology studies of surfaces and interfaces; (4) durability and adhesion of easy-release elastomeric coatings; (5) bearing/lubricant/additive interactions and their effects on lubrication; (6) development of lubricating oils and greases for especially demanding applications, and (7) replacement of hard chrome plate with alternative materials. The Surface Nanoscience and Sensor Technology Section (SNSTS) studies the atomic-scale structure and chemistry of single crystal silicon, germanium, and III-V compound semiconductor surfaces, interfaces, and devices in UHV using STM and other surface analytical techniques. Because of the rapidly shrinking size of electronic devices, these studies are vital to the development of future Navy electronics. The SNSTS also uses a host of

chemical synthesis and characterization methods to fabricate and study a variety of nanostructures. Current work includes the development of AFM-based “dip-pen nanolithography” for creating nanoscale organic nanostructures on surfaces, the synthesis and self-assembly of nanowires and nanotubes, and bio-inspired self-assembly of nanoscale components such as submicron mercury or gallium droplets. They are also attempting to combine UHV-based atomic-scale control over surface structure with wet chemical processing to create hybrid organic-semiconductor nanostructures. NIDS engages in basic and applied research of the chemical, electronic, and optical properties of nanoscale materials, including nanoparticles, nanowires, and nanotubes that range from single-phase elemental structures to more complex multiphase materials such as heterostructures and nanoparticle/biological interfaces. The focus is on determining how the fundamental properties of a material change at the nanoscale, especially as a result of their environment. Surfaces and interfaces can dramatically affect the properties of these materials because of their small size and large surface to volume ratio. Thus, the behavior of nanoparticles can be affected by contact with surfaces, immersion in a vacuum or a fluid, or integration in functional devices such as ChemFETs or plasmonic light sources. The nanoscale-derived properties of these materials are then used to meet DoD-relevant applications by synthesizing, characterizing and assembling the nanostructures into relevant architectures as prototype electronic, photonic, and sensing devices.

Generally, the Navy is working to improve the performance service life, affordability, maintainability, and safety while reducing life-cycle costs and manning requirements. NRL is significantly involved in assisting the Navy in its endeavors in supporting research, development and engineering efforts for improving these areas. Accordingly, NRL requires highly specialized technical and engineering support that is capable of supporting the diverse and interdisciplinary research topics described above.

3.3.1.2 Technical Requirements

1) The contractor shall prepare samples for friction and wear studies using polishing techniques to yield geometry and finish suitable for subsequent analysis by modern, sophisticated surface analysis techniques. The surface modification will be done at an NRL facility or elsewhere as is cost effective. The friction, wear and load carrying characteristics of the modified and control samples shall be determined by appropriate techniques. Using the sample specified above, chemical and microstructural information must be determined on wear surfaces. The data obtained from these tests shall be correlated with tribological performance of the modified surfaces.

2) The contractor shall conduct surface engineering studies where surfaces are modified by film deposition (or ion implantation) to explore the effects of novel structures and alloy compositions on friction and wear behavior. For example, using a triple ion gun IBAD system, the contractor shall make compositionally graded films of virtually any alloy. Surface analytical techniques are combined with micro-mechanical testing to establish structure-property relationships of tailored surfaces. Example of recent studies involve both metal and ceramic substrates, and coating materials such as solid lubricating films, hard-coatings (DLC, metal/metal-ceramic multilayers) and elastomer-based, foulant-release coatings.

3) The contractor shall prepare new metastable materials such as diamond, c-BN, silicon carbide, gallium nitride, and/or III-V materials via chemical vapor deposition or other deposition methods. Deposition conditions, surface reactivity, precursor decomposition mechanism, precursor adsorption/desorption, and nature of different ligands are some of the factors studied for their influence on the aforementioned thin film properties.

3.3.2 Synthesis And Characterization Of Materials For Energy Storage, Conversion And Generation

3.3.2.1 Background

Disordered and amorphous materials are critical components in numerous technologies of societal and military importance. Examples of such materials, in which charge transport is required for the technological end use include amorphous semiconductors for photovoltaics or electrophotographic imaging, superconducting cuprates and magnetoresistive manganese manganates whose properties derive from localized defects for motors and ferroelectrics, respectively, and insertion solids such as carbon and metal oxides or hydrides for electrochemical power storage. In particular, it has recently been recognized that nanoscale, poorly crystalline, charge-insertion solids function as high-performance materials in power source such as lithium-ion batteries, direct methanol fuel cells, and reformate-fed fuel cells. The difficulty of analytical and physiochemical characterization of disordered-to-amorphous materials is further compounded when the materials and phases are nanoscopic. Hence, conventional X-ray diffraction and other traditional techniques used to determine the structure of materials may be the place to start when characterizing any new material, but isn't the place to finish when working with charge-insertion nanomaterials of interest in batteries, supercapacitors, ultracapacitors, photovoltaics, fuel cells, and electrocatalysts.

3.3.2.2 Technical Requirements

- 1) The contractor shall prepare and characterize new advanced electrochemical materials such as ambigel/xerogel/aerogel monoliths and powders and/or colloidal gold and platinum aerogels and composite aerogels for catalysis, sensors, and electrochemical devices including batteries and fuel cells. The contractor shall also assist in the preparation and characterization of 3-D nanoarchitectures as integrated, tricontinuous nanobatteries including fabrication of ultrathin, pinhole-free electropolymerized polymeric separators.
- 2) The contractor shall also conduct applied research on new oxide-based catalysts for oxygen-reduction at polymer fuel cell catalysts. This work shall include the synthesis of novel materials plus their physical and electrochemical characterization. The contractor shall also assemble and test the catalysts in fuel cells.
- 3) The contractor shall help to develop mesoscale electrochemical and solar energy harvesting devices. Materials will be characterized and tested for their performance and energy efficiency.

3.4 DEVELOPMENT, ANALYSIS AND MODELING OF UXO SENSORS

3.4.1 Background

Hundreds of thousands of acres of Department of Defense (DoD) property are returned to civilian use each year. Portions of DoD bombing and target ranges periodically must be rendered safe for further DoD operations. Additionally, toxic and hazardous burial sites must be evaluated to determine required remediation efforts. For many years, NRL has been developing automated technologies for detection of buried materials and non-intrusive characterization of explosive ordnance disposal (EOD) sites and toxic/hazardous waste burial sites. The NRL has developed a state-of-the-art capability; the Multi-sensor Towed Army Detection System, MTADS, is a fully field-worthy prototype system. It is currently being demonstrated at field sites selected by the Office of the Assistant Secretary for Defense for Environmental Security and other DOD agencies. The vehicular MTADS has been augmented by hand-held, man-portable adjuncts and both GPS and acoustic navigation have been integrated. Currently, new variants of both time-domain and frequency-domain electromagnetic induction sensors are being evaluated, as are new concepts for metal sensing for UXO detection and discrimination.

Increasingly, the emphasis in UXO R&D programs is on discrimination. Systems such as the MTADS have proven the ability to detect most UXO targets of interest but still suffer from an inordinate number of false positives. In fact, the Army Corps of Engineers estimates that in a typical UXO clean-up, 70% of the resources are spent digging non-hazardous targets. To reduce the number of false positive detections will require both new, more capable sensors and improved data analysis schemes to efficiently make use of the additional information provided by these new sensors.

3.4.2 Technical Requirements:

1) The contractor shall provide specified R&D support, in areas as described below. Computational performance models shall be developed for variants of existing sensor types including time- and frequency-domain EMI detectors. Development of new concepts for detection approaches including data sampling approaches, deployment of sensor arrays of identical or complimentary sensors, and new sensor approaches with potential to provide object shape information shall be undertaken. Promising approaches will be developed, evaluated, and incorporated into prototype designs for field demonstrations.

2) The contractor shall develop data analysis schemes that accommodate developing and future sensor outputs, deployment strategies and joint and cooperative sensor analyses. New target modeling approaches shall be developed that incorporate information from advanced sensors. All software developments are subject to testing in UXO field demonstration surveys.

4.0 WORK SITE

A major portion of all tasks will be performed at NRL, or at other Navy, DOD or government facilities as specified by the COR, and consequently will mostly use government furnished equipment, materials and components. Some parts of the tasking may be performed at the contractor's facilities. Some demonstrations and evaluations may take place at current or former DoD ranges containing UXO or other hazardous materials. Access to these sites may require appropriate training, use of personal protective gear and OSHA and Hazardous Waste Operations (HAZWOPR) certification. Special requirements may apply, as described above. Certain GFE, materials and components will be used on the former DoD ranges.

5.0 DELIVERABLES

The contractor shall provide a monthly status of funds report, periodic progress reports (monthly, or as required by the COR), oral briefings and progress reports (quarterly, or as requested by the contractor or COR) and a final report upon completion of this task as described in DD Form 1423. Prototype equipment developed as part of any tasking, will be a deliverable. Any developed prototype equipment will be provided with full documentation including manuals, drawings, schematics and documented software. (The level of drawings, schematics, etc. will be specified by the COR on a case-by-case basis.) Detailed test procedures associated with analytical tests, documented analytical protocols, and test procedures, as specified by the COR, are deliverables.

6.0 SECURITY REQUIREMENTS

No classified area or access to classified information is anticipated for this task. The security classification for this task shall be at the UNCLASSIFIED level.

7.0 SAFETY REQUIREMENTS

The contractor shall be required to follow all NRL, Navy and DoD regulations in regards to safety in areas such as hazardous material usage and disposal, biological safety, laser safety, radiological safety, and human subjects. Access to sites containing UXO or other hazardous materials may require appropriate training, use of personal protective gear and OSHA and Hazardous Waste Operations (HAZWOPR) certification.

CONTRACT DATA REQUIREMENTS LIST
(2 Data Items)

Form Approved
OMB No. 0704-0188

The 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 the burden, to the Department of Defense, Executive Services Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please do not return your form to the above organization. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO. 0005, 0010, 0015, 0020, 0025	B. EXHIBIT A	C. CATEGORY: TDP _____ TM _____ OTHER _____
--	------------------------	---

D. SYSTEM/ITEM	E. CONTRACT/PR NO. 61-0266-10	F. CONTRACTOR
-----------------------	---	----------------------

1. DATA ITEM NO. A001	2. TITLE OF DATA ITEM Monthly Financial Status Report	3. SUBTITLE
---------------------------------	---	--------------------

4. AUTHORITY (Data Acquisition Document No.) N/A	5. CONTRACT REFERENCE SOW Para 5.0	6. REQUIRING OFFICE NRL Technical Code
--	--	--

7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED	10. FREQUENCY Monthly	12. DATE OF FIRST SUBMISSION 35 DAC	14. DISTRIBUTION		
8. APP CODE	11. AS OF DATE DAC	13. DATE OF SUBSEQUENT SUBMISSION *See BLK 16		a. ADDRESSEE	b. COPIES	
					Draft	Final Reg Repro

16. REMARKS The report shall include, but is not limited to, a) Current cumulative support provided for the contract and enumeration of all prior increments applied to the contract associated with individual tasks/subtasks. b) Monthly and cumulative (contract to date and fiscal year to date) labor hours and costs (including program management, individual labor hours (show employee name, number of hours, and total amount billed for each employee), materials travel, publications, consultants, subcontracts, and other costs. If the contractor employees worked on multiple tasks/subtasks (as defined by the COR), the number of hours worked on each task/subtask must be shown separately. c) Funds remaining to support each task/subtask. *Report due NLT 5th of each month.	15. TOTAL → 0 1 0
---	--------------------------------

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

1. DATA ITEM NO. A002	2. TITLE OF DATA ITEM Monthly Technical Progress Reports	3. SUBTITLE
---------------------------------	--	--------------------

4. AUTHORITY (Data Acquisition Document No.) N/A	5. CONTRACT REFERENCE SOW Para 5.0	6. REQUIRING OFFICE NRL Code 6130
--	--	---

7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED	10. FREQUENCY Monthly	12. DATE OF FIRST SUBMISSION 35 DAC	14. DISTRIBUTION		
8. APP CODE	11. AS OF DATE DAC	13. DATE OF SUBSEQUENT SUBMISSION SEE BLK 16		a. ADDRESSEE	b. COPIES	
					Draft	Final Reg Repro

16. REMARKS Report shall include, but is not limited to: a) Description of progress on individual tasks/subtasks during the reporting period, accompanied by description of any changes in approach, requirements, and schedule. b) Summary of problems, issues or areas of concern for which government assistance or guidance is appropriate. c) Description of existing or anticipated deviation from the approved program plan or required change in program objectives. d) Formal or informal oral briefings describing progress on individual tasks or subtasks, as required by the COR. *Report due no later than 5th of each month	15. TOTAL → 0 1 0
---	--------------------------------

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

G. PREPARED BY NRL Code 6102	H. DATE	I. APPROVED BY	J. DATE
--	----------------	-----------------------	----------------

CONTRACT DATA REQUIREMENTS LIST
(2 Data Items)

Form Approved
OMB No. 0704-0188

The 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 the burden, to the Department of Defense, Executive Services Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please do not return your form to the above organization. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO. 0005, 0010, 0015, 0020, 0025		B. EXHIBIT A	C. CATEGORY: TDP _____ TM _____ OTHER X	
D. SYSTEM/ITEM		E. CONTRACT/PR NO. 61-0266-10		F. CONTRACTOR
1. DATA ITEM NO. A005	2. TITLE OF DATA ITEM Contractor On-Site Report		3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.) N/A		5. CONTRACT REFERENCE		6. REQUIRING OFFICE NRL Technical Code
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED N/A	10. FREQUENCY Monthly	12. DATE OF FIRST SUBMISSION 30DAC	
8. APP CODE N/A		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	
14. DISTRIBUTION		15. TOTAL → 0 2 0		
16. REMARKS		17. PRICE GROUP		
The contractor shall provide a monthly contractor on-site labor report by the 5th workday of each month for the preceding month. The report must include the following data:		18. ESTIMATED TOTAL PRICE		
(1) Reporting Period:				
Contract Number:				
Contract Value:				
Current Funding:				
Amount Expended in Current Period:				
Total Expended to Date:				
Date Submitted:				
(2) Labor (including subcontractors) - Show employee name, number of hours, and total amount billed for contractor employees working on site at NRL. If the contractor employees worked on multiple tasks (as defined by the COR), the number of hours worked on each task must be shown separately.				

1. DATA ITEM NO. A006		2. TITLE OF DATA ITEM Progress Report		3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE SOW Para 5.0		6. REQUIRING OFFICE NRL Technical Code	
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED N/A	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION ASREQ		
8. APP CODE N/A		11. AS OF DATE ASREQ	13. DATE OF SUBSEQUENT SUBMISSION ASREQ		
14. DISTRIBUTION		15. TOTAL → 0 2 0			
16. REMARKS		17. PRICE GROUP			
These reports will be submitted as requested by the COR in a format agreed upon between the Contractor and the COR.		18. ESTIMATED TOTAL PRICE			

G. PREPARED BY NRL Code 6102		H. DATE	I. APPROVED BY		J. DATE
--	--	----------------	-----------------------	--	----------------

PERSONNEL QUALIFICATIONS

The following describe required qualifications for Key Personnel:

Program Manager (Key Personnel)

The Program Manager (PM) for this contract must be a senior R&D Manager with a minimum of 10 years of experience in an R&D environment administering DoD-sponsored programs. Because of the highly technical and specific nature of the work the PM must possess a BS degree in the chemical, physical or engineering sciences, and must have demonstrated experience or oversight commensurate with the scope of this effort. Specifically, the Program Manager must have knowledge or experience in (1) the development of chemical and biological sensors for the detection, analysis and control of airborne and waterborne species, (2) the handling of environmental problems associated with site characterization and remediation of environmental contaminants in soils, groundwater and sediments, (3) the development, characterization and evaluation of materials and instrumentation for Naval and other DoD/Government projects, and (4) the design and operation of Naval engineering systems and their applications. As manager of a group of highly-trained specialists, with diverse talents working on programs with both strong laboratory R&D and field operational components, the PM shall have documented strengths in coordinating complex programs and managing/supervising a staff composed of physical, material, chemical and biological scientists, engineers, as well as ancillary technical and administrative support personnel.

SOW Paragraph 3.1: ANALYSIS AND SENSORS

Scientist/Engineer(s) (Key Personnel) must possess a BS or equivalent degree in chemistry, biochemistry and/or biology related fields. Background and practical experience is required in molecular biology (including the cloning and sequencing of genes, enzyme assays, the production and characterization of protein), drug analysis, and miscellaneous laboratory procedures such as spectrophotometry (UV, visible, and fluorescence), centrifugation, and sterilization. Hands-on experience using standard analytical methods, which may include gas and liquid chromatography, electrochemical methods, mass spectrometry, NMR, and optical spectroscopy and techniques such as solid-phase extraction and other sampling methods is desired.

SOW Paragraph 3.2: CARBON CYCLING IN AQUATIC, MARINE AND TERRESTRIAL ECOSYSTEMS

Scientist/Engineer(s) (Key Personnel) for this task must possess BS or equivalent degree in chemistry, biology, environmental or marine science/engineering or related disciplines. Experience in operating and maintaining standard analytical methods such as gas and liquid chromatography, total organic carbon analyzer, coulometer, fluorometer, nutrient analyzer, mass spectrometry, and optical spectroscopy and

techniques such as solid-phase extraction and other sampling methods for characterizing gases, inorganic compounds and trace organic and biological components in water and air samples is highly desirable. The support staff will also be directly involved with the collection of samples at remote field sites and subsequent remediation of these sites. Hence, significant field experience is desired.

SOW Paragraph 3.3: Materials

Senior Scientist/Engineer(s) (Key Personnel) must have Ph.D. degree or equivalent degree in Chemistry or Physics, Materials Science or Engineering, Mechanical Engineering, or equivalent, with a minimum of 5 years of experience in materials characterization. Each person shall be a recognized expert and an active researcher in his/her field, as documented by his/her stature in professional societies and/or regular publications in peer-reviewed journals and presentations in professional society meetings. Senior Scientist/Engineer(s) must possess demonstrated experience in the fields of Surface Chemistry or Physics.. Expertise in subfields such as nanoscience, corrosion inhibition, and tribology including the synthesis of lubricants of Naval applications or materials engineering as it pertains to failure analysis, coating systems, and specifically in corrosion, weathering, and physical test methods in accordance with various standards organizations, are highly desirable.. Senior Scientists/Engineers may be required to coordinate the activities of junior staff; hence, demonstrated supervisory experience is desired.

Scientist/Engineer(s) (Key Personnel) staff must possess BS or equivalent technical degree in chemistry, materials science, nanoscience, or other related fields. Background and practical experience in the synthesis of materials via chemical vapor and other deposition methods of semiconductor materials, such as diamond, is required. Knowledge and skills in areas of metallographic polishing and chemical etching are highly desired. Database management skills are also desired. Some programs will require background and practical experience in surface analytical methods (including X-ray photoelectron spectroscopy, Auger Electron Spectroscopy, Raman Spectroscopy, Infrared Reflection Absorption Spectroscopy) as well as the design and construction of ultra-high vacuum surface analytical equipment.

Scientist/Engineer(s) (Key Personnel) staff must possess B.S. degree or equivalent technical degree in chemistry, physics, materials science or related disciplines and have 1 year of hands on experience in electrochemistry and electrochemical systems including battery, fuel cell, and other power generating/storage technologies. Other hands-on experience using various surface and materials characterization tools such as electrochemical methods (for example potentiometry, impedance spectroscopy, and cyclic voltametry), scanning and transmission electron microscopy, X-Ray diffraction and X-ray photoelectron spectroscopy is desired.

The following describe desired qualifications for other Personnel:

Scientist/Engineer(s) - BS or equivalent degree in chemistry, biology, environmental science/engineering or related disciplines and have hands on experience using standard analytical methods such as gas and liquid chromatography, electrochemical methods, mass spectrometry and optical spectroscopy and techniques such as solid-phase extraction and other sampling methods for characterizing gases, inorganic compounds and trace organic and biological components in water and air samples.

Scientist/Engineer(s) - BS or equivalent degree in chemistry or a related discipline and should have hands on experience in chemical synthesis and analysis using standard analytical methods which could include gas, ion and liquid chromatography, GC/MS and other mass spectrometry including time-of-flight, atomic emission, electrochemical and electroanalytical methods, fluorescence, spectrophotometry, NMR, UV-VIS spectroscopy, and FTIR spectroscopy.

Senior Scientist/Engineer(s) - Ph.D. degrees in Chemistry, Biology/Microbiology, biochemistry, Biomedical/Electrical/Mechanical Engineering, or equivalent, with a minimum of 5 years of experience. Each person must be a recognized expert and an active researcher in his/her field, as documented by his/her stature in professional societies and/or regular publications in peer-reviewed journals and presentations in professional society meetings.

Senior Scientist/Engineer(s) - experience in the following areas: the design and construction of scientific instrumentation including the development of biosensors and microfluidics systems. Expertise in microbial physiology, ecology, genomics, and molecular biology as applied to the detection and defense against microbial pathogens is highly desired. He/she may be required to coordinate the activities of junior staff; hence, demonstrated supervisory experience is considered a strength.

Scientific Electronics Technician(s) - 3 years experience demonstrating technical skills in electronics including a familiarity with the function of standard instrumentation interfaces and protocols such as IEEE-488, RS-232, parallel communication port, Universal Serial bus (USB). Computer science and programming skills are also required including experience with multiple platforms such as Linux, Windows (XP, Vista, 7, Server), and various programming languages including Lab View, C++, and Visual Basic.

Senior Scientist/Engineer(s) - Ph.D. degree or equivalent technical degree in chemistry physics, materials science or related disciplines and have hands on experience in electrochemistry and electrochemical systems including battery, fuel cell, and other power generating/storage technologies. Other hands-on experience using various surface and materials characterization tools such as electrochemical methods (for example potentiometry, impedance spectroscopy, and cyclic voltametry), scanning and transmission electron microscopy, X-Ray diffraction and X-ray photoelectron spectroscopy is desired.

Senior Scientist/Engineer(s) - Ph.D. degree in geophysics, geology or a related field, with a minimum of 5 years of experience in program management. The person is expected to be a recognized expert and an active researcher in his/her field, as documented by his/her stature in professional societies and/or regular publications/presentations in professional society meetings. He/she may be required to coordinate the activities of junior staff; hence, demonstrated supervisory experience is considered a strength.

Scientist/Engineer(s) - BS degree in computer science/modeling or geophysics or related disciplines and have hands on experience using geographical information systems.