

SOLICITATION, OFFER AND AWARD		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING DO-C9	PAGE OF 1 24 PAGES
2. CONTRACT NO.	3. SOLICITATION NO. N00173-03-R-DL02	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)		5. DATE ISSUED 2/20/03	6. REQUISITION/PURCHASE NO.
7. ISSUED BY CONTRACTING OFFICER NAVAL RESEARCH LABORATORY 4555 OVERLOOK AVENUE SW WASHINGTON DC 20375-5326 ATTN: CODE 3220.dl		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 Four (4) 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 See Section L-2 until 4:00 local time 3/24/03
(Hour) (Date)

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

10. FOR INFORMATION CALL:	A. NAME Dian Lockamy	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) 202-767-3782
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OFFER (Must be fully completed by offeror)

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

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

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52-232-8)	10 CALENDAR DAYS	20 CALENDAR DAYS	30 CALENDAR DAYS	CALENDAR DAYS
	%	%	%	%
14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated:	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)
15B. TELEPHONE NO. (Include area code)			17. SIGNATURE
15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.			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 <input type="checkbox"/> ITEM (4 copies unless otherwise specified)	
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 (Signature of Contracting Officer)	28. AWARD DATE

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

**PART I - THE SCHEDULE
SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS**

B-1 SUPPLIES/SERVICES AND COSTS

ITEM NUMBER	SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
0001	The Contractor shall conduct research and development in accordance with Section C.	\$	\$	\$
0002	Data in accordance with Exhibit A (DD 1423)	* NSP	* NSP	* NSP
TOTAL ESTIMATED COST PLUS FIXED FEE:		\$	\$	\$

** Not Separately Priced*

NOTICE TO OFFERORS: In addition to inserting the estimated cost and fixed fee for the base year above, the estimated cost and fixed fee for each optional extension of the term of the contract are to be inserted in Section H.

**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, with 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 08 October 2002 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/home.htm>.

C-3 SUBCONTRACTING PLAN

Subcontracting Plan _____ dated _____ is hereby incorporated by reference and made a material part of this contract.
*(*this provision will be included and completed at time of award, if applicable)*

**SECTION D
PACKAGING AND MARKING**

D-1 PACKAGING AND MARKING

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

**SECTION E
INSPECTION AND ACCEPTANCE**

E-1 INSPECTION AND ACCEPTANCE CLAUSES INCORPORATED BY REFERENCE

FAR CLAUSE TITLE

- 52.246-8 - Inspection Of Research And Development - Cost Reimbursement (MAR 2001)
- 52.246-9 - Inspection Of Research And Development (Short Form) (APR 1984)

DFARS CLAUSE TITLE

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

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 AND PLACE OF PERFORMANCE

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

(b) The principal place of performance of this contract shall be at the Naval Research Laboratory, Washington DC.

**SECTION G
CONTRACT ADMINISTRATION DATA**

G-1 PROCURING OFFICE REPRESENTATIVE

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.

Security Matters- Contracting Officer for Security, Code 1221, (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

* is hereby designated the cognizant COR who will represent the Contracting Officer in the administration of technical details within the scope of this contract and inspection and acceptance. 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 statements of work, a modification must be issued in writing and signed by the Contracting Officer. The COR is responsible for reviewing the bills and charges submitted by the Contractor and informing the ACO of areas where exceptions are to be taken.

(* 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 provision, the Contractor shall notify the Contracting Officer in writing within ten (10) working days after its receipt.

G-4 SUBCONTRACTORS/CONSULTANTS

- (a) 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).
- (b) The following subcontractors/consultants have been identified in the Contractor's proposal as necessary for performance of this contract:

Subcontractor/Consultant Name	Estimated Cost
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(Paragraph (b) will be included and filled in at time of award if subcontractor/consultants are proposed by the successful offeror)

G-5 NAPS 5252.232-9001 - SUBMISSION OF INVOICES (COST-REIMBURSEMENT, TIME-AND-MATERIALS, LABOR-HOUR, OR FIXED PRICE INCENTIVE (JUL 1992)

- (a) "Invoice" as used in this clause includes contractor requests for interim payments using public vouchers (SF 1034) but does not include contractor requests for progress payments under fixed price incentive contracts.

(b) The Contractor shall submit invoices and any necessary supporting documentation, in an original and 4 copies, to the contract auditor at the following address:

(To be completed at time of award)

unless delivery orders are applicable, in which case invoices will be segregated by individual order and submitted to the address specified in the order. In addition, an information copy shall be submitted to [See Section G for designated COR]. Following verification, the contract auditor will forward the invoice to the designated payment office for payment in the amount determined to be owing, in accordance with the applicable payment (and fee) clause(s) of this contract.

(c) Invoices requesting interim payments shall be submitted no more than once every two weeks, unless another time period is specified in the Payments clause of this contract. For indefinite delivery type contracts, interim payment invoices shall be submitted no more than once every two weeks for each delivery orders. There shall be a lapse of no more than 30 calendar days between performance and submission of an interim payment invoice.

(d) In addition to the information identified in the Prompt Payment clause herein, each invoice shall contain the following information, as applicable:

- (1) Contract line item number (CLIN)
- (2) Subline item number (SLIN)
- (3) Accounting Classification Reference Number (ACRN)
- (4) Payment terms
- (5) Procuring activity
- (6) Date supplies provided or services performed
- (7) Costs incurred and allowable under the contract
- (8) Vessel (e.g., ship, submarine or other craft) or system for which supply/service is provided

(e) A DD Form 250, "Material Inspection and Receiving Report",

- is required with each invoice submittal.
- is required only with the final invoice.
- is not required.

(f) A Certificate of Performance

- shall be provided with each invoice submittal.
- is not required.

(g) The Contractor's final invoice shall be identified as such, and shall list all other invoices (if any) previously tendered under this contract.

(h) Cost of performance shall be segregated, accumulated and invoiced to the appropriate ACRN categories to the extent possible. When such segregation of costs by ACRN is not possible for invoices submitted with CLIN/SLINS with more than one ACRN, an allocation ratio shall be established in the same ratio as the obligations cited in the accounting data so that costs are allocated on a proportional basis.

G-6 INCREMENTAL FUNDING

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

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

G-7 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-8 SPECIAL PAYMENT INSTRUCTIONS- MULTIPLE ACCOUNTING CLASSIFICATION CITATIONS (COST-REIMBURSEMENT)

Payments shall be made in accordance with the ACRN(s) cited on the contractor's invoice. The Contractor may contact the COR regarding which ACRN(s) to cite on an invoice.

**SECTION H
SPECIAL CONTRACT REQUIREMENTS****H-1 TYPE OF CONTRACT**

This is a *

*(*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:

Labor Category	First/M/Last Name
Program Manager	*
Senior Computer Scientist	*
Senior Computer Scientist/Mathematician/ Physicist/Physical Scientist	
Senior Engineer Analyst	
Senior Research Analyst	

(*To be completed at time of award)

H-3 ONR 5252.216-9706 - LEVEL OF EFFORT (DEC 88)

- (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 157,354 total hours of direct labor for the basic award and 157,354 total hours for each option period, if exercised, including subcontractor direct labor for those subcontractors specifically identified in the Contractor's proposal as having hours included in the proposed level of effort. A breakdown of labor categories and hours is set forth in paragraph (k) below.
- (b) The level of effort for this contract shall be expended at an average rate of 13,113 hours per month. 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 is required to notify the Contracting Officer when any of the following situations occur, or are anticipated to occur: If during any three consecutive months the monthly average is exceeded by 25% or, 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, 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.
- (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.

(f) If the total level of effort specified in paragraph (a) above is not provided by the Contractor during the term of this contract, the Contracting Officer shall either (i) reduce the fixed fee of this contract as follows:

$$\text{Fee Reduction} = \text{Fixed Fee} \times \frac{(\text{Required LOE Hours} - \text{Expended LOE Hours})}{\text{Required LOE Hours}}$$

or (ii) subject to the provisions of the clause of this contract entitled "Limitation of Cost," require the Contractor to continue to perform the work until the total number of hours of direct labor specified in paragraph (a) shall have been expended, at no increase in the fixed fee of this contract.

(g) In the event the government fails to fully fund the contract in a timely manner, the term of the contract may be extended accordingly with no change to cost or fee. If the government fails to fully fund the contract, the fee will be adjusted in direct proportion to that effort which was performed.

(h) Notwithstanding any of the provisions in the above paragraphs, the Contractor may furnish hours up to five percent in excess of the total hours specified in paragraph (a) above, provided that the additional effort is furnished within the term hereof, and provided further that no increase in the estimated cost or fixed fee is required, and no adjustment in the fixed fee shall be made provided that the Contractor has delivered at least 95% of the level of effort required in paragraph (a) above.

(i) It is understood that the mix of labor categories provided by the Contractor under the contract, as well as the distribution of effort among those categories, may vary considerably from the initial mix and distribution of effort which was estimated by the government or proposed by the Contractor.

(j) Nothing herein shall be construed to alter or waive any of the rights or obligations of either party pursuant to the Clause entitled "Limitation of Costs" or "Limitation of Funds," either of which clauses as incorporated herein applies to this contract.

(k) The anticipated breakdown by labor category of the total level of effort is as follows:

Task	Labor Category	Hours for Base Year And each Option Year
3.1	Systems Engineer/Scientist	3,840
3.1	Senior Subject Matter Expert (Terrorism)	1,920
3.1	Senior Analyst	3,840
3.1	Analyst	3,840
3.1	Research & Evaluation Specialist	3,840
3.1	Technical Program Manager	1,920
3.1	Subject Matter Expert (Marine Corps Systems)	1,920
3.2	Engineer/Computer Scientist	1,920
3.3	Computer Scientist/Electrical Engineer	9,600
3.4	Engineer/Computer Scientist	1,920
3.5	Computer Scientist/Engineer/Mathematician	3,840
3.6	System Engineer	1,152
3.7	Operations Research Analyst/Mathematician	900
3.8	Physicist/Electrical Engineer	3,100
3.8	Physicist/Oceanographer	1,920
3.8	Physicist/Computer Scientist	1,920
3.8	Computer Scientist	1,920
3.9	Engineer/Computer Scientist	23,040
3.10	Engineer/Computer Scientist	3,840
3.10	Senior Computer Scientist	1,920
3.11	Sr Computer Scientist/Mathematician/Physicist/Physical Scientist	3,840
3.12	Computer Scientist/Electrical Engineer/Analyst	7,680
3.13	Engineer/Computer Scientist	1,920
3.14	Senior Computer Scientists	1,920
3.14	Computer Scientist	1,920
3.14	Software Developer (3D Input Devise & Interactive Controls)	1,920
3.14	Electrical Engineer (Microcontrollers Specialty)	230
3.14	Electrical Engineer (Wireless Communications Specialty)	480
3.14	Artist Modeler (3D Computer Game Modeling)	672
3.15	Cognitive Scientist	1,920
3.15	Computer Scientist	1,920
3.16	Computer Engineer	1,920
3.16	Senior Engineer Analyst	1,920
3.16	Engineer/Computer Scientist	1,920
3.17	Computer Scientist	1,920
3.17	Software Developer	1,920
3.18	Computer Engineer	2,020
3.19.1	Senior Analyst I	1,920
3.19.2	Senior Analyst II	1,920
3.19.3	Senior Analyst III	1,920
3.19.4	Senior Analyst IV	1,920
3.19.5	Senior Research Analyst	1,920
3.19.6	Engineer	1,920

3.20	Project Resource & Management Spec.	3,360
3.21	Engineer/Computer Scientist	26,880
3.22	Project Manager	480
3.22	Program Analyst	480
3.22	Sub-Contract Administrator	480
	TOTAL	157,354

H-4 ONR 5252.235-9714 - REPORT PREPARATION (FEB 02)

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 Z39.18-1995, 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 OPTION TO EXTEND THE TERM OF THE CONTRACT

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 a total of four (4) times and each such renewal shall extend the term of the contract by twelve (12) months. The Contractor agrees that performance under each such renewal shall be accomplished in accordance with all of the terms and conditions of this contract and at the estimated cost and fixed fee set forth below:

First Option

Estimated Cost:	\$
Fixed Fee:	\$
Estimated Cost Plus Fixed Fee:	\$

Second Option

Estimated Cost:	\$
Fixed Fee:	\$

Estimated Cost Plus Fixed Fee: \$

Third Option

Estimated Cost: \$

Fixed Fee: \$

Estimated Cost Plus Fixed Fee: \$

Fourth Option

Estimated Cost: \$

Fixed Fee: \$

Estimated Cost Plus Fixed Fee: \$

H-7 ON-SITE USE OF GOVERNMENT PROPERTY

Government facilities and equipment specified or approved for use in the performance of any portion of the contract at the U.S. Naval Research Laboratory (NRL) or any of its field sites may be used by the contractor's personnel on a rent free basis. All such property shall be considered to remain in the possession and control of the NRL for property responsibility and accountability purposes.

H-8 REPRESENTATIONS AND CERTIFICATIONS

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

PART II - CONTRACT CLAUSES
SECTION I
CONTRACT CLAUSES

I-1 52.252-2 - CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

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

<http://www.arnet.gov/far>
<http://heron.nrl.navy.mil/contracts/home.htm>

a. FEDERAL ACQUISITION REGULATION CLAUSES

FAR CLAUSE	TITLE
52.202-1	- Definitions (DEC 2001)
52.203-3	- Gratuities (APR 1984)
52.203-5	- Covenant Against Contingent Fees (APR 1984)
52.203-6	- Restrictions On Subcontractor Sales To The Government (JUL 1995)
52.203-7	- Anti-Kickback Procedures (JUL 1995)
52-203-8	- Cancellation, Rescission, And Recovery Of Funds For Illegal Or Improper Activity (JAN 1997)
52.203-10	- Price Or Fee Adjustment For Illegal Or Improper Activity (JAN 1997)
52.203-12	- Limitation On Payments To Influence Certain Federal Transactions (JUN 1997)
52.204-2	- Security Requirements (AUG 1996)
52.204-4	- Printed Or Copied Double-Sided On Recycled Paper (AUG 2000)
52.209-6	- Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (JUL 1995)
52.211-15	- Defense Priority And Allocation Requirements (SEP 1990)
52.215-2	- Audit And Records-Negotiation (JUN 1999)
52.215-8	- Order Of Precedence - Uniform Contract Format (OCT 1997)
52.215-11	- Price Reduction For Defective Cost Or Pricing Data - Modifications (OCT 1997)
52.215-13	- Subcontractor Cost Or Pricing Data Modifications (OCT 1997)
52.215-14	- Integrity Of Unit Prices (OCT 1997)
52.215-15	- Pension Adjustments And Asset Reversions (DEC 1998)
52.215-17	- Waiver Of Facilities Capital Cost Of Money (OCT 1997) <i>(will be included if the successful offeror does not propose facilities capital cost of money)</i>
52.215-18	- Reversion Or Adjustment Of Plans For Post-Retirement Benefits (PRB) Other Than Pensions (OCT 1997)
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 1997)
52.216-7	- Allowable Cost And Payment (DEC 2002) (fill in <u>30th</u>)
52.216-8	- Fixed-Fee (MAR 1997)

- 52.219-4 - Notice Of Price Evaluation Preference For HUBZone Small Business Concerns (JAN 1999) Offeror elects to waive the evaluation preference.
- 52.219-6 - Notice Of Total Small-Business Set-Aside (JUL 1996)
- 52.219-8 - Utilization Of Small Business Concerns (OCT 2000)
- 52.219-9 - Small Business Subcontracting Plan (JAN 2002) - 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"
- 52.222-3 - Convict Labor (AUG 1996)
- 52.222-21 - Prohibition Of Segregated Facilities (FEB 1999)
- 52.222-26 - Equal Opportunity (APR 2002)
- 52.222-35 - Equal Opportunity For Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (DEC 2001)
- 52.222-36 - Affirmative Action For Workers With Disabilities (JUN 1998)
- 52.222-37 - Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (DEC 2001)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)
- 52.223-5 - Pollution Prevention And Right-To-Know Information (APR 1998)
- 52.223-6 - Drug-Free Workplace (MAY 2001)
- 52.223-10 - Waste Reduction Program (AUG 2000)
- 52.223-14 - Toxic Chemical Release Reporting (OCT 2000)
- 52.225-13 - Restrictions On Certain Foreign Purchases (JUL 2000)
- 52.227-1 - Authorization And Consent (JUL 1995)- Alternate I (APR 1984)
- 52.227-2 - Notice And Assistance Regarding Patent And Copyright Infringement (AUG 1996)
- 52.227-10 - Filing Of Patent Application- Classified Subject Matter (APR 1984)
- 52.227-11 - Patent Rights - Retention By The Contractor (Short Form) (JUN 1997)
(will be included if the successful offeror is a small business or a non-profit organization)
- 52.227-12 - Patent Rights - Retention By The Contractor (Long Form) (JAN 1997)
(will be included if the successful offeror is not a small business or a non-profit organization)
- 52.228-7 - Insurance - Liability To Third Persons (MAR 1996)
- 52.230-2 - Cost Accounting Standards (APR 1998)
- 52.232-9 - Limitation On Withholding Of Payments (APR 1984)
- 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 (FEB 2002) Alternate I(FEB 2002)
- 52.232-33 - Payment By Electronic Funds Transfer-Central Contractor Registration (MAY 1999)
- 52.233-1 - Disputes (JUL 2002)
- 52.233-3 - Protest After Award (AUG 1996) - Alternate I (JUN 1985)
- 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)
- 52.243-6 - Change Order Accounting (APR 1984)
- 52.243-7 - Notification Of Changes (APR 1984) fill in 30
- 52.244-2 - Subcontracts (AUG 1998) - Alternate I (AUG 1998)
- 52.244-5 - Competition In Subcontracting (DEC 1996)
- 52.245-5 - Government Property (Cost-Reimbursement, Time-And-Material, Or Labor-Hour Contracts) (JAN 1986) (DEVIATION)
- 52.245-19 - Government Property Furnished "As-Is" (APR 1984)
- 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 (APR 1984)
- 52.247-63 - Preference For U. S. Flag Carriers (JAN 1997)
- 52.249-6 - Termination (Cost-Reimbursement) (SEP 1996)
- 52.249-14 - Excusable Delays (APR 1984)
- 52.251-1 - Government Supply Sources (APR 1984)
- 52.252-6 - Authorized Deviations in Clauses (APR 1984)(fill in Defense Federal Acquisition Regulation Supplement (48 CFR Chapter 2))
- 52.253-1 - Computer Generated Forms (JAN 1991)

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 (MAR 1999)
- 252.203-7002 - Display Of DoD Hotline Poster (DEC 1991)
- 252.204-7000 - Disclosure Of Information (DEC 1991)
- 252.204-7003 - Control Of Government Personnel Work Product (APR 1992)
- 252.204-7004 - Required Central Contractor Registration (NOV 2001)
- 252.205-7000 - Provision Of Information To Cooperative Agreement Holders (DEC 1991)
- 252.209-7000 - Acquisition From Subcontractors Subject To On-Site Inspection Under The Intermediate-Range Nuclear Forces (INF) Treaty (NOV 1995)
- 252.209-7004 - Subcontracting With Firms That Are Owned Or Controlled By The Government Of A Terrorist Country (MAR 1998)
- 252.215-7000 - Pricing Adjustments (DEC 1991)
- 252.219-7003 - Small Business And Small Disadvantaged Business Subcontracting Plan (DoD Contracts) (APR 1996)
- 252.223-7004 - Drug-Free Work Force (SEP 1988)
- 252.223-7006 - Prohibition On Storage And Disposal Of Toxic And Hazardous Materials (APR 1993)
- 252.225-7001 - Buy American Act And Balance Of Payments Program (MAR 1998)
- 252.225-7002 - Qualifying Country Sources As Subcontractors (DEC 1991)
- 252.225-7009 - Duty-Free Entry – Qualifying Country Supplies (End Products and Components (AUG 2000)
- 252.225-7012 - Preference For Certain Domestic Commodities (APR 2002)
- 252.225-7016 - Restriction On Acquisition Of Ball And Roller Bearings (DEC 2000)
- 252.225-7026 - Reporting Of Contract Performance Outside The United States (JUN 2000)

- 252.225-7031 - Secondary Arab Boycott Of Israel (JUN 1992)
- 252.225-7043 - Antiterrorism/Force Protection Policy For Defense Contractors Outside The United States (JUN 1998) (fill in : Naval Criminal Investigative Service (NCIS), Code 24, telephone, DSN 228-9113 or commercial (202)433-9113)
- 252.226-7001 - Utilization of Indian Organizations and Indian-Owned Economic Enterprises-DoD Contracts (SEP 2001)
- 252.227-7000 - Non Estoppel (OCT 1966)
- 252.227-7001 - Release Of Past Infringement (AUG 1984)
- 252.227-7013 - Rights In Technical Data -- Noncommercial Items (NOV 1995)
- 252.227-7014 - Rights In Noncommercial Computer Software And Noncommercial Computer Software Documentation (JUN 1995)
- 252.227-7016 - Rights In Bid Or Proposal Information (JUN 1995)
- 252.227-7019 - Validation Of Asserted Restrictions--Computer Software (JUN 1995)
- 252.227-7025 - Limitations On The Use Or Disclosure Of Government-Furnished Information Marked With Restrictive Legends (JUN 1995)
- 252.227-7026 - Deferred Delivery Of Technical Data Or Computer Software (APR 1988)
- 252.227-7030 - Technical Data--Withholding Of Payment (MAR 2000)
- 252.227-7034 - Patents--Subcontracts (APR 1984)
- 252.227-7036 - Declaration Of Technical Data Conformity (JAN 1997)
- 252.227-7037 - Validation Of Restrictive Markings On Technical Data (SEP 1999)
- 252.227-7039 - Patents--Reporting Of Subject Inventions (APR 1990)
- 252.231-7000 - Supplemental Cost Principles (DEC 1991)
- 252.235-7010 - Acknowledgment Of Support And Disclaimer (MAY 1995)
- 252.235-7011 - Final Scientific Or Technical Report (SEP 1999)
- 252.242-7000 - Post Award Conference (DEC 1991)
- 252.242-7004 - Material Management And Accounting System (DEC 2000)
- 252.243-7002 - Requests For Equitable Adjustment (MAR 1998)
- 252.244-7000 - Subcontracts For Commercial Items And Commercial Components (DOD Contracts) (MAR 2000)
- 252.245-7001 - Reports Of Government Property (MAY 1994)
- 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)
- 252.251-7000 - Ordering From Government Supply Sources (OCT 2002)

I-2 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).

I-3 DFARS 252.225-7008 - SUPPLIES TO BE ACCORDED DUTY- FREE ENTRY (MAR 1998)

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

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

- J-1** Attachment (1) - Statement Of Work - 14 Pages, With Exhibit A - DD Form 1423, Contract Data Requirements List, 3 Pages.
- J-2** Attachment (2) - DD Form 254, Contract Security Classification Specification, Ser: 069-02 undated, 2 Pages.
- J-3** Attachment (3) – Personnel Qualifications, 14 Pages.
- J-4** Attachment (4) – Accounting and Appropriation Data - 1 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

Each Offeror must submit a completed Representations, Certifications, and Other Statements Of Offerors or Respondents with its proposal which is available electronically in full text at [HTTP://HERON.NRL.NAVY.MIL/CONTRACTS/REPS&CERTS.HTM](http://HERON.NRL.NAVY.MIL/CONTRACTS/REPS&CERTS.HTM)

Use Representations and Certifications: A

K-2 FILL IN FOR FAR 52.219-1 - SMALL BUSINESS PROGRAM REPRESENTATIONS (MAR 2001)

The fill in information is as follows:

The NAICS code for this acquisition is 541710

The small business size standard is. 500

**SECTION L
INSTRUCTIONS CONDITIONS AND NOTICES
TO OFFERORS OR RESPONDENTS**

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

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

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

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

FAR CLAUSE TITLE

52.204-6	-	Data Universal Numbering System (DUNS) Number (JUNE 1999)
52.214-34	-	Submission Of Offers In The English Language (APR 1991)
52.214-35	-	Submission Of Offers In U.S. Currency (APR 1991)
52.215-1	-	Instructions To Offerors- Competitive Acquisition (MAY 2001)
52.215-5	-	Facsimile Proposals (OCT 1997)
		Paragraph (c) is completed as follows: (202) 767- 0430 (primary) or (202) 767-0494 (alternate). In addition proposals may be transmitted by e-mail to lockamy@contracts.nrl.navy.mil (primary) or cosby@contracts.nrl.navy.mil

- (alternate) in either Microsoft Word (2000 or earlier) or pdf format.
- 52.215-16 - Facilities Capital Cost Of Money (OCT 1997)
 - 52.219-24 - Small Disadvantaged Business Participation Program - Targets (OCT 2000)
 - 52.222-24 - Preaward On-Site Equal Opportunity Compliance Evaluation (FEB 1999)

DFAR CLAUSE TITLE

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

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 to:

Contracting Officer, ATTN: Code 3220

Naval Research Laboratory(NRL)

4555 Overlook Avenue, S.W.

Washington, D.C. 20375

Solicitation/RFP No. – N00173-03-R-DL02

Closing Date: 3/17/03 Time: 4:00 PM

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, local 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/aboutdc.htm>

If facsimile proposals are authorized, contracting officers may request offeror(s) to provide the complete; original signed proposal at a later date.

L-3 FAR 52.211-14 - NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE USE (SEP 1990)

Any contract awarded as a result of this solicitation will be a DX rated order; DO rated order certified for national 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 1997)ALTERNATE IV (OCT 1997)

- (a) Submission of cost or pricing data is not required.
- (b) Provide information described in Section L-12, Instructions for Submission and Information Required to Evaluate Proposals.

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 (AUG 1996)

(a) Protests, as defined in Section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO) shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from the Control Desk, Code 3200, Bldg. 222, Rm. 115, Naval Research Laboratory, 4555 Overlook Ave., S.W., Washington DC 20375-5326.

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

L-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 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 provided for in the solicitation.

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 9 of the Standard Form 33, "Solicitation, Offer and Award," no less than fifteen (15) days before closing. The Government will not consider questions received after this date. Offerors are cautioned against directing any questions concerning this RFP to technical personnel at the Naval Research Laboratory.

L-11 VOLUME I - TECHNICAL/MANAGEMENT PROPOSAL

REQUIRED COPIES: 1 ORIGINAL AND FOUR (4) COPIES .

(1) The contractor must propose the labor category in accordance with the Level of Effort Breakdown listed in Section H-3. If the offeror uses labor category terminology other than that used in Section H-3, the offeror must provide a matrix clearly relating their proposed labor categories to those in Section H-3.

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

Personnel Qualifications

Provide resumes for all management, technical, and project personnel. Demonstrate experience, clarity, conciseness and relevancy to all tasks of Attachment (1), Statement of Work (SOW). Demonstrate personnel qualifications, which meet the basic requirements of the RFP, Attachment (1), SOW, and Attachment (3), Personnel Qualifications. Provide documentation in the form of specific work experience and publications. Personnel proposed will be evaluated on education, training, and professional affiliations.

Corporate Experience

Provide documentation on recent experience (within the past 5 years) in successfully performing projects and tasks relevant to those described in the SOW, Attachment (1). Provide company qualifications, background, and related experience to demonstrate the understanding of the technical problems related to the tasks. Describe projects involving research in all task areas: communication

networks and discrete-event dynamic systems, voice/data integration, distributed systems, modeling and simulation, protocol development, security parallel processing, and projects relevant to the use of emerging gigabit fiber optic networking technologies. Proposals should identify related work via contract numbers, Government agency/commercial entity, dollar amounts, dates of performance, names and telephone numbers of technical personnel if government and/or commercial procuring and technical personnel. Proposal should include a brief summary of the relevant work performed under each contract.

Corporate Management/Resource

Provide documentation to show 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. The management plan must establish the means for project monitoring and control. The proposal must demonstrate the contractor's ability to identify delays, problem areas, and development of contingency plans or alternative courses of action promptly in order to ameliorate possible roadblocks/delays in accomplishing the project. Show facilities available to provide timely support in conjunction with assigned tasks.

L-12 VOLUME II - BUSINESS PROPOSAL

REQUIRED COPIES: 1 ORIGINAL AND FOUR (4) COPIES

(1) COST PROPOSAL

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 that is 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.

(2) SMALL BUSINESS PARTICIPATION

(a) In addition to complying with the clause at FAR 52.219-9, Small Business Subcontracting Plan (JAN 2002) with its Alternate II (OCT 2000), 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.

L-13 TRAVEL AND MATERIAL ESTIMATES AND OTHER DIRECT COSTS (FOR EVALUATION PURPOSES ONLY)

The travel and material estimates and other direct costs set forth must be included in each offeror's cost proposal for evaluation purposes only. During the term of this contract, the contractor will be reimbursed actual and allowable travel, material, and other direct expenses.

The Government estimates the travel costs for this effort to be \$200,000.00 for the basic award and \$200,000.00 per each option period, if exercised.

The Government estimates the material costs for this effort to be \$500,000.00 for the basic award and \$500,000.00 per each option period, if exercised.

These estimates are direct costs, and the offeror should add any applicable indirect costs.

L-14 MULTIPLE AWARDS

The Contracting Officer may make multiple awards resulting from this solicitation.

**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, proposed cost and other factors considered. The Government reserves the right to make award to other than the low offeror. Although 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 business considerations become.

M-2 EVALUATION FACTORS FOR AWARD

Proposals will be evaluated in accordance with the following criteria. The technical factor is more important than the cost factor. The technical subfactors are listed in descending order of importance.

M-2-1. Technical/Management**(1) PERSONNEL QUALIFICATIONS**

The proposed personnel will be evaluated on the experience and qualifications relevant to the tasks of the statement of work to include education, training, professional affiliation, the previous experience of the key personnel, and the degree to which they meet the requirements set forth in Attachment (3), Personnel Qualifications.

(2) CORPORATE EXPERIENCE

Corporate experience will be evaluated on recent experience (within the past five years) in successfully performing projects and tasks relevant to those described in the statement of work. Company qualifications, background, and related experience that demonstrate an understanding of

the technical problems in each task area will be evaluated.

(3) CORPORATE MANAGEMENT/RESOURCES

Corporate Management/Resources will be evaluated on the soundness of the offeror's approach for accomplishing each task of the statement of work. 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 through the duration of the projects will be evaluated. The adequacy of the proposed facilities will be evaluated on the availability to provide timely support in conjunction with assigned tasks.

M-2-2 COST TO THE GOVERNMENT

Proposed estimated 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-2-3 SMALL BUSINESS PARTICIPATION

The extent of participation of small businesses and historically black colleges or universities and minority institutions in performance of the contract will be evaluated on the basis of the proposed 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.

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 Information Technology Division (Code 5500) is the Naval Research Laboratory's (NRL's) principal investigator in the areas of information architecture and related technology. These areas include design and development of information processing systems, decision support systems, database structure and mining, applications of parallel and distributed computing and the design software to use such systems. The information architecture includes the communications and networking research required to provide fast, reliable, authenticated and often secure transfer of data among various parts of the overall system, incorporating assets ranging from massively parallel computing system to Naval assets deployed in hostile military environments. Human interface research ranging from voice and tactile to the development of interactive virtual environments is an integral part of the work. Information processing research includes traditional signal analysis and extends to various automated reasoning techniques. Information assurance and security, real time processing, simulation and modeling, multilevel secure database structures, progressive motion imagery, compression and decompression, and robotics are also integral parts of the Division's research thrusts.

2.0 SCOPE

The contractor shall provide scientific, engineering, technical, and analytical (SETA) support for a wide range of NRL research activities. The following task areas and descriptions indicate the specific nature of these research efforts.

3.0 TASKS

3.1. Systems Engineering and Research in Modeling and Simulation (M&S) for Training, Analysis, Acquisition and Experimentation Applications.

The contractor shall provide systems engineering and research support into the development of M&S tools and systems including algorithms and models, techniques, and concepts for various defense applications and component systems. These systems may be either a stand-alone or distributed configuration. The contractor shall design interfaces among software and hardware systems. The contractor shall test and evaluate dimensions of the system output to the user. Typical of the systems to be interfaced are geographic information system (GIS) tools, application

servers, and military planning tools. As appropriate, the contractor shall assist in transitioning science and technology products into fieldable systems.

The contractor shall also participate in the planning of research initiatives; in model development and review; in design and implementation of experimental software; and in analysis of research results to assess earned value. The contractor shall provide technical risk assessments of programs, technologies, and techniques. The contractor shall provide literature reviews/product reviews, model enhancements; and interface design documentation.

3.2. Conduct research in, and development of, Intelligent Information Systems for Decision Support and provide technical support in the design, modeling, development and analysis of Distributed Simulation Systems.

The contractor shall provide technical support in the design and development of intelligent information systems for the Naval and DoD communities. These intelligent systems will operate in a distributed network to support military decision-making processes. In support of this requirement, the contractor shall conduct research, prototyping, development, and where appropriate, extend the state-of-the-art with regard to technologies that enable software components to be embedded with intelligent processes/algorithms that are capable of operating in a distributed environment. In the area of distributed simulation systems, the contractor shall provide support to NRL in the design and analysis of advanced distributed simulation systems based on the DMSO HLA. The contractor shall also provide support to NRL in the design and development of simulation models, as well as conduct research and build systems to support advanced visualization techniques and multi-media displays for distributed simulations. The contractor shall also support technical studies that deal with identifying deficiencies in decision support systems as well as M&S systems, and research the application of intelligent software systems to rectify those deficiencies, and if applicable, develop software prototypes and systems that ultimately demonstrate that advanced capability. In all of the aforementioned tasks, the contractor shall provide written documentation describing the results of the research, including, but not limited to, test plans, test results, user guides, technical memorandum and journal and/or conference papers. Lastly, the contractor shall provide short monthly technical and financial reports to the appropriate government personnel (email acceptable). The technical reports should address tasks completed, any critical technical issues that may present a barrier or need to be resolved, proposed

solutions, and tasks/plans for the following month. The financial report should include funds expended during the month, as well expenditures to date.

3.3 Research and Development of Virtual and Augmented Reality Systems and Applications.

The contractor shall provide support in the development of virtual reality (VR) and augmented reality (AR) systems. The contractor shall design algorithms to build the virtual or augmented reality environments and the systems to utilize them. Typical algorithms would include tracking and registration for AR, information filtering and display, collaboration in 3D worlds, scientific visualization, and multimodal interaction techniques. The contractor will also design and implement software architectures to create these VR and AR systems. The contractor will use NRL chosen software including in-house developed systems for VR and AR. The contractor will design device interfaces and will conduct user evaluation studies of these software and systems. Typical of the devices are tracking systems for AR and VR, head-mounted displays, immersive VR displays, and wearable computers.

3.4 Research in the Development and Management of Information and Entities in Distributed Simulation Systems

The contractor shall perform research into the adaptation of semi-automated force and intelligent force designs for use in a multicast environment. The contractor shall provide support to NRL in the design of appropriately aggregated Naval entities for use in an advanced distributed simulation context. The contract shall provide support in the design of network traffic tests and measures of effectiveness of design implementations on the variety of networks available at NRL including ATM. The contractor shall provide support to NRL in the design and development of entities and models for distributed simulations. The contractor shall perform research and development tasks in the area of advanced visualization and multi-media displays for distributed simulations. In all these tasks, the contractor shall provide complete documentation on the research results and test results.

3.5 Research in the area of composability, as related to simulation systems

The contractor shall perform research in the applicability of M&S, and non-M&S composable practices and procedures. The ultimate goal of this research is to determine whether there is any merit in adapting and adopting composability practices from related, and non related disciplines for

general use and standardization within the M&S community. In addition, the contractor will perform research in determining where there are technology gaps in M&S composability, and how they might be filled.

3.6 Research and Development in the Area of Visual Programming for Signal Processing and Command and Control Applications.

The contractor shall provide technical and engineering support in the description of processors and processes in such a way that processes can be linked to processors without the involvement of the applications developer. Analysis and description of processors and processes will be developed in a mathematical context that permits the linking to be made. A central idea is to characterize parallel processors with a descriptive language that identifies their connection topology, individual processor speeds, and the additional details that provide a representation sufficient to make it possible to develop algorithms that define how to efficiently execute a particular application on a particular hardware architecture. The work is based on processing graphs and data flow paradigms. The contractor shall identify resources and provide input in the development of test plans and metrics.

3.7 Research and development support for the Processing Graph Method (PGM) and the Processing Graph Method Tool (PGMT) software.

The contractor shall research projects that use PGMT. Develop and present PGM/PGMT to selected audiences. Complete the documentation of PGM/PGMT. Choose appropriate sections of the PGM/PGMT documentation and write the necessary additional copy to unite them into a single volume and placed under a GNU documentation license. Volume shall be prepared in a format suitable for publication on the AIT/PGMT website and elsewhere. Provide operations research analysis support with emphasis on probability and statistics.

3.8 Data Specification and Delivery for Distributed Applications.

The contractor shall support the process of extracting data specifications for all elements of the natural environment relevant to Naval operations and research. The final specification must be consistent with national and international standards such as SEDRIS and SEDRES and expressed in an appropriate engineering language such as one based on UML standards. The resulting specification should be proven relevant to acquisition, analysis and training. Further, the contractor shall provide an environment concept

model designed to assist application developers in expressing both data and effects model requirements. This environment concept model must be developed in an appropriate engineering specification language.

3.9 Research in the Management, Use and Application of High Performance Networks

The contractor shall perform research and development in the area of algorithms and tools for the management of emerging high performance networks. The research will evolve new techniques for information flow and control that will eventually lead to standards against which hardware and software will be developed. While protocols and standards are available for lower performance data flow, the emergence of high performance networks presents new capabilities that can only be harnessed if new protocols are developed first for native stream communications and deployed over ATM infrastructures and integrated as transparent in all-optical core network fabrics. The contractor shall investigate all of the routing services, addressing, network management and signaling issues, but with particular attention to reliable, low-latency and assured communication at multi gigabit speeds. The contractor shall develop mathematical models for network performance and test suites that are appropriate for various modes of operation. The contractor shall test these models on the NRL experimental network testbed which consists of legacy Super-HIPPI (IEEE Gigabyte Systems Network for 6.4 Gbps) devices and slower speed 10/100/1000 Ethernet devices coupled into ATM network fabrics ranging from OC3c to OC192c link speeds, as well as transparent multi-gigabit all-optical wavelength division networked core devices. The contractor shall make sure that the information flow is consistent with the major SANs and file servers including the multi-resident Andrew File System (MR-AFS), and employ the common means of authentication available on networked, heterogeneous systems developed utilizing distributed key services based on Kerberos (K5). The contractor shall explore solutions for monitoring/auditing performance, scaling capability, end-to-end quality-of-service and robustness in the research environment, and subject the best developed models to rigorously test unpredictable, high traffic loads, both real and simulated, as the necessary step for evolving effective, lowest latency protocols. During these tests, as under normal operation, the contractor shall maintain as much as possible the operational integrity (system does not crash and remains usable) of the NRL test facility in its entirety.

3.10 Research in the Organization, Management and Application of High Performance Computing Systems: Massively Parallel Processors coupled with Progressive Motion Imagery-

The contractor shall perform research into the development of reliable, heterogeneous, high performance computing environments including workstations, massively parallel computers, high performance networked infrastructure (SONET, ATM, GE, GSN, SMPTE, WDM and all-optical); a variety of storage media: cache, primary, secondary, tertiary and archival; and uncompressed/compressed progressive motion imagery systems: HD0 for 480/60p and HD1 for 720/60p form as baseline systems linked in uncompressed mode or compressed. The contractor shall investigate optimal data flow among the various components of the experimental facility. Since many of the components are emerging systems of research grade, the contractor shall develop as needed new algorithms for linking the systems and test those algorithms on the existing facilities. In many cases, the commercial standard devices will have to be interfaced with emerging systems that do not support such devices. In such cases, the contractor shall develop solutions that provide reliable flow of data between all types of devices that can be used in background mode. The research may be either engineering or algorithmic in nature, but in combination must result in an integration of system that would otherwise not operate consistently with each other. The contractor shall also serve as an interface with the NRL and the Department of Defense (DoD) communities as needed to introduce users to new capabilities that result from the research.

3.11 Research and Development in Parallel Processing Applications

The contractor shall develop new techniques for exploring parallel decomposition of scientific and engineering models in such areas as acoustics, signal processing, weather prediction, ocean circulation, fluid dynamics, electromagnetics, image understanding and simulations. The contractor shall develop solution methods that account for optimal or near optimal data flow, memory access and scalable distribution of processing. The contractor shall test resulting solutions using NRL's distributed high performance computing facility. The facility includes a variety of distributed MPP computational platforms (SGI: Origin 3000 Irix cc:NUMA, SGI/IA-64 Linux cc:NUMA, and Sun: SunFire/SunLink Solaris MPI). Storage includes Fiber Channel SAN technology with CXFS, and Adic FileServ and VolServ systems based on MR-AFS. Systems are linked by high performance experimental ATM and GE networks authenticated end-to-end with Kerberos (K5). SMPTE imagery is also carried across the infrastructure.

3.12 Development and Support of Network Applications

The contractor shall develop and maintain web related documents and network applications. Projects can potentially support any NRL function and will range from simple web pages to more complicated networked applications utilizing backend databases. This effort requires that the contractor have the ability to interact and communicate with individuals (managers, customers, users, team members and support staff) that have a broad range of technical expertise. For each project, the contractor shall ascertain requirements, develop an implementation plan (including a break down of required resources and timelines), provide weekly status updates (both verbally and in writing) during execution, and on completion produce documentation that details any code, maintenance procedures or usage requirements.

3.13 Design and Development of Information Security Capabilities

The contractor shall provide support in the design and development of a variety of information security capabilities. The contractor shall perform analysis and deployment of security vulnerability assessment tools. The contractor will be responsible for tracking security advisories and developing software for security assessments on a wide range of platforms. The contractor shall perform vulnerability scans on NRL systems and work with system administrators to resolve a variety of security issues.

3.14 Research and Development of Immersive Simulation

The contractor shall provide support in the development of virtual environments simulating real world interactions. The contractor shall design algorithms to build the environment consisting of but not limited to a three-dimensional space for visual, audio, and tactile user interface devices. Typical algorithms would include collision detection and handling, full body avatar control and realistic weapon aiming. The contractor will contribute to the design and implementation of the software architectures used to create the virtual environments. The contractor will use NRL chosen rendering software, examples include Performer, Vega, and NetImmerse. The contractor shall design device interfaces for the virtual environment and tests to determine the behavioral fidelity of the output to the user. Typical of the devices to be interfaced are real-time tracking systems, custom measurement devices, and stereo head mounted displays.

3.15 Research in Human Computer Interaction

The contractor shall provide support in the analysis, design, development, and evaluation of advanced human computer interfaces and collaborative human-computer systems and concepts. The contractor shall perform human-centered cognitive, human factors and workflow analyses, develop interface and interaction solutions for complex systems, evaluate these solutions in laboratory and field settings, and write reports on the results of the evaluations.

3.16 Research and Development of Sensor Systems and Their Operation for Robotics

The contractor shall provide support in the design and development of algorithms that provide sensor processing for control of NOMADIC mobile robots. This work includes the development of sensor interpretation procedures for the robot's vision sensors and interfaces for various devices such as manipulators and laser tag devices. A particular focus of the work is the interpretation of range images. The contractor shall provide support in the design and development of interfaces between the NOMADIC robots and various robot-mounted devices. Interface design will include both algorithms and the hardware on which they are to operate.

3.17 Research in the Development, Integration, and Evaluation of Intelligent Decision Aids

The contractor will provide support in the research, design, implementation, integration, and evaluation of decision aids prototypes. Specific areas of interest include mixed-initiative and multi-modal reasoning frameworks, case-based reasoning, machine learning, knowledge management, planning, qualitative process modeling, and related topic areas. Existing competency in Java programming is required, or will be required in developing these prototypes.

3.18 Research and Development in Voice Biometric System.

The contractor shall provide support in research efforts to implement a reliable and user-friendly speaker verification system. Specifically, the contractor shall implement the government-furnished voice processing algorithm in the portable PC.

3.19 Research and Development in Communication Systems

The contractor shall provide support in research efforts in four areas: management of distributed networks; modeling and simulation of computer and communication based systems; protocol development for communication networks; and

development of algorithms and hardware for communication networks. These networks include wireless, mobile ad hoc networks as well as wired networks with fixed infrastructure.

3.19.1 Research in Management of Distributed Networks

The Contractor shall develop and evaluate new techniques for the management of distributed communication networks and computer networks. Here the concept of management includes:

- Monitoring and modification of resources supporting fixed-infrastructure networks
- Automatic configuration and adaptive re-configuration of wireless ad hoc mobile networks
- Policy-based management of how the aggregate capacity of network links is shared by multiple users and applications
- Cross-layer protocol coupling strategies as may be required to adapt MAC-layer link properties in response to routing-layer traffic demand.
- Automated control of beam-hopped, electronically-steered antenna arrays (ESA) or sectorized directional antennas as required to support mobile ad hoc networks.

The emphasis is on technology that supports tactical military networks in situations where there is no reliable commercial communication network infrastructure. In this situation, network-centric operations will have to depend on networks that are supported via heterogeneous wireless communication equipment present on battlefield platforms, such as tanks, HMMWVs, AAVs, aircraft and UAVs, and ships. Each node will have the potential to route data packets among its outgoing links to other neighbor platforms. One-hop connectivity to all neighbors cannot be assumed. Since these platforms may be in constant motion, the connectivity between routers may be in a constant state of change. Routing tables must adapt automatically, frequently, and with little time delay. Nodes must automatically determine which nodes are neighbors, based on link quality,

The contractor shall develop distributed, automated management and control schemes for the types of networks referenced above. The networks must be able to automatically configure and adaptively reconfigure without human intervention. The optimization metric that drives network reconfiguration may vary from one scenario to other, but generally will depend on a weighted combination of the following:

- Ability to achieve complete network connectivity via multi-hop relaying (routing)

- Ability to adapt to and support the offered traffic load (the load is assumed to change during the operational scenario and the network is expected to change routing and, where possible, adapt MAC-layer resources to optimize the shared use of channel capacity.
- Ability to provide the required quality of service to the applications sharing the network.
- Ability to meet anti-jam and/or limited-probability of detection objectives.

In addition, the contractor may be asked to develop management and control schemes and mathematical models for heterogeneous networks that use high- and low-bandwidth channels and that support voice, data, imagery, and video. The contractor shall explore new approaches to exploit the potential synergism between networking and signal processing. The contractor shall research key issues relating to the distributed control of communication and the communication complexity of control. In systems of this type, multiple decision-making entities are distributed across the geographically dispersed system. Therefore, means must be found not only for the correct decisions to be made but, also, for the implementation of these decisions to be synergistic, synchronized, and coordinated. The contractor shall develop mathematical performance models where appropriate, and efficient simulation models shall be developed where necessary. The contractor shall evaluate the performance of data systems in terms of throughput, delay, packet loss, packet latency histograms, etc. Applications of interest include radio networks, satellite networks, wireline networks, fiber optics networks, and hybrid networks containing two or more of these media.

3.19.2 Modeling and Simulation of Computer and Communication Based Systems

The contractor shall provide support to a broad spectrum of simulation technology and model development with a focus on military systems that rely on digital communication techniques. One important area for applying modeling and simulation is for mobile, ad hoc, wireless networks. Here simulation will be used to determine the performance and reliability of protocols that control auto-configuration, adaptive reconfiguration, quality of service, changes in resource allocation, and directional antenna control under conditions of varying traffic load, different mixtures of traffic flows, node failures, exit and re-entry of nodes into the network, etc. The contractor may choose the modeling techniques employed, subject to review by the COR; however, NS2 and OPNET are preferred so that software that is developed is transferable to NRL in-house simulators.

Future military communication systems will focus on higher data rates and internetworking among multi-banded systems (e.g., UHF, L-, C-, X-, and K-bands) with heterogeneous radios. Some of these performance trades can be done analytically while others will have to be done by simulation. The contractor shall model a variety of data transport services, such as unicast, multicast, anycast, and broadcast, either analytically or via simulation. The contractor shall model an integrated services (voice, data, imagery) network architecture for low and high data rate network applications. This integrated-service network shall be simulated and include multi-media services over mixed media communication systems. Internetworking protocols need to be designed to have this overall communication system architecture operate in an efficient and timely manner.

3.19.3 Protocol Development for Communication Networks

The Contractor shall design protocols that will operate over a wide range of network types, including wire, fiber, and mobile, ad hoc wireless. Targeted protocol layers include:

- Medium- Access (MAC)
- Management of contention on shared RF channels; hidden and exposed node effects; adaptive schedules for pointing beam-hopped ESA antennas.
- Link
- Network
- Adaptive routing across multi-band and mixed heterogeneous systems; quality of service routing; flow control
- Transport
- End-to-end reliability; ordering; admission control; multicast; anycast
- Agent (application)
- Cross-layer (multi-layer) interaction management.

The goal is to support a wide variety of Navy applications, e.g., surveillance data, tactical data, video teleconferencing, etc. The contractor shall develop protocols for the management of all the communication resources over a given network or multiplicity of networks. The management of these resources needs to be automated to the maximum extent with as little human interaction as possible. These protocols shall be evaluated via simulation with respect to performance criteria that will be developed separately as appropriate for each case study.

3.19.4 Software & Hardware Development for Communication Networks

The Contractor shall develop the target software required to implement the algorithms and protocols developed under Tasks

3.15.1 - 3.15.3. The software consists of non-real-time prototype software designed to execute in a simulation environment as well as real-time software designed to execute in a multi-tasking real-time environment. The contractor shall develop and document a high level software design for each protocol and algorithm. The contractor shall produce source code that can be compiled for and executed in both simulation and real-time environments. The contractor shall verify software functionality and operation. The contractor shall document the software in detail. The contractor shall develop hardware as required for prototype components needed for laboratory and field tests. Hardware documentation shall be provided in format and detail suited to each specific circumstance as will be mutually agreed upon by the COR and contractor on a case by case basis

3.19.5 Research in Wireless, Mobile Ad-Hoc Networks

The Contractor shall address some of the basic research issues associated with mobile, "ad-hoc" wireless networks (i.e., mobile wireless networks that are not supported by fixed base stations). Algorithms are needed for routing, channel access, admission control, and flow control. In addition, there is a need for multimedia applications support, e.g., the delivery of a common tactical picture to command centers and to individual warriors. The information systems to be studied must be supported by heterogeneous networks that use a variety of high- and low-bandwidth channels. Complex integrated traffic requirements must be supported, including voice, data, image, and video. Mechanisms to provide individualized services to users with different needs and different capabilities are needed. Both unicast and multicast applications shall be studied. Our goal is the development of principles, algorithms, and tools for the design, evaluation, and operation of mobile, wireless ad-hoc networks. A crucial aspect of the proposed research is the development of networking techniques for networks that include "small" mobile users, including individual warriors. In networks that consist (solely or partially) of small mobile users, operation is ultimately limited by the constraint of finite battery life at the individual users. Thus, there is a need to develop networking techniques that make efficient use of the limited energy that is available. The study of energy-efficient communication as a network control issue impacts directly on the other fundamental issues proposed for study, namely network architecture, information distribution, and multicasting. The ad-hoc networking environment is sufficiently different from that of wired networks, or even cellular wireless networks, that drastically different approaches may be needed. The contractor shall focus on

basic research issues that are considered to be the most prominent, distinguishing, and fundamental for ad-hoc networks, and that lead to new questions that simply did not exist until now in more traditional network architectures.

3.19.6 Experimentation and Testing

The Contractor shall provide engineering support for experimentation and testing in laboratory and field environments. This includes hardware and software support, planning and logistics for large field demonstrations, operators for mobile communications equipment, and data analysis.

3.20 Development of Audio/Visual Materials and Aids, Project Management

In the prosecution of technical programs, the contractor shall provide technical and engineering support in maintaining programmatic material, communicating with program participants, preparing technical briefings, development of work tasking, annotation and promulgation of action items resulting from meetings and general programmatic support of a technical nature. The contractor shall ensure that all project and program actions are tracked and documented and that the documentation is made available to all program participants. The contractor shall provide support in developing action items and tracking them. The contractor shall provide support in the development of technical reports, briefing materials, resource tracking and all other programmatic information required.

3.21 Hardware and Software System Design and Maintenance

NRL maintains a variety of heterogeneous, highly distributed networked systems for the development of technical programs. These systems range from state-of-the-art ATM, GE, streams and optical networks with high end workstations, servers and parallel processing systems. These networked systems are often clustered within a workgroup as a number of workstations running off a server with a storage farm. Requirements exist to implement scalable state-of-the-art capabilities; design, reconfigure and maintain distributed systems; update older configurations and generally maintain systems at current or recent versions of the operating systems and file management systems. The overall systems include:

- SONET, ATM , GE, FC networks
- WDM and "all-optical" networks
- SMPTE 292M networked imagery

Legacy: 10/100 Ethernet, Super-(GSN) and AppleTalk protocols

Remote access systems (modems, ppp, MacSLP, etc.)
NFS, AFS and MR-AFS distributed file systems
Kerberos distributed authentication services
Solaris, Mac, DOS, Windows, NT, Linux, Irix OS's
MPP Systems and Servers: SGI, Sun, Intel, etc.
Adic FileServ and VolServe archives

The contractor shall design, configure, reconfigure, update and maintain individual networked groups, maintain close to current revisions of operating systems and adapting to the full range of available local and wide area networks. The contractor shall ensure that all information is backed up at defined intervals and that future needs are anticipated and reported as needed. The contractor shall develop and maintain complete site documentation for the configuration of the system and provide on-line documentation for start-up and shut-down of all systems. The contractor shall develop growth plans based on current usage so that future system and software needs can be put into the budget.

3.22 Program Management

The contractor shall perform as liaison with the NRL Contracting Officer Representative (COR) and perform the following functions in support of tasks 3.1 through 3.17: Provide task leader support along NRL Code 5500 functional areas and coordination of task leader technical activities. Assign personnel to meet specific task requirements in the areas of staff knowledge, experience, and demonstrated performance. Provide continual refinement of schedule, resource requirements, approach methodology, and identification and resolution of problems areas. Produce and deliver a monthly comprehensive contract cost monitoring and control report. Contractor shall establish budgets and monitor the financial status of the individual SOW tasks and the total program. Perform as liaison to subcontractors for technical tasking, technical and financial performance monitoring and compliance review of deliverable items.

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A. CONTRACT LINE ITEM NO. 0002		B. EXHIBIT "A"	C. CATEGORY: TDP _____ TM- _____ OTHER _____	
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D. SYSTEM / ITEM		E. CONTRACT / PR NO. 55-7029-03	F. CONTRACTOR
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1. DATA ITEM NO. A001	2. TITLE OF DATA ITEM Design Documentation of Algorithms, Models, Protocols		3. SUBTITLE
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4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE Tasks 3.1 through 3.19 & 3.21		6. REQUIRING OFFICE NRL Code 5580	
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7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION ASREQ	14. DISTRIBUTION		
8. APP CODE N		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	a. ADDRESSEE Code 5580		b. COPIES Draft Reg Repr

16. REMARKS				15. TOTAL →		
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17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

1. DATA ITEM NO. A002	2. TITLE OF DATA ITEM Documentation of Algorithms, Models, Protocols		3. SUBTITLE
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4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE Tasks 3.1 through 3.19 & 3.21		6. REQUIRING OFFICE NRL Code 5580	
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7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION ASREQ	14. DISTRIBUTION		
8. APP CODE N		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION	a. ADDRESSEE Code 5580		b. COPIES Draft Reg Repr

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17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

1. DATA ITEM NO. A003	2. TITLE OF DATA ITEM See Block 16		3. SUBTITLE
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4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE Task 3.1 through 3.16 & 3.18		6. REQUIRING OFFICE NRL Code 5580	
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7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION ASREQ	14. DISTRIBUTION		
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16. REMARKS				15. TOTAL →		
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17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

1. DATA ITEM NO. A004	2. TITLE OF DATA ITEM Documentation of Architecture & Interfaces		3. SUBTITLE
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4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE Tasks 3.1 through 3.19 & 3.21		6. REQUIRING OFFICE NRL Code 5580	
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7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION ASREQ	14. DISTRIBUTION		
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17. PRICE GROUP
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A. CONTRACT LINE ITEM NO. 0002	B. EXHIBIT "A"	C. CATEGORY: TDP _____ TM- _____ OTHER _____
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D. SYSTEM / ITEM	E. CONTRACT / PR NO.	F. CONTRACTOR
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1. DATA ITEM NO. A005	2. TITLE OF DATA ITEM Briefing Materials on Results of Research	3. SUBTITLE
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE Tasks 3.1 through 3.19
6. REQUIRING OFFICE NRL Code		
7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY ASREQ
8. APP CODE N	11. AS OF DATE	12. DATE OF FIRST SUBMISSION ASREQ
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17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

1. DATA ITEM NO. A006	2. TITLE OF DATA ITEM Monthly Technical Reports	3. SUBTITLE
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE Tasks 3.1 through 3.19 & 3.21
6. REQUIRING OFFICE NRL Code 5580		
7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY MNTHLY
8. APP CODE N	11. AS OF DATE	12. DATE OF FIRST SUBMISSION *
13. DATE OF SUBSEQUENT SUBMISSION		14. DISTRIBUTION
16. REMARKS The report must contain the technical progress of the previous unreported period and any problems encountered or anticipated. *One month after award of contract.		a. ADDRESSEE Code 5580
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17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

1. DATA ITEM NO. A007	2. TITLE OF DATA ITEM System configuration Documentation	3. SUBTITLE
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE
6. REQUIRING OFFICE NRL Code 5580		
7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY ASREQ
8. APP CODE N	11. AS OF DATE	12. DATE OF FIRST SUBMISSION ASREQ
13. DATE OF SUBSEQUENT SUBMISSION		14. DISTRIBUTION
16. REMARKS Should include System Growth Plans, and System Start-up/Shut Down		a. ADDRESSEE Code 5580
		b. COPIES
		Draft
		Final
		Reg
		Repro
		1
15. TOTAL →		1

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

1. DATA ITEM NO.	2. TITLE OF DATA ITEM	3. SUBTITLE
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE
6. REQUIRING OFFICE		
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY
8. APP CODE	11. AS OF DATE	12. DATE OF FIRST SUBMISSION
13. DATE OF SUBSEQUENT SUBMISSION		14. DISTRIBUTION
16. REMARKS		a. ADDRESSEE
		b. COPIES
		Draft
		Final
		Reg
		Repro
15. TOTAL →		

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

G. PREPARED BY Code 5580	H. DATE 1/16/03	I. APPROVED BY	J. DATE
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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 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0701-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. 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 address. Send completed form to the Government Issuing

A. CONTRACT LINE ITEM NO. 0002	B. EXHIBIT "A"	C. CATEGORY: TDP _____ TM- _____ OTHER _____
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D. SYSTEM / ITEM	E. CONTRACT / PR NO. 55-7029-03	F. CONTRACTOR
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1. DATA ITEM NO. A008	2. TITLE OF DATA ITEM Monthly Financial Report	3. SUBTITLE
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4. AUTHORITY (Data Acquisition Document No.)	5. CONTRACT REFERENCE All Tasks	6. REQUIRING OFFICE
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7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY MNTHLY	12. DATE OF FIRST SUBMISSION 30 DAC	14. DISTRIBUTION	
8. APP CODE N		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION *	a. ADDRESSEE	b. COPIES

16. REMARKS *The contractor shall provide the monthly financial reports in the following format: 1) A copy of the invoice submitted for payment, 2) An expenditure plan by month for each sponsor for each tasks. The format will be designated by the COR in accordance with Government procedures and particular needs of the sponsors. The plan will be submitted once every fiscal year for that task. The actual expenditures must be reported on a monthly basis for the previous unreported period and must be reported for each sponsor for each tasks against the plan. Government task managers who will be identified upon award of the contract shall each receive the relevant financial report. The contractor shall provide all reports with a summary to the COR's administrative contractor monitor.	15. TOTAL → 1
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1. DATA ITEM NO. A009	2. TITLE OF DATA ITEM Monthly On-Site Labor Hours Report	3. SUBTITLE
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4. AUTHORITY (Data Acquisition Document No.)	5. CONTRACT REFERENCE All Tasks	6. REQUIRING OFFICE Code 5580
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7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY MNTHLY	12. DATE OF FIRST SUBMISSION *	14. DISTRIBUTION	
8. APP CODE N		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION *	a. ADDRESSEE	b. COPIES

16. REMARKS *The Contractor shall deliver the monthly status on-site labor report no later than five (5) days after the end of each reporting month. The report must include as a minimum the following data: (1) Reporting Period, Contract Number, Contract Value, Current Funding, Amount Expended in Current Period, Total Expended to Date and Date Submitted. (2) Labor (include subcontractors) - Show employee name, number of hours, and total hours 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. The contractor shall deliver the monthly on-site labor hour report no later than five (5) days after the end of each reporting month. This may be delivered electronically to each task manager.	15. TOTAL → 2
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G. PREPARED BY Code 5580	H. DATE 1/16/03	I. APPROVED BY	J. DATE
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17. PRICE GROUP
18. ESTIMATED

17. PRICE GROUP
18. ESTIMATED

Solicitation Number: N00173-03-R-DL02
Attachment (2)

DEPARTMENT OF DEFENSE CONTRACT SECURITY CLASSIFICATION SPECIFICATION <i>(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)</i>				1. CLEARANCE AND SAFEGUARDING SER:069-02	
				a. FACILITY CLEARANCE REQUIRED	
				TOP SECRET	
				b. LEVEL OF SAFEGUARDING REQUIRED	
				NONE	
2. THIS SPECIFICATION IS FOR: <i>(X and complete as applicable)</i>			3. THIS SPECIFICATION IS: <i>(X and complete as applicable)</i>		
a. PRIME CONTRACT NUMBER			<input checked="" type="checkbox"/>	a. ORIGINAL <i>(Complete date in all cases)</i>	DATE (YYYYMMDD)
b. SUBCONTRACT NUMBER				b. REVISED <i>(Supersedes all previous specs)</i>	REVISION NO. DATE (YYYYMMDD)
<input checked="" type="checkbox"/> c. SOLICITATION OR OTHER NUMBER	DUE DATE (YYYYMMDD)			c. FINAL <i>(Complete item 5 in all cases)</i>	DATE (YYYYMMDD)
55-7029-03					
4. IS THIS A FOLLOW-ON CONTRACT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO. If Yes, complete the following: Classified material received or generated under _____ <i>(Preceding Contract Number)</i> is transferred to this follow-on contract.					
5. IS THIS A FINAL DD FORM 254? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO. If Yes, complete the following: In response to the contractor's request dated _____, retention of the classified material is authorized for the period of _____					
6. CONTRACTOR <i>(Include Commercial and Government Entity (CAGE) Code)</i>					
a. NAME, ADDRESS, AND ZIP CODE		b. CAGE CODE	c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>		
FOR RFP PURPOSES ONLY, NOT VALID FOR ACTUAL CONTRACT AWARD			N/A		
7. SUBCONTRACTOR					
a. NAME, ADDRESS, AND ZIP CODE		b. CAGE CODE	c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>		
N/A			N/A		
8. ACTUAL PERFORMANCE					
a. LOCATION		b. CAGE CODE	c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>		
N/A			N/A		
9. GENERAL IDENTIFICATION OF THIS PROCUREMENT					
SCIENTIFIC, ENGINEERING, TECHNICAL, ANALYTICAL SUPPORT					
10. CONTRACTOR WILL REQUIRE ACCESS TO:					
a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION	YES	NO	11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL:		
b. RESTRICTED DATA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY	YES	NO
c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	b. RECEIVE CLASSIFIED DOCUMENTS ONLY	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. FORMERLY RESTRICTED DATA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	c. RECEIVE AND GENERATE CLASSIFIED MATERIAL	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. INTELLIGENCE INFORMATION	<input type="checkbox"/>	<input type="checkbox"/>	d. FABRICATE, MODIFY, OR STORE CLASSIFIED HARDWARE	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(1) Sensitive Compartmented Information (SCI)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	e. PERFORM SERVICES ONLY	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(2) Non-SCI	<input type="checkbox"/>	<input checked="" type="checkbox"/>	f. HAVE ACCESS TO U.S. CLASSIFIED INFORMATION OUTSIDE THE U.S., PUERTO RICO, U.S. POSSESSIONS AND TRUST TERRITORIES	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. SPECIAL ACCESS INFORMATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	g. BE AUTHORIZED TO USE THE SERVICES OF DEFENSE TECHNICAL INFORMATION CENTER (DTIC) OR OTHER SECONDARY DISTRIBUTION CENTER	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. NATO INFORMATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	h. REQUIRE A COMSEC ACCOUNT	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. FOREIGN GOVERNMENT INFORMATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	i. HAVE TEMPEST REQUIREMENTS	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. LIMITED DISSEMINATION INFORMATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	j. HAVE OPERATIONS SECURITY (OPSEC) REQUIREMENTS	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j. FOR OFFICIAL USE ONLY INFORMATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	k. BE AUTHORIZED TO USE THE DEFENSE COURIER SERVICE	<input type="checkbox"/>	<input checked="" type="checkbox"/>
k. OTHER <i>(Specify)</i>			l. OTHER <i>(Specify)</i>		

Reset

**Solicitation Number: N00173-03-R-DL02
Attachment (2)**

12. PUBLIC RELEASE. Any information (*classified or unclassified*) pertaining to this contract shall not be released for public dissemination except as provided by the Industrial Security Manual or unless it has been approved for public release by appropriate U.S. Government authority. Proposed public releases shall be submitted for approval prior to release Direct Through (*Specify*)

COMMANDING OFFICER, NAVAL RESEARCH LABORATORY, WASHINGTON, DC 20375-5320, CODE 5580.

NO PUBLIC RELEASE OF SCI AUTHORIZED

to the Directorate for Freedom of Information and Security Review, Office of the Assistant Secretary of Defense (Public Affairs)* for review.
*In the case of non-DoD User Agencies, requests for disclosure shall be submitted to that agency.

13. SECURITY GUIDANCE. The security classification guidance needed for this classified effort is identified below. If any difficulty is encountered in applying this guidance or if any other contributing factor indicates a need for changes in this guidance, the contractor is authorized and encouraged to provide recommended changes; to challenge the guidance or the classification assigned to any information or material furnished or generated under this contract; and to submit any questions for interpretation of this guidance to the official identified below. Pending final decision, the information involved shall be handled and protected at the highest level of classification assigned or recommended. (*Fill in as appropriate for the classified effort. Attach, or forward under separate correspondence, any documents/guides/extracts referenced herein. Add additional pages as needed to provide complete guidance.*)

Access to classified information is not required for the purpose of submitting a bid/proposal for this statement of work. However, prior to award of contract, the successful contractor will be required to have a TOP SECRET facility clearance, and personnel eligible for Sensitive Compartmented Information.

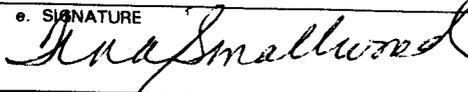
14. ADDITIONAL SECURITY REQUIREMENTS. Requirements, in addition to ISM requirements, are established for this contract. Yes No
(If Yes, identify the pertinent contractual clauses in the contract document itself, or provide an appropriate statement which identifies the additional requirements. Provide a copy of the requirements to the cognizant security office. Use Item 13 if additional space is needed.)

15. INSPECTIONS. Elements of this contract are outside the inspection responsibility of the cognizant security office. Yes No
(If Yes, explain and identify specific areas or elements carved out and the activity responsible for inspections. Use Item 13 if additional space is needed.)

16. CERTIFICATION AND SIGNATURE. Security requirements stated herein are complete and adequate for safeguarding the classified information to be released or generated under this classified effort. All questions shall be referred to the official named below.

a. TYPED NAME OF CERTIFYING OFFICIAL TINA SMALLWOOD	b. TITLE CONTRACTING OFFICER, SECURITY	c. TELEPHONE (<i>Include Area Code</i>) (202)767-2240/2391
---	--	--

d. ADDRESS (*Include Zip Code*)
**NAVAL RESEARCH LABORATORY
4555 OVERLOOK AVE., SW
WASHINGTON, DC 20375-5320**

e. SIGNATURE


17. REQUIRED DISTRIBUTION

- | | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | a. CONTRACTOR |
| <input type="checkbox"/> | b. SUBCONTRACTOR |
| <input checked="" type="checkbox"/> | c. COGNIZANT SECURITY OFFICE FOR PRIME AND SUBCONTRACTOR |
| <input type="checkbox"/> | d. U.S. ACTIVITY RESPONSIBLE FOR OVERSEAS SECURITY ADMINISTRATION |
| <input type="checkbox"/> | e. ADMINISTRATIVE CONTRACTING OFFICER |
| <input checked="" type="checkbox"/> | f. OTHERS AS NECESSARY 1221.1, 1223.1, 5580, 5502, ONI-532 |

PERSONNEL QUALIFICATIONS

Task 3.1 Systems Engineer/Scientist

Education: Master degree in engineering or systems management is required.

Experience: Ten years experience in defense modeling and simulation. Five of these years of experience must include experience working with distributed simulation networking protocols, as well as working in real-time simulation programming. Experience with formal methods and object-oriented software design methodologies is required. Experience with the Unix operating system, C/C++ programming languages, Java, and interface design is required. A history of publications in modeling and simulation conference proceedings is required. The ability to obtain a security clearance with SBI (Special Background Investigation) is required.

Task 3.1 Senior Subject Matter Expert (Terrorism)

Education: Masters degree in Political Science, International Relations, Politics, or International Security is required.

Experience: Fifteen years in intelligence research, analysis, and development technologies and initiatives, as well as collaboration technologies. Must have current SBI.

Task 3.1 Senior Analyst

Education: Masters degree in Political Science, International Relations, Politics, or International Security is required.

Experience: Fifteen years in intelligence research, analysis, and development technologies and initiatives, as well as collaboration technologies. Must have either a current SBI or the ability to obtain SBI.

Task 3.1 Analyst

Education: Baccalaureate degree in Political Science, International Relations, Politics, or International Security is required.

Experience: Ten years in intelligence research, analysis, and development technologies and initiatives, as well as collaboration technologies. Must have either a current SBI or the ability to obtain an SBI.

Task 3.1 Research & Evaluation Specialist

Education: Baccalaureate degree in Political Science, International Relations, Politics, or International Security is required.

Experience: One-year experience in intelligence research and development technologies and initiatives, as well as collaboration technologies.

Task 3.1 Systems Engineer

Education: Baccalaureate degree in an engineering or science field is required as a minimum. A Masters degree in Systems Engineering or Systems Management is preferred. DoD acquisition courses are desirable.

Experience: Ten or more years in DoD systems management and software development with particular emphasis in Modeling and Simulation. Previous DARPA and ONR experience is desirable. In addition, knowledge and professional experience in the area of Multi-Agent System theory or design, artificial intelligence theory and technologies, related applications. The contractor must also have 3-5 years experience related to Modeling and Simulation, especially those that are used in the Navy, Marine Corps and in the Joint community. In addition, familiarity with technologies that impact decision support systems are an added plus, as are publications, patents, participation on standard committees, etc in all of the aforementioned areas of interest.

Task 3.1 Subject Matter Expert, Marine Corps Systems

Education: Baccalaureate degree in an engineering or science field is required. Basic and Advanced Marine Corps professional education is highly desirable.

Experience: Experience as a Marine Corps Infantry Officer with responsibility for training in the areas of Military Operations in Urban Terrain (MOUT). Familiarity with DoD training M&S such as JSAF is highly desirable.

Task 3.2 Engineer/Computer Scientist

Education: Baccalaureate degree in an engineering related field or computer science is required at a minimum. An Masters degree in an engineering field or computer science is preferred, but can be substituted if the contractor has a Baccalaureate degree and at least 5+ years professional experience in the area of software development, particularly in an object oriented programming language.

Experience: Three to five years experience in developing software systems in an object oriented programming language such as C++ or Java and strong

mathematical skills, demonstrable either through college credentials or work experience. In addition, knowledge and professional experience in the area of Multi-Agent System theory or design, artificial intelligence theory and technologies, related applications and logic programming. The contractor must also have 3-5 years experience related to Modeling and Simulation, especially those that are used in the Navy and Marine Corps. In addition, familiarity with technologies that impact decision support systems are an added plus, as are publications, patents, participation on standard committees, etc in all of the aforementioned areas of interest.

Task 3.3 Computer Scientist/Electrical Engineer/Computer Engineer

Education: Baccalaureate degree in computer science, electrical engineering, computer engineering, or systems engineering is required.

Experience: At least three years of demonstrated achievement in developing VR and AR systems, architectures, and components. An advanced degree may substitute for experience. A working knowledge of C++, UNIX, modeling packages, and software design tools is required.

Task 3.4 Engineer/Computer Scientist

Education: Baccalaureate degree in computer science, electrical engineering, computer engineering, or systems engineering is required.

Experience: Three years of experience in working semi-automated forces applications and distributed interactive simulations are required. Must have a demonstrable knowledge (publications, patents, work on standards committees, etc.) of network protocols including PDUs for distributed simulation, internet protocols, DSI protocols and evolving ATM and IP protocols and Kerberos authentication including experience in developing network traffic tests and simulation models for such tests.

Task 3.5 Computer Scientist/Engineer/Mathematician

Education: Ph. D in computer science, electrical engineering, computer engineering, or systems engineering is required.

Experience: 10 years experience in modeling and simulation research and development areas that includes distributed simulation (SIMNET, DIS, HLA), computer generated forces, terrain representation and reasoning, simulation software architectures, simulation interoperability and composability, multi-resolution simulation.

Task 3.5 Computer Scientist/Computer Engineer

Education: Baccalaureate degree in computer science, electrical engineering, computer engineering, or systems engineering is required.

Experience: Two years experience development models using C++, UNIX, modeling packages, and software design tools is required.

Task 3.6 Computer Scientist/Mathematician

Education: Ph.D. in Mathematics or Computer Science is required.

Experience: 15 + years experience in signal processing and algorithm design, knowledge of the Unix environment and modern development tools available in the Unix environment, knowledgeable with C/C++ is required. Three years of experience in processing graph and data flow paradigms is required.

Task 3.7 Operations Research Analyst/Mathematician

Education: Masters degree in Mathematics or Operations Research is required.

Experience: 15 + years experience in Operations Research, signal processing and/or algorithm design, knowledge of military systems and the use of multi-processor networks, knowledge of modern development tools. Seven years of experience in processing graph and data flow paradigms is required. At least five years of hand-on management experience is required. Knowledge of probabilistic methods is required.

Task 3.8 Physicist/Electrical Engineer I

Education: Ph.D. in Physics is required.

Experience: 15+ years of experience in the design, development and testing of ocean acoustic Modeling and Simulation. Extensive experience in software system integration. Familiarity with Modeling and Simulation High Level Architecture (HLA) and Synthetic Environment Data Representation and Interchange Specification (SEDRIS). Participation in M&S standards development. Familiarity with broadband, range dependent Gaussian beam underwater acoustic propagation models. Familiarity with Navy OAML standard acoustic propagation models. Must have written extensive publications. Secret clearance is required.

Task 3.8 Physicist/Electrical Engineer II

Education: Masters degree in Electrical Engineering, or Physics is required.

25+ years experience in areas of sonar and software system development and modeling and simulation of synthetic natural ocean environments. Has held leadership role in efforts to develop data and models to support simulations, and to develop, design and provide engineering support to the development of trainer systems and engineering federations. Knowledge of the Naval Training Meta FOM (NTMF), Modeling and Simulation interoperability and composability. Demonstrated leadership in Department of Defense related Modeling and Simulation standards development working groups.

Task 3.8 Physicist/Oceanographer

Education: Ph.D. in Physics (Geology, Meteorology, or Oceanography) is required.

Experience: 15+ years of technical and management experience in national and international oceanography and atmospheric science programs. Broad knowledge of the Modeling & Simulation (M&S) and Research & Development (R&D) communities, including the federal government, universities, laboratories, and industry. Extensive experience required in the development and application of integrated and consistent natural environment representations, including Testing & Evaluation (T&E) and standards development. Familiarity with Defense Modeling and Simulation Office projects including High Level Architecture, Federation Development Process (FEDEP), Synthetic Environment Data Representation and Interchange Specification (SEDRIS), and Verification, Validation & Accreditation (VV&A). Experience with Navy M&S programs, especially Probability of Raid Annihilation (PRA) Federation and related acquisition programs. Must be an experienced speaker and writer. Secret clearance is required.

Task 3.8 Physicist/Computer Scientist

Education: Masters degree in Physics, Geology, Meteorology, Oceanography is required.

Experience: 15+ years experience in using computer technologies in technical programs involving the maritime environment, ranging from the study of the effects of the atmosphere on high-energy laser propagation to the planning of the development and use of a low-cost, low-earth-orbiting communications satellite. Extensive experience with the application of the object-oriented paradigm and Unified Modeling Language (UML), both commonly used in software development, for the description and analysis of natural environment systems as well as for software development. Experience with the Navy's M&S programs, including the Single Integrated Air Picture and other acquisition programs. Secret clearance required.

Task 3.8 Computer Scientist

Education: Baccalaureate degree in computer science is required.

Experience: Two years experience in programming using C++, UNIX, modeling packages, and software design tools are required.

Task 3.9 Engineer/Computer Scientist

Education: Baccalaureate degree in either electrical engineering or computer science is required.

Experience: Five years of experience in the administration and development of high performance networks consisting of more than 50 workstations consisting of two years of experience with the UNIX operating system, the C programming language, and ATM and IP networks; and one year of experience with Kerberos authentication and the following advanced technology hardware: SGI workstations, servers and cc:NUMA parallel systems, Sun Microsystems workstations and Enterprise parallel systems, Windows NT workstations, Mac OS X workstations and servers are required.

Task 3.9. Engineer/Computer Scientist

Education: Baccalaureate degree in engineering or computer science is required. Four years of experience in an engineering or computer science discipline can be substituted for the degree.

Experience: Five years of experience in the administration and development of high performance networks consisting of more than 50 workstations, consisting of at least two years of experience with the UNIX operating system and the C programming language ATM and IP networks; and one year of experience with Kerberos authentication and the following advanced technology hardware: SGI cc:NUMA Origin 3000 parallel systems, SGI Infinite Reality IR4 servers, Sun Microsystems distributed Sunfire/Sunlink MPI parallel systems, and Linux/IA-64 cc:NUMA are required.

Task 3.10 Engineer/Computer Scientist

Education: Baccalaureate degree in either electrical engineering or computer science is required.

Experience: Five years of experience in the administration and development of heterogeneous, high performance computing environments consisting of more than massively parallel computers, graphics workstations and high speed storage systems, consisting of at least two years of experience with the UNIX

operating system and the C programming language, ATM and IP distributed networks with Kerberos authentication, and one year of experience with the following advanced technology hardware: SGI cc:NUMA Origin 3000 parallel systems, SGI Infinite Reality IR4 servers, Sun Microsystems distributed Sunfire/Sunlink MPI parallel systems, and Linux/IA-64 cc:NUMA are required.

Task 3.10 Engineer/Computer Scientist

Education: Baccalaureate degree in engineering or computer science is required. Four years of experience in an engineering or computer science discipline can be substituted for the degree.

Experience: Five years of experience in the administration and development of heterogeneous, high performance computing environments consisting of more than massively parallel computers, graphics workstations and high speed storage systems, consisting of at least two years of experience with the UNIX operating system and the C programming language, ATM and IP distributed networks with Kerberos authentication, and one year of experience with the following advanced technology hardware: SGI cc:NUMA Origin 3000 parallel systems, SGI Infinite Reality IR4 servers, Sun Microsystems distributed Sunfire/Sunlink MPI parallel systems, and Linux/IA-64 cc:NUMA are required.

Task 3.10 Senior Computer Scientist

Education: Masters or PhD degree in engineering, mathematics, computer engineering, or computer science is required.

Experience: Three years experience in research and developing high performance computing systems, progressive motion imagery systems, high performance interfaces, and compression/decompression algorithms. Interfacing devices to high performance computing environments and a strong working knowledge of C++, driver code, graphics programming, and such software packages and optimization tools are required. The ability to obtain a top secret clearance is preferred.

Task 3.11 Senior Computer Scientist/ Mathematician/ Physicist/ Physical Scientist:

Education: Masters degree in either computer science, mathematics, physics or other physical science (e.g., meteorology, geology) is required. Four years of training in the any one of these disciplines can be substituted for the degree.

Experience: Four years of experience with the Unix/Linux operating systems, IP and ATM network protocol, C, C++ or Fortran programming languages, consisting of three or more years of experience working with parallel decomposition of software applications and one year of experience in parallel

software analysis in the area of the cc:NUMA SGI Origin 3000 shared memory system or equivalent are required.

Task 3.12 Computer Scientist/Electrical Engineer/Analyst

Education: Bachelor of Science (BS) degree in computer science, electrical engineering, or a minor in computer science with a programming background. Four years of experience in programming can be substituted for the degree.

Experience: Four years experience in designing algorithms for web based applications is required. The contractor must; have an excellent working knowledge of the UNIX operating system, HTML, CSS, and Java Script; have mastery or one or more of the following programming languages: Perl, PHP or Java script; have experience with querying relational database.

Task 3.13 Engineer/Computer Scientist

Education: Degree in computer scientist or software engineer is required.

Experience: Five years experience in formal methods and software design methodologies is required. The five years of experience must include experience with the UNIX operating system, the C, C++ programming languages, and be familiar with emerging formal methods of object-oriented software specification, design, and programming. Experience with security vulnerability assessment tools. Secret Clearance is required.

Task 3.14 Senior Computer Scientist:

Education: Masters degree in computer science engineering is required.

Experience: Three years of experience in designing and developing virtual environments and interfacing devices to those environments and a strong working knowledge of C++, graphics programming, and such software packages as Vega and Performer are required. Secret clearance is required.

Task 3.14 Computer Scientist

Education: Master's degree in computer science or engineering is required.

Experience: One or more years of experience in designing and developing virtual environments and interfacing devices to those environments and a strong working knowledge of C++, graphics programming, and such software packages as Vega and Performer are required. Secret clearance is required

Task 3.14 3D Input Device & Interactive Controls Software Developer

Education: Master's degree in computer science or engineering is required.

Experience: Ten years of experience in designing and implementing interactive graphical user interfaces, a strong working knowledge of C++, and 3D graphics programming. Three years of experience in developing a variety of high level device drivers for 3D, real-time, full body tracking systems. Two years of experience in controlling the movement of an articulated human figure based on a person's tracked motion.

Task 3.14 Electrical Engineer specializing in Micro-controllers

Education: Bachelor's degree in computer engineering or electrical engineering is required.

Experience: Three years of experience in designing and implementing digital circuits using micro-controllers. Previous experience developing low level device driver software for interfacing communications devices including serial and parallel ports.

Task 3.14 Electrical Engineer specializing in Wireless Communications

Education: Bachelor's degree in electrical engineering is required.

Experience: Three years of experience in designing and implementing digital and analog circuits for remote sensing applications. Previous experience developing compact, low power, high speed wireless digital communications systems.

Task 3.14 Artist Modeler specializing modeling for 3D computer games

Education: Bachelor's degree in the field of visual design or computer graphics is required.

Experience: Three years of experience in constructing 3D models optimized for computer graphics rendering. Experience developing 3D models for both engineering applications and 3D computer games.

Task 3.15 Cognitive Scientist

Education: Baccalaureate degree in cognitive science or psychology with emphasis in cognition

Experience: Completion of internship or independent research project on cognitive analysis or cognitive engineering. Experience in cognitive modeling and cognitive task analysis.

Task 3.15 Computer Scientist

Education: Baccalaureate degree in computer science

Experience: Coursework in human computer interaction, artificial intelligence, and programming languages. Demonstrated ability to complete programming assignments on time.

Task 3.16 Computer Engineer

Education: Bachelor of Science (BS) degree in computer science, electrical engineering, or a minor in computer science with a programming background. Four years of experience in programming can be substituted for the degree.

Experience: Three years experience in designing algorithms for a PC environment is required.

Task 3.16 Senior Engineer/Analyst

Education: Baccalaureate degree in computer science or engineering is required.

Experience: Three years of experience in network protocol design; a strong working knowledge of ATM and IP network protocols, security and equipment; the UNIX operating environment; and common knowledge of high performance distributed computing, network management, signaling, routing, authentication for use in wide area distribution and dissemination of multimedia data streams are required.

Task 3.16 Engineer/Computer Scientist

Education: Baccalaureate degree in either electrical engineering or computer science is required.

Experience: Five years of experience in the administration and development of heterogeneous, high performance computing environments consisting of more than massively parallel computers, graphics workstations and high speed storage systems, consisting of at least two years of experience with the UNIX operating system and the C programming language, ATM and IP distributed networks with Kerberos authentication, and one year of experience with the following advanced technology hardware: SGI cc:NUMA Origin 3000 parallel systems, SGI Infinite Reality servers, Sun Microsystems distributed Global Works and Wildfire parallel systems are required.

Task 3.16 Computer Scientist

Education: PhD in Computer Science, Cognitive Science, or Information Management with emphasis in artificial intelligence is required.

Experience: Five or more years experience relating to case-based reasoning, information management, natural language processing, machine learning, mixed-initiative planning, knowledge management, and/or related fields. Must have strong working skills in Java.

Task 3.17 Software Developer

Education: Baccalaureate degree in Computer Science

Experience: 1-3 years in developing prototypes for decision support systems. Knowledge of some AI-related topics (e.g., machine learning, knowledge management, generative planning, case-based reasoning) is required. Competency in Java programming required. American citizens, only.

Task 3.18 Computer Engineer

Education: Bachelor of Science (BS) degree in computer science, electrical engineering, or a minor in computer science with a programming background. Four years of experience in programming can be substituted for the degree.

Experience: Three years experience in designing algorithms for a PC environment is required.

Task 3.19.1 Senior Analyst I:

Education: Baccalaureate degree in either electrical engineering, computer engineering, or computer science degree is required.

Experience: Ten years of experience with demonstrated research ability in Distributed Information Processing Systems as well as in related fields are required. A history of publications in the literature and direct experience in the academic field is required. A demonstrated research ability means a combination of ten or more publications and reports.

Task 3.19.2 Senior Analyst II:

Education: Baccalaureate degree in either electrical engineering, computer engineering, or computer science degree is required.

Experience: Fifteen years of experience in the theoretical aspects of communication and in computer programming are required. Extensive experience in the realm of simulation and mathematical modeling of communication systems is required. Extensive experience can be evidenced by a combination of ten years and five or more publications and/or reports.

Task 3.19.3 Senior Analyst III:

Education: Baccalaureate degree in either electrical engineering, computer engineering, or computer science is required.

Experience: Fifteen years of experience in the theoretical aspects of communication systems are required. Extensive experience in designing digital communication protocols and algorithms as well as the design and simulation of communication systems is required. Extensive experience can be evidenced by a combination of ten years and five or more publications and/or reports.

Task 3.19.4 Senior Analyst IV:

Education: Baccalaureate degree in either electrical engineering, computer engineering, or computer science degree is required.

Experience: Four years of experience in real-time hardware, and system development and experience with C++ software development, VxWorks, VME-based systems, and RF transmission hardware are required.

Task 3.19.5 Senior Research Analyst:

Education: Ph.D. in electrical engineering, computer engineering, or computer science is required.

Experience: Twenty years of experience and a distinguished background with demonstrated research ability in communication system design, analysis, and simulation modeling as well as in related fields are required. A demonstration of a distinguished background may include an IEEE Fellow or numerous publications (25 or more) in IEEE journals. A history of extensive publication in the literature is required. Furthermore, broad exposure to and direct experience in the academic field and in research is required. Extensive publication can be evidenced by a combination of twenty-five or more publications and/or reports.

Task 3.19.6 Engineer I

Education: Baccalaureate degree in electrical engineering, computer engineering, or computer science is required. Four years of experience in hardware and software field support can be substituted for the degree.

Experience: Competent in Unix/Linux operating system environments. Ability to understand and debug C/C++ computer programs. Experience with antennas, transmission lines, radio hardware, and crypto devices. Ability to apply these talents in a field environment for limited periods of time.

Task 3.20 Project Resource & Management Specialist :

Experience: Three years experience in desktop publishing skills; familiarity with internet; ability to develop and maintain program management plans; and generally support technical program management are required.

Task 3.21 Engineer/Computer Scientist

Education: Baccalaureate degree in electrical engineering or computer science is required. Combinations of course work and practical experience can be substituted for the Baccalaureate degree.

Experience: Three years of experience in one of the following areas each involving a combination of wide and local area networks is required:
 setting up and managing a combination of Sun's, PC's and Mac's;
 all of the above plus AFS, IP/ATM services;
 all of the above plus high performance massively parallel systems and storage. One must have a current top secret clearance.

Tasks 3.22 Program Manager

Education: Baccalaureate degree in Business Administration.

Experience: Ten years experience in the management of military research on-site contracts. An SBI is required.

Task 3.22 Program Analyst

Education: Baccalaureate degree in Management Studies or Business

Experience: Two years experience in updating, maintenance, and distribution of financial and technical reports related to military research on-site contracts.

Task 3.22 Subcontract Administrator

Education: Baccalaureate degree in business or finance is required.

Experience: Four years experience relating to subcontracting, purchasing, pricing, and accounting is required. Must have a working knowledge of the Federal Acquisition Regulations (FAR), DoD FAR Supplement, and company internal purchasing policies and procedures.