

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

1. SOLICITATION NUMBER  N00173-99-R-MS04	2. (X one)	
	<input type="checkbox"/>	a. SEALED BID
	<input checked="" type="checkbox"/>	b. NEGOTIATED (RFP)
	<input type="checkbox"/>	c. NEGOTIATED (RFQ)

**INSTRUCTIONS**

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

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

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

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

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

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

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

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

CONTRACTING OFFICER  
NAVAL RESEARCH LABORATORY  
ATTN: CODE 3220.MS  
WASHINGTON DC 20375-5326

**4. ITEMS TO BE PURCHASED (Brief description)**

Scientific, Engineering, Technical, and Analytical (SETA) Support for a wide range of NRL research activities.

**5. PROCUREMENT INFORMATION (X and complete as applicable)**

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

**6. ADDITIONAL INFORMATION**

The Naval Research Laboratory Contracting Division issues solicitations and amendments to solicitations electronically via the Internet at the following website: <http://heron.nrl.navy.mil/contracts/home.htm>.

Any amendments to this solicitation will be posted at that website. Amendments will not be distributed by any other means. It is the responsibility of potential offerors to periodically review the website for amendments to this solicitation.

**7. POINT OF CONTACT FOR INFORMATION**

a. NAME (Last, First, Middle Initial) Sandy, Mary M.	b. ADDRESS (Include Zip Code) Naval Research Laboratory, Code 3220.MS 4555 Overlook, Ave., SW Washington, DC 20375-5326
c. TELEPHONE NUMBER (Include Area Code and Extension) (NO COLLECT CALLS) 202-767-3710	

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

DD FORM 1707 REVERSE, MAR 90

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FROM

AFFIX  
STAMP  
HERE

SOLICITATION NUMBER N00173-99-R-MS04	
DATE <i>(YYMMDD)</i> 99/08/02	LOCAL TIME 4:00 PM

**TO** Naval Research Laboratory  
Attn.: Code 3220.MS  
4555 Overlook, Ave. SW  
Washington, DC 20375-5326

<b>SOLICITATION, OFFER AND AWARD</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING <b>DO-C9</b>	PAGE OF 1   28 PAGES
2. CONTRACT NO.	3. SOLICITATION NO. <b>N00173-99-R-MS04</b>	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)		5. DATE ISSUED 2 July 1999	6. REQUISITION/PURCHASE NO. 57-7013-99
7. ISSUED BY CONTRACTING OFFICER NAVAL RESEARCH LABORATORY ATTN: CODE 3220J.MS WASHINGTON DC 20375-5326		CODE	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 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 Bldg. 222, Room 115 until 4:00pm local time 8/2/99  
(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 <b>Ms. Mary M. Sandy</b>	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) <b>202-767-3710</b>
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**11. TABLE OF CONTENTS**

(✓) SEC.	DESCRIPTION	PAGE(S)	(✓) SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE			PART II - CONTRACT CLAUSES		
<input checked="" type="checkbox"/> A	SOLICITATION/CONTRACT FORM	1	<input checked="" type="checkbox"/> I	CONTRACT CLAUSES	14-18
<input checked="" type="checkbox"/> B	SUPPLIES OR SERVICES AND PRICES/COSTS	2-4	PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.		
<input checked="" type="checkbox"/> C	DESCRIPTION/SPECS./WORK STATEMENT	4	<input checked="" type="checkbox"/> J	LIST OF ATTACHMENTS	19
<input checked="" type="checkbox"/> D	PACKAGING AND MARKING	4	PART IV - REPRESENTATIONS AND INSTRUCTIONS		
<input checked="" type="checkbox"/> E	INSPECTION AND ACCEPTANCE	5	<input checked="" type="checkbox"/> K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	20
<input checked="" type="checkbox"/> F	DELIVERIES OR PERFORMANCE	5			
<input checked="" type="checkbox"/> G	CONTRACT ADMINISTRATION DATA	6-9	<input checked="" type="checkbox"/> L	INSTRS., CONDS., AND NOTICES TO OFFERORS	21-27
<input checked="" type="checkbox"/> H	SPECIAL CONTRACT REQUIREMENTS	9-13	<input checked="" type="checkbox"/> M	EVALUATION FACTORS FOR AWARD	27-28

**OFFER (Must be fully completed by offeror)**

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

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

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

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)	
15B. TELEPHONE NO. (Include area code)	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE. <input type="checkbox"/>		17. SIGNATURE	18. OFFER DATE

**AWARD (To be completed by Government)**

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION		
22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304(c) ( ) <input type="checkbox"/> 41 U.S.C. 253(c) ( )		23. SUBMIT INVOICES TO ADDRESS SHOWN IN  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
<b>Basic Award</b>				
0001	The Contractor shall conduct research and development in accordance with Section C.	\$	\$	\$
0002	Data in accordance with Exhibit A (DD 1423) and Enclosure (1).	* NSP	* NSP	* NSP
<b>TOTAL EST. COST PLUS FIXED FEE BASIC AWARD</b>		\$	\$	\$

\* Not Separately Priced

**Option I**

0003	The Contractor shall conduct research and development in accordance with Section C.	\$	\$	\$
0004	Data in accordance with Exhibit A (DD 1423) and Enclosure (1).	* NSP	* NSP	* NSP
<b>TOTAL EST. COST PLUS FIXED FEE OPTION I</b>		\$	\$	\$

\* Not Separately Priced

ITEM NUMBER	SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
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**Option II**

0005	The Contractor shall conduct research and development in accordance with Section C.	\$	\$	\$
0006	Data in accordance with Exhibit A (DD 1423) and Enclosure (1).	* NSP	* NSP	* NSP

<b>TOTAL EST. COST PLUS FIXED FEE OPTION II</b>		\$	\$	\$
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\* Not Separately Priced

**Option III**

0007	The Contractor shall conduct research and development in accordance with Section C.	\$	\$	\$
0008	Data in accordance with Exhibit A (DD 1423) and Enclosure (1).	* NSP	* NSP	* NSP

<b>TOTAL EST. COST PLUS FIXED FEE OPTION III</b>		\$	\$	\$
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\* Not Separately Priced

ITEM NUMBER	SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
<b>Option IV</b>				
0009	The Contractor shall conduct research and development in accordance with Section C.	\$	\$	\$
0010	Data in accordance with Exhibit A (DD 1423) and Enclosure (1).	* NSP	* NSP	* NSP
<b>TOTAL EST. COST PLUS FIXED FEE OPTION IV</b>		\$	\$	\$

**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 02 February 1998 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/home.htm>.

**SECTION D  
PACKAGING AND MARKING**

**D-1 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**

52.246-9        -    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. Constructive acceptance, in accordance with FAR 32.905 (a) (1), shall be deemed to have occurred on the    day after the final delivery.

**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 the

Naval Research Laboratory  
4555 Overlook Ave., SW  
Washington, DC 20375

**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.

Contract Matters- \*

Security Matters- \*

Safety Matters- \*

Patent Matters- \*

Release of Data- \*

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

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

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.

**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 filled in 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 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 filled in 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**

This contract is incrementally funded pursuant to the Limitation of Funds clause, FAR 52.232-22. Funds are allotted to the contract in the amount of \$ \* and it is estimated that they are sufficient for contract performance through \*.

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

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

The purpose of these instructions is to permit the paying office to charge the accounting classification citations in the contract in a manner that reflects the performance of the contract. These instructions do not create any obligation on the part of the Government or the contractor nor do they in any way alter any obligation created by any other provision of the contract. Invoices should be paid from available ACRNs in the following order:

- (a) ACRNs cited on the contractor's invoice.
- (b) On a proportional basis from any ACRNs assigned to funds which will cancel at the end of the current fiscal year.
- (c) The ACRN assigned to the following line of accounting:  
97X4930.NH4A 000 77777 0 000173 2F 000000 N00173Z45000.
- (d) If funds appropriated in more than one fiscal year are allotted to the contract, the ACRN assigned to the oldest allotment of funds.
- (e) On a proportional basis from all ACRNs assigned to allotments of funds appropriated in a single fiscal year.

### **SECTION H SPECIAL CONTRACT REQUIREMENTS**

#### **H-1 TYPE OF CONTRACT**

(To be filled in 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 fifteen (15) days in advance (thirty (30) days if security clearance must be obtained) of any proposed substitution and provide the information required by paragraph (c) below.

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

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

The following are identified as key personnel:

(To be filled in 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 94,490 total hours for the basic award and 94,490 hours of direct labor for each option period, if exercised. The direct labor per year must include subcontractor direct labor for those subcontractors specifically identified in the Contractor's proposal as having hours included in the proposed level of effort. If the options are exercised, the total level of effort for performance shall be 94,490 total hours of direct labor per option year. 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 7,874 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:

Labor Category	Basic Award and each Option, if exercised
Computer Engineer I	320
Computer Engineer II	1,920
Senior Engineer/Analyst I	1,920
Senior Engineer/Computer Scientist I	3,840
Senior Engineer/Computer Scientist/Operations Research Analyst I	2,400

Engineer/Computer Scientist/Operations Research Analyst I	3,840
Engineer/Computer Scientist I	3,840
Engineer/Computer Scientist II	3,840
Engineer/Computer Scientist III	3,840
Engineer/Computer Scientist IV	3,840
Engineer/Computer Scientist V	3,840
Engineer/Computer Scientist VI	7,680
Engineer/Computer Scientist VII	5,760
Engineer/Computer Scientist VIII	2,400
Engineer/Computer Scientist IX	7,680
Engineer/Computer Scientist X	1,920
Data Management Security Analyst I	768
Secure Systems Analyst I	768
Secure Systems Analyst II	768
Secure Systems Analyst III	768
Secure Systems Analyst IV	768
Computer Scientist/Mathematician/Physicist/Physical Scientist I	5,760
Senior Research Analyst I	960
Senior Research Analyst II	960
Senior Analyst I	4,800
Senior Analyst II	3,840
Senior Analyst III	1,920
Senior Analyst IV	1,920
Electronics Engineer I	1,920
Electronics Engineer II	381
Electronics Technician I	381
System Engineer I	960
Mathematician/Physicist I	960
Engineer/Computer Scientist/Mathematician I	960
Project & Resource Management Specialist I	5,760
Subcontract Administrator	288
<b>Total</b>	<b>94,490</b>

#### H-4 ONR 5252.235-9714 - REPORT PREPARATION (FEB 97)

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: ANSI Z39.18 may be obtained from NISO Press Fulfillment Center, P. O. Box 338, Oxon Hill, MD. 20750-0338.Telephone 1-800-282-6476]

#### H-5 OPTION TO EXTEND TERM

This contract shall be renewable at the unilateral option of the Government by the Contracting Officer's notice of renewal to the Contractor within the existing term of the contract.

**H-6 ON-SITE USE OF GOVERNMENT PROPERTY**

It is anticipated that Government property will be used by the contractor's personnel in the performance of that portion of the contract performed on-site at the U.S. Naval Research Laboratory (NRL) including any of its field sites. Such use will be on a rent free basis and all such property shall be considered to remain in the possession and control of the NRL for property responsibility and accountability purposes.

**H-7 YEAR 2000 COMPLIANT INFORMATION TECHNOLOGY**

This requirement applies to information technology (IT) that processes date-related information. All such IT delivered under this contract shall be Year 2000 compliant as defined at FAR 39.002.

**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**

<b>FAR CLAUSE</b>	<b>TITLE</b>
52.202-1	- Definitions (OCT 1995)
52.203-3	- Gratuities (APR 1984)
52.203-5	- Covenant Against Contingent Fees (APR 1984)
52.203-6	- Restrictions On Subcontractor Sales To The Government (JUL 1995)
52.203-7	- Anti-Kickback Procedures (JUL 1995)
52-203-8	- Cancellation, Rescission, And Recovery Of Funds For Illegal Or Improper Activity (JAN 1997)
52.203-10	- Price Or Fee Adjustment For Illegal Or Improper Activity (JAN 1997)
52.203-12	- Limitation On Payments To Influence Certain Federal Transactions (JUN 1997)
52.204-2	- Security Requirements (AUG 1996)
52.204-4	- Printing/Copying Double-Sided On Recycled Paper (JUN 1996)
52.209-6	- Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (JUL 1995)
52.211-15	- Defense Priority and Allocation Requirements (SEP 1990)
52.215-2	- Audit And Records-Negotiation (AUG 1996)
52.215-8	- Order of Precedence - Uniform Contract Format (OCT 1997)

- 52.215-11 - 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)  
( *will be included if the successful offeror does not propose facilities capital cost of money*)
- 52.215-18 - Reversion or Adjustment of Plans for Post-retirement Benefits (PRB) Other than Pensions (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 ) - Alternate IV (OCT 1997)
- 52.216-7 - Allowable Cost And Payment (APR 1998)
- 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.
- 52.219-8 - Utilization Of Small Business Concerns (JAN 1999)
- 52.219-9 - Small Business Subcontracting Plan (JAN 1999) - Alternate II (JAN 1999)
- 52.219-16 - Liquidated Damages-Subcontracting Plan (JAN 1999)
- 52.219-25 - Small Disadvantaged Business Participation Program-Disadvantaged Status And Reporting (JAN 1999)
- 52.222-1 - Notice To The Government Of Labor Disputes (FEB 1997)
- 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 (FEB 1999)
- 52.222-29 - Notification Of Visa Denial (APR 1984) (DEVIATION)
- 52.222-35 - Affirmative Action For Disabled Veterans And Veterans Of The Vietnam Era (APR 1998)
- 52.222-36 - Affirmative Action For Workers With Disabilities (JUN 1998)
- 52.222-37 - Employment Reports On Disabled Veterans And Veterans Of The Vietnam Era (APR 1998)
- 52.223-2 - Clean Air And Water (APR 1984)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)
- 52.223-5 - Pollution Prevention and Right-To-Know Information (APR 1998)
- 52.223-6 - Drug-Free Workplace (JAN 1997)
- 52.223-14 - Toxic Chemical Release Reporting (OCT 1996)
- 52.225-11 - Restrictions On Certain Foreign Purchases (AUG 1998)
- 52.226-1 - Utilization Of Indian Organizations And Indian-Owned Economic Enterprises (MAY 1999)
- 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)
- 52.230-3 - Disclosure And Consistency Of Cost Accounting Practices (APR 1998)
- 52.230-6 - Administration Of Cost Accounting Standards (APR 1996)
- 52.232-9 - Limitation On Withholding Of Payments (APR 1984)
- 52.232-17 - Interest (JUN 1996)
- 52.232-18 - Availability Of Funds (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 (JUN 1997)
- 52.232-33 - Payment By Electronic Funds Transfer-Central Contractor Registration (MAY 1999)
- 52.233-1 - Disputes (DEC 1998)
- 52.233-3 - Protest After Award (AUG 1996) - Alternate I (JUN 1985)
- 52.237-2 - Protection Of Government Buildings, Equipment And Vegetation (APR 1984)
- 52.237-3 - Continuity Of Services (JAN 1991)
- 52.237-10 - Identification of Uncompensated Overtime (OCT 1997)
- 52.242-1 - Notice Of Intent To Disallow Costs (APR 1984)
- 52.242-3 - Penalties For Unallowable Costs (OCT 1995)
- 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)
- 52.244-6 - Subcontracts for Commercial Items and Commercial Components (OCT 1998)
- 52.245-5 - Government Property (Cost-Reimbursement, Time-And-Material, Or Labor-Hour Contracts) (JAN 1986) (DEVIATION)
- 52.245-9 - Use And Charges (APR 1984) (DEVIATION)
- 52.245-19 - Government Property Furnished "As-Is" (APR 1984)
- 52.246-23 - Limitation Of Liability (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 (MAR 1998)
- 252.205-7000 - Provision Of Information To Cooperative Agreement Holders (DEC 1991)
- 252.209-7000 - Acquisition From Subcontractors Subject To On-Site Inspection Under The Intermediate-Range Nuclear Forces (INF) Treaty (NOV 1995)
- 252.209-7004 - 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) (MAR 1998)
- 252.225-7010 - Duty Free Entry - Additional Provisions (MAR 1998)
- 252.225-7012 - Preference For Certain Domestic Commodities (MAY 1999)
- 252.225-7016 - Restriction On Acquisition Of Ball And Roller Bearings (AUG 1998)
- 252.225-7026 - Reporting Of Contract Performance Outside The United States (MAR 1998)
- 252.225-7031 - Secondary Arab Boycott Of Israel (JUN 1992)
- 252.225-7043 - Antiterrorism/Force Protection Policy For Defense Contractors Outside The United States (JUN 1998) (fill in : Naval Criminal Investigative Service (NCIS), Code 24, telephone, DSN 228-9113 or commercial (202)433-9113)
- 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 Bids 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 (OCT 1988)
- 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 (NOV 1995)
- 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 (MAY 1995)
- 252.242-7000 - Post Award Conference (DEC 1991)
- 252.242-7004 - Material Management And Accounting System (SEP 1996)
- 252.243-7002 - Requests for Equitable Adjustment (MAR 1998)
- 252.245-7001 - Reports of Government Property (MAY 1994)
- 252.247-7023 - Transportation Of Supplies By Sea (NOV 1995)
- 252.247-7024 - Notification Of Transportation Of Supplies By Sea (NOV 1995)  
*(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 (MAY 1995)

**I-2 FAR 52.223-11 - OZONE-DEPLETING SUBSTANCES (JUN 1996)**

(a) Definitions.

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

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

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

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

**I-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.

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

- J-1** Attachment (1) - Statement Of Work – 10 Pages, With Exhibit A - DD Form 1423, Contract Data Requirements And Enclosure (1) - Instructions For Distribution – 10 Pages
- J-2** Attachment (2 ) - DD 254, Contract Security Classification Specification Form Ser 006-99 Dated February 12, 1999 - 2 Pages
- J-3** Attachment (3) – Personnel Qualifications – 9 Pages
- J-4** Attachment (4) – Accounting and Appropriation Data (To be completed 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/rep&certs.htm>

**K-2 FILL IN FOR FAR 52.219-1 - SMALL BUSINESS PROGRAM REPRESENTATIONS (MAY 1999)**

The fill in information is as follows:

The standard industrial classification (SIC) code for this acquisition is 8731.

The small business size standard is 500 employees.

**K-3 COMMERCIAL AND GOVERNMENT ENTITY (CAGE) CODE REPORTING**

The Offeror's CAGE Code is {fill-in}\_\_\_\_\_.

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

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

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

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

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

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

**FAR CLAUSE    TITLE**

52.204-6	-	Data Universal Numbering System (DUNS) Number (APR 1998)
52.214-34	-	Submission Of Offers In The English Language (APR 1991)
52.214-35	-	Submission Of Offers In U.S. Currency (APR 1991)
52.215-1	-	Instructions to Offerors- Competitive Acquisition (OCT 1997)
52.215-16	-	Facilities Capital Cost Of Money (OCT 1997)
52.219-24	-	Small Disadvantaged Business Participation Program - Targets (JAN 1999)
52.222-24	-	Preaward On-Site Equal Opportunity Compliance Evaluation (FEB 1999)
52.252-5	-	Authorized Deviations in Provisions (APR 1984)

**L-2 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-3 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-4 FAR 52.216-1 - TYPE OF CONTRACT (APR 1984)**

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

**L-5 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-6 TRAVEL AND MATERIAL ESTIMATES - FOR EVALUATION PURPOSES ONLY**

The travel and material set forth below must be included in each offeror's cost proposal. During the term of the contract, the contractor will be reimbursed actual and verifiable travel and material expenses.

- a) The Government estimates the travel costs for this effort to be \$37,500 per year.
- b) The Government estimates the material costs for this effort to be \$50,000 per year.
- c) The travel and material estimates are direct costs and the offeror should add applicable indirect costs, if any.

**L-7 DFARS 252.204-7001 - COMMERCIAL AND GOVERNMENT ENTITY (CAGE) CODE REPORTING (DEC 1991)**

- (a) The Offeror is requested to enter its CAGE code on its offer in the block with its name and address. The CAGE code entered must be for that name and address. Enter CAGE Before the number.
- (b) If the Offeror does not have a CAGE code, it may ask the Contracting Officer to request one from the Defense Logistics Services Center (DLSC). The Contracting Officer will--
  - (1) Ask the Contractor to complete section B of a DD Form 2051, Request for Assignment of the Commercial and Government Entity (CAGE) Code;

- (2) Complete section A and forward the form to DLSC; and
- (3) Notify the Contractor of its assigned CAGE code.
- (c) Do not delay submission of the offer pending receipt of a CAGE code.

**L-8 DFARS 252.227-7017 - IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS (JUN 1995)**

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

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

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

\*\* Generally, development at private expense, either exclusively or partially, is the only basis

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

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

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

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

Date \_\_\_\_\_

Printed Name and Title \_\_\_\_\_

Signature \_\_\_\_\_

(End of identification and assertion)

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

**L-9 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-10 GOVERNMENT-FURNISHED PROPERTY**

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

**L-11 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-12 INSTRUCTIONS FOR SUBMISSION AND INFORMATION REQUIRED TO EVALUATE PROPOSALS**

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

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

**Solicitation No. N00173-99-R-MS04**  
**Closing Date:**  
**(As specified in Block 9, RFP face page)**  
**Attn: Code 3220J.MS**

(3) Proposal Format and Length - No attempt is made to restrict the proposal format and style. However, the proposal should be written and organized so as to be compatible with the RFP, the Statement of Work, company's organization and accounting structure, and proposed cost estimate. Offerors are encouraged to use recycled paper and maximize the use of double sided copying when preparing responses to solicitations.

**L-13 VOLUME I - TECHNICAL/MANAGEMENT PROPOSAL**

REQUIRED COPIES: 1 ORIGINAL AND 4 COPIES .

(1) The Contractor must propose the labor category in accordance with Level of Effort Breakdown 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 proposal:

## **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. 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/ Resources**

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 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-14 VOLUME II - BUSINESS PROPOSAL**

REQUIRED COPIES: 1 ORIGINAL AND 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 the cost elements. Should rates be used in the proposal which are not DCAA approved, the offeror shall provide complete documentation and the rationale for their use at time of proposal submission.

**(2) SMALL BUSINESS PARTICIPATION**

(a) In addition to complying with the clause at FAR 52.219-9, Small Business Subcontracting Plan (Jan 1999) with its Alternate II, proposals must include information to permit evaluation of the extent of participation of small businesses and historical black colleges or universities and minority institutions in performance of the contract. Participation to be identified may be in the form of a joint venture, teaming arrangement, or subcontract. Small business concerns that are not required by FAR 52.219-9 to submit a subcontracting plan must indicate the extent to which proposed joint ventures, teaming arrangements, or subcontracts are with historically black colleges or universities and minority institutions. Information provided should include the extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

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

**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**

Proposal 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 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 number (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 demonstrates an understanding of the technical problems in each task area will be evaluated.

## 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

- (a) 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.
- (b) The extent of participation of small disadvantaged business concerns 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 security, real time processing, simulation and modeling, multilevel secure database structures, progressive motion imagery, 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 work will be done primarily on-site, but provision should be made to have less than 10% of the support available off-site that will be specified by NRL. The following task areas and descriptions indicate the specific nature of these research efforts.

## 3.0 TASKS

3.1 Research in Voice/Data Integration Speech Processing in Radio Networks--The contractor shall provide support to a variety of research activities in the development of the infrastructure needed to support secure, reliable voice and data transmission across radio networks. The activities range from the definition and modeling of the radio network (low, routing and protocol development) to the development of speech processing for minimum bandwidth networks. The contractor shall provide the following support in the development of a multilingual, one-way, real-time speech translator utilizing stored speech. This is in support of the research effort in the communication of intelligible voice over radio links.

- a. The contractor shall develop algorithms that can operate with PC-based software to store and play back raw speech. The algorithms must permit the operator to select an appropriate phrase for play back, and the selected phrase shall be indicated visually on the screen.
- b. The algorithm must be designed to permit the translation of 100 to 150 preselected phrases for military and law enforcement applications. The contractor shall work with the user to define and refine an operational lexicon.
- c. The contractor shall provide support in the search of native speakers of six different languages and record them reading preselected phrases.
- d. The contractor shall design and incorporate the lexicon with the algorithms and shall support the user in conduction field tests.

3.2. Research in the Management, Use and Application of High Performance Networks--The contractor shall perform research and development in the area of algorithms 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 and network management and signaling issues, but with particular attention to reliable, low-latency and assured communication at 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 High Performance Peripheral Interface (HIPPI) devices and slower speed 10/100 Ethernet devices coupled into ATM network fabrics ranging from OC3c to OC48c 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 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 capability, quality-of-service and robustness in the research environment and subject the best models to rigorous 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.

3.3 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 (HIPPI, SONET, ATM, 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. 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) community as needed to introduce users to new capabilities that result from the research.

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 Development and Integration of Decision Support Systems--The contractor shall provide support in the design of algorithms for decision support systems. The specific areas for research include optimization of resource allocation, development of jointly interdependent routing, mathematically sound methods for distributing decision making capability, novel means for fusing data and testing filter algorithms, and design of user interfaces for decision systems. Algorithm design must include interfaces to existing and proposed databases, sensor systems and decision support architectures. Development of user interfaces includes interactive means for controlling the flow of information and decision making as well as graphical presentation of the resulting decision space. Current decision aid development involves strike warfare and the displays involve animation of transit routes through the three-dimensional battle space that includes threats, sensor systems, targets and weapons package. All tasks rest on the ability to design systems to operate in a distributed environment, using military systems and databases, in languages appropriate for the design (such as C++), and based on contemporary workstation technology. As a component of system design, the contractor shall provide support to NRL in integration of the new technology into existing research grade prototypes.

3.6 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.

3.7 Research and Development of Secure Information Systems Including Multi-level Secure Databases--

3.7.1 The contractor shall provide support on various aspects of multilevel secure (MLS) information management including physical separation to provide strong protection of information and replication to allow users to share information. The contractor shall perform research to discover high assurance strategies for MLS transaction management and recovery, relational and other data modeling, database design, heterogeneity, and interoperability. The contractor shall design, document, implement, and test prototype MLS information management systems. The contractor shall conduct performance analysis of competing MLS architectures and prototypes, both through actual stress testing and through simulation and shall document ways to improve the performance of a prototype.

The contractor shall investigate and develop secure system engineering approaches that result in the development of high assurance systems that satisfy both security and operational requirements. The contractor shall specify and automate a framework for understanding the effects that certain design decisions have on a system's security posture and operational capabilities. The contractor shall investigate the role that simulation and modeling can play in the definition of the aforementioned framework. The contractor shall concentrate on both local and wide distribution of systems and a strong requirement for interoperability.

3.7.2 The contractor shall provide support in the design and development of a variety of information security capabilities. Specifically, the contractor shall perform research and development in the analysis of security measures for cryptographic protocols used in secure distributed systems. The contractor shall perform experiments with various information displays and analyze the effectiveness of the information in terms of the reactions of people using the security tools.

3.8 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 distribution of processing. The contractor shall test the solutions using NRL's high performance computing facility. The facility includes a variety of distributed MPP computational platforms (SGI: 128p Origin 2000, HP: 64p Exemplar, and Sun: 96p Wildfire). Storage devices include Fiber Channel based Emass FileServ and VolServ systems based on MR-AFS and linked by high performance experimental ATM networks authenticated end-to-end with Kerberos. High resolution motion video systems include streaming of 720/60p imagery across the infrastructure.

3.9 Research and Development of Virtual Environments--The contractor shall provide support in the development of virtual environments for the display of scientific or technical information. The contractor shall design algorithms to build the environment consisting of but not limited to a three-dimensional space for visual, audio and tactical user interface devices. 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 interfaces are Fake Space booms, data gloves and audio devices.

3.10 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.

3.10.1 Research in Management of Distributed Networks—The Contractor shall develop and evaluate new techniques for the management of distributed communication networks and computer networks. The contractor shall 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 also investigate the use and application of existing network manager software. The contractor shall develop new mathematical system models that will facilitate the analysis, control, and optimization of distributed information processing systems such as communication networks and computer networks. The emphasis shall be on high-speed networks and on the interface between high-speed and low-speed systems. The contractor shall research the problem of providing individualized services to users with different needs and different capabilities. The contractor shall also develop mathematical models for communication networks and computer networks that will permit their performance evaluation and optimization. The contractor shall evaluate the performance of data systems in terms of throughput and delay. Applications of interest include radio networks, satellite networks, wireline networks, fiber optics networks, and hybrid networks containing two or more of these media.

**3.10.2 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. Some of the potential areas for development include Asynchronous Transfer Mode (ATM) modeling and simulation, multicast modeling and simulation, and simulation and modeling of multi-media communication systems and internetting protocols. The contractor shall develop new mathematical models that will facilitate the analysis, control, and optimization of computer and communication based systems of interest to the Navy. The contractor may choose the modeling techniques employed, subject to review by the COR. Future military communication systems will focus on higher data rates and greater use of commercial services. To understand how DoD can best use these services, the contractor shall determine the driving needs of future military communications with emphasis on Naval applications and examine the implications of using ATM for transmission and switching in military communication networks. The contractor shall identify those critical issues that must be addressed in order to successfully deploy this technology in future military systems. One particular critical issue is the impact of using ATM technology over RF links (as opposed to fiber links). Another issue is how to integrate this high data rate ATM technology into those lower bandwidth user networks. The contractor shall model ATM networks with emphasis on these as well as other critical issues and determine the relative performance tradeoffs. Some of these performance trades can be done analytically while others will have to be done by simulation. The contractor shall model multicast services either analytically or via simulation. This is an important area of technology that is starting to show increased applications and interest within DoD. The contractor shall model an integrated voice/data network architecture for low and high data rate network applications. This integrated voice/data 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.

**3.10.3 Protocol Development for Communication Networks** –The Contractor shall design protocols that will operate over high speed ATM networks. 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. The management of these resources needs to be accomplished remotely. The network envisioned for this effort is the Synthetic Theater of War (STOW) net. These protocols shall be evaluated with respect to some performance criterion and in some cases simulated to verify actual performance.

**3.10.4 Software & Hardware Development for Communication Networks**—The Contractor shall develop the target software required to implement the algorithms and protocols developed under Tasks 3.10.1 - 3.10.3. 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 provide a high level hardware description of a communication node that supports the network under study.

3.10.5 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.

3.10.6 Protocol and Software Development for Automated Relaying Networks—The Contractor shall design protocols that will facilitate the automated relaying of digitized voice and data together over the same RF transmission system. The goal is to support a wide variety of Navy applications, e.g., voice, tactical data, record message, etc., by access to a single relay network that manages all the communication resources. Upon completion of the algorithms for automated relaying, it is necessary to develop the software for implementation of these algorithms and protocols. The software consists of non-real-time prototype software designed to execute in a simulation environment.

3.11 Design and Development of Software Engineering Methods--The contractor shall provide research support into the specification and design of parallel and real time systems. This includes research into the functional and timing models of hard real-time systems; additionally, it includes support in using disciplined software-engineering techniques (e.g., module decomposition, specification of abstract interfaces, program design and testing) in the development of prototype formal and semi-formal specification tools. It also includes participation 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 progress towards goals. The contractor shall provide literature reviews, theory development, and refinement of theories and models.

3.12 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.

3.13 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 networks with high end workstations, servers and parallel processing systems to local networks running at less than Ethernet capability. 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 and ATM networks

WDM and "all-optical" networks

SMPTE 292M networked imagery

Legacy: • FDDI, 10/100 Ethernet, HIPPI 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 Y2K-compliant OS's

MPP Systems and Servers: SGI, Sun, HP, etc.

Emass 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.

### 3.14 Research and Development in Communication Transmission Technology--

3.14.1 Classified Radio Communication—The contractor shall provide support for research and development in the area of radio communications with particular emphasis in classified radio communication. The contractor shall provide hardware and firmware engineering support for general purpose signal recognition systems designed by NRL and being upgraded as in-laboratory projects. The contractor shall perform hardware/software (HW/SW) design implementation, development, test, maintenance, and documentation in support of classified NRL programs. The contractor shall provide applicable software maintenance, configuration control, and publications support, in compliance with existing specifications and standardization requirements, for the classified systems.

3.14.2 RF Engineering Research and Development--The contractor shall provide technical and engineering support in the evaluation of Naval Communication systems. This shall include a first article system testing and shipboard system integration. The contractor shall be required to analyze operational system requirements in order to generate evaluation and integration plans and specifications. The contractor shall investigate applications of high temperature superconducting materials to antenna design, matching problems, and RF components such as filters, multicouplers, impedance matching networks, and delay lines. The contractor shall measure the electrical characteristics of superconducting materials and devices and to evaluate the performance of superconducting system components.

3.14.3 Development, Test and Evaluation of Telecommunication Channels for Operational Navy Use--The contractor shall provide technical and engineering support in the evaluation of telecommunication channels under consideration for operational use by the U. S. Navy. The nature of the effort is to investigate and obtain measurements of the characteristics of radio communication channel of interest and to determine the performance limits imposed by the channels in order to establish guidelines for the design of future communication systems. Toward this set of goals, the contractor shall provide technical support for field experiments that includes, but is not limited to, a determination of the optimum antenna sensor, definition and description of the signal processing techniques, a determination of the form of data recording, specification of the types of equipment to be used for the measurements, and the method for interfacing the individual components. Additionally, the contractor shall perform the requisite data reduction to a form suitable for both formal and informal reporting.

3.15 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.

3.16 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.

3.17 Program Management--The contractor shall perform as liaison with the NRL COR and perform the following functions in support of tasks 3.1 through 3.15:

3.17.1 Project Organization--provide task leader support along NRL Code 5500 functional areas and coordination of task leader technical activities.

3.17.2 Assignment of Personnel--assign personnel to meet specific task requirements in the areas of staff knowledge, experience, and demonstrated performance.

3.17.3 Task Management--provide continual refinement of schedule, resource requirements, approach methodology, and identification and resolution of problems areas.

3.17.4 Cost Monitoring and Control--produce and deliver a monthly financial report. Contractor shall establish budgets and monitor the financial status of the individual SOW tasks and the total program.

3.17.5 Subcontract Administration--perform as liaison to subcontractors for technical tasking, technical and financial performance monitoring and compliance review of deliverable items.

# CONTRACT DATA REQUIREMENTS LIST

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

<b>A. CONTRACT LINE ITEM NO.</b> 0002, 0004, 0006, 0008, 0010				<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____			
<b>D. SYSTEM / ITEM</b>				<b>E. CONTRACT / PR NO.</b> N00173-99-R-MS04		<b>F. CONTRACTOR</b>			
<b>1. DATA ITEM NO.</b> A001		<b>2. TITLE OF DATA ITEM</b> Semiannual Technical Reports				<b>3. SUBTITLE</b>			
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.1		<b>6. REQUIRING OFFICE</b> NRL CODE 5580			
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> SEMIA		<b>12. DATE OF FIRST SUBMISSION</b> 180 DAC		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	
								<b>b. COPIES</b>	
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<b>16. REMARKS</b> The report must contain the technical progress of the previous unreported period and any problems encountered or anticipated.						See Distribution			
						<b>15. TOTAL</b> →			
<b>1. DATA ITEM NO.</b> A002		<b>2. TITLE OF DATA ITEM</b> Complete Documentation of the Algorithms				<b>3. SUBTITLE</b>			
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.1, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.15		<b>6. REQUIRING OFFICE</b> NRL CODE 5580			
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	
								<b>b. COPIES</b>	
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<b>16. REMARKS</b>						See Distribution			
						<b>15. TOTAL</b> →			
<b>1. DATA ITEM NO.</b> A003		<b>2. TITLE OF DATA ITEM</b> Complete Documentation of the Algorithms and Protocols				<b>3. SUBTITLE</b>			
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.2		<b>6. REQUIRING OFFICE</b> NRL CODE 5580			
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	
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								Final	
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								Repro	
<b>16. REMARKS</b>						See Distribution			
						<b>15. TOTAL</b> →			
<b>1. DATA ITEM NO.</b> A004		<b>2. TITLE OF DATA ITEM</b> Weekly Technical Report				<b>3. SUBTITLE</b>			
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.2, 3.3, 3.8		<b>6. REQUIRING OFFICE</b> NRL CODE 5580			
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> WEKLY		<b>12. DATE OF FIRST SUBMISSION</b> *		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	
								<b>b. COPIES</b>	
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<b>16. REMARKS</b> The report must contain the technical progress of the previous unreported period and any problems encountered or anticipated.						See Distribution			
						<b>15. TOTAL</b> →			
<b>G. PREPARED BY</b> Mary M. Sandy				<b>H. DATE</b> 5/6/99		<b>I. APPROVED BY</b>		<b>J. DATE</b>	

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<b>A. CONTRACT LINE ITEM NO.</b> 0002, 0004, 0006, 0008, 0010		<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____	
<b>D. SYSTEM / ITEM</b>			<b>E. CONTRACT / PR NO.</b> N00173-99-R-MS04		<b>F. CONTRACTOR</b>
<b>1. DATA ITEM NO.</b> A005	<b>2. TITLE OF DATA ITEM</b> Briefing Materials on Results of the Research			<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.2, 3.3, 3.4, 3.6, 3.7, 3.8, 3.15,		<b>6. REQUIRING OFFICE</b> NRL CODE 5580
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ	
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>	
<b>14. DISTRIBUTION</b>				<b>b. COPIES</b>	
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<b>16. REMARKS</b>				See Distribution	
				15. TOTAL →	
<b>1. DATA ITEM NO.</b> A006		<b>2. TITLE OF DATA ITEM</b> Complete Documentation of Algorithms, Interfaces, etc			<b>3. SUBTITLE</b>
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.3		<b>6. REQUIRING OFFICE</b> NRL CODE 5580
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ	
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>	
<b>14. DISTRIBUTION</b>				<b>b. COPIES</b>	
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<b>16. REMARKS</b>				See Distribution	
				15. TOTAL →	
<b>1. DATA ITEM NO.</b> A007		<b>2. TITLE OF DATA ITEM</b> Complete Documentation of Test Methods and Results			<b>3. SUBTITLE</b>
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.3, 3.15		<b>6. REQUIRING OFFICE</b> NRL CODE 5580
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ	
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>	
<b>14. DISTRIBUTION</b>				<b>b. COPIES</b>	
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<b>16. REMARKS</b>				See Distribution	
				15. TOTAL →	
<b>1. DATA ITEM NO.</b> A008		<b>2. TITLE OF DATA ITEM</b> *			<b>3. SUBTITLE</b>
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.4		<b>6. REQUIRING OFFICE</b> NRL CODE 5580
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ	
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>	
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<b>a. ADDRESSEE</b>				Draft	Final
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<b>16. REMARKS</b>				See Distribution	
*Complete Documentation of Test Procedures, Models used in Test, Measures of Effectiveness and Analyses of Test Results				15. TOTAL →	
<b>G. PREPARED BY</b> Mary M. Sandy			<b>H. DATE</b> 5/6/99		<b>I. APPROVED BY</b>
					<b>J. DATE</b>

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<b>A. CONTRACT LINE ITEM NO.</b> 0002, 0004, 0006, 0008, 0010			<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM- _____ OTHER _____													
<b>D. SYSTEM / ITEM</b>			<b>E. CONTRACT / PR NO.</b> N00173-99-R-MS04		<b>F. CONTRACTOR</b>													
<b>1. DATA ITEM NO.</b> A009	<b>2. TITLE OF DATA ITEM</b> Monthly Technical Reports				<b>3. SUBTITLE</b>													
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.4, 3.5, 3.6, 3.7, 3.9, 3.10, 3.11, 3.14		<b>6. REQUIRING OFFICE</b> NRL CODE 5580													
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> MNTLY		<b>12. DATE OF FIRST SUBMISSION</b> 30 DAC		<b>14. DISTRIBUTION</b>												
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b> 10 th of each month		<table border="1"> <tr> <td rowspan="2">a. ADDRESSEE</td> <td colspan="3">b. COPIES</td> </tr> <tr> <td>Draft</td> <td colspan="2">Final</td> </tr> <tr> <td></td> <td>Reg</td> <td>Repro</td> <td></td> </tr> </table>		a. ADDRESSEE	b. COPIES			Draft	Final			Reg	Repro	
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<b>16. REMARKS</b> The report must contain the technical progress of the previous unreported period and any problems encountered or anticipated.						See Distribution												
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<b>1. DATA ITEM NO.</b> A010	<b>2. TITLE OF DATA ITEM</b> *				<b>3. SUBTITLE</b>													
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.5		<b>6. REQUIRING OFFICE</b> NRL CODE 5580													
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>												
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<table border="1"> <tr> <td rowspan="2">a. ADDRESSEE</td> <td colspan="3">b. COPIES</td> </tr> <tr> <td>Draft</td> <td colspan="2">Final</td> </tr> <tr> <td></td> <td>Reg</td> <td>Repro</td> <td></td> </tr> </table>		a. ADDRESSEE	b. COPIES			Draft	Final			Reg	Repro	
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	Reg	Repro																
<b>16. REMARKS</b> * Complete Documentation of the Architecture Design and Interfaces						See Distribution												
<b>15. TOTAL</b> →																		
<b>1. DATA ITEM NO.</b> A011	<b>2. TITLE OF DATA ITEM</b> Complete Documentation of Interface Designs				<b>3. SUBTITLE</b>													
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.6, 3.7, 3.9		<b>6. REQUIRING OFFICE</b> NRL CODE 5580													
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>												
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<table border="1"> <tr> <td rowspan="2">a. ADDRESSEE</td> <td colspan="3">b. COPIES</td> </tr> <tr> <td>Draft</td> <td colspan="2">Final</td> </tr> <tr> <td></td> <td>Reg</td> <td>Repro</td> <td></td> </tr> </table>		a. ADDRESSEE	b. COPIES			Draft	Final			Reg	Repro	
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<b>16. REMARKS</b>						See Distribution												
<b>15. TOTAL</b> →																		
<b>1. DATA ITEM NO.</b> A012	<b>2. TITLE OF DATA ITEM</b> *				<b>3. SUBTITLE</b>													
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.6, 3.7		<b>6. REQUIRING OFFICE</b> NRL CODE 5580													
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>												
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<table border="1"> <tr> <td rowspan="2">a. ADDRESSEE</td> <td colspan="3">b. COPIES</td> </tr> <tr> <td>Draft</td> <td colspan="2">Final</td> </tr> <tr> <td></td> <td>Reg</td> <td>Repro</td> <td></td> </tr> </table>		a. ADDRESSEE	b. COPIES			Draft	Final			Reg	Repro	
a. ADDRESSEE	b. COPIES																	
	Draft	Final																
	Reg	Repro																
<b>16. REMARKS</b> * Documentation of Test and Evaluation Procedures for Algorithms and Interfaces						See Distribution												
<b>15. TOTAL</b> →																		
<b>G. PREPARED BY</b> Mary M. Sandy			<b>H. DATE</b> 5/6/99		<b>I. APPROVED BY</b>		<b>J. DATE</b>											

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A. CONTRACT LINE ITEM NO.		B. EXHIBIT		C. CATEGORY:	
0002, 0004, 0006, 0008, 0010		A		TDP _____ TM- _____ OTHER _____	
D. SYSTEM / ITEM			E. CONTRACT / PR NO.		F. CONTRACTOR
			N00173-99-R-MS04		
1. DATA ITEM NO.	2. TITLE OF DATA ITEM		3. SUBTITLE		
A013	*				
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE		6. REQUIRING OFFICE	
		SOW 3.8		NRL CODE 5580	
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION
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8. APP CODE	N	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE
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16. REMARKS					b. COPIES
* Documentation of Test and Evaluation Procedures for the Algorithms					
					Final
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15. TOTAL →					
1. DATA ITEM NO.	2. TITLE OF DATA ITEM		3. SUBTITLE		
A014	Complete Documentation of Test Plans and Results				
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE		6. REQUIRING OFFICE	
		SOW 3.9		NRL CODE 5580	
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION
N		ASREQ	ASREQ		
8. APP CODE	N	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE
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16. REMARKS					b. COPIES
* Complete Documentation of Algorithms, Models, and Protocol Designs					
					Final
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15. TOTAL →					
1. DATA ITEM NO.	2. TITLE OF DATA ITEM		3. SUBTITLE		
A015	*				
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE		6. REQUIRING OFFICE	
		SOW 3.10		NRL CODE 5580	
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION
N		ASREQ	ASREQ		
8. APP CODE	N	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE
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16. REMARKS					b. COPIES
* Complete Documentation of Algorithms, Models, and Protocol Designs					
					Final
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					Repro
15. TOTAL →					
1. DATA ITEM NO.	2. TITLE OF DATA ITEM		3. SUBTITLE		
A016	*		*		
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE		6. REQUIRING OFFICE	
		SOW 3.11		NRL CODE 5580	
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION
N		ASREQ	ASREQ		
8. APP CODE	N	11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE
N					
16. REMARKS					b. COPIES
* Complete Documentation of Models, Software Engineering Techniques, Formal Specification Tools, and Research Results					
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					Repro
15. TOTAL →					
G. PREPARED BY		H. DATE	I. APPROVED BY		J. DATE
Mary M. Sandy		5/6/99			

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<b>A. CONTRACT LINE ITEM NO.</b> 0002, 0004, 0006, 0008, 0010			<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____		
<b>D. SYSTEM / ITEM</b>			<b>E. CONTRACT / PR NO.</b> N00173-99-R-MS04		<b>F. CONTRACTOR</b>		
<b>1. DATA ITEM NO.</b> A017	<b>2. TITLE OF DATA ITEM</b> Program Documentation				<b>3. SUBTITLE</b>		
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.12		<b>6. REQUIRING OFFICE</b> NRL CODE 5580		
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
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<b>16. REMARKS</b>					See Distribution		
					<b>15. TOTAL</b> →		
<b>1. DATA ITEM NO.</b> A018	<b>2. TITLE OF DATA ITEM</b> Status Reports				<b>3. SUBTITLE</b>		
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.12		<b>6. REQUIRING OFFICE</b> NRL CODE 5580		
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
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<b>16. REMARKS</b>					See Distribution		
					<b>15. TOTAL</b> →		
<b>1. DATA ITEM NO.</b> A019	<b>2. TITLE OF DATA ITEM</b> System Growth Plans				<b>3. SUBTITLE</b>		
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.13		<b>6. REQUIRING OFFICE</b> NRL CODE 5580		
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
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<b>16. REMARKS</b>					See Distribution		
					<b>15. TOTAL</b> →		
<b>1. DATA ITEM NO.</b> A020	<b>2. TITLE OF DATA ITEM</b> *				<b>3. SUBTITLE</b>		
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.13		<b>6. REQUIRING OFFICE</b> NRL CODE 5580		
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
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<b>16. REMARKS</b>					See Distribution		
					<b>15. TOTAL</b> →		
<b>G. PREPARED BY</b> Mary M. Sandy			<b>H. DATE</b> 5/6/99		<b>I. APPROVED BY</b>		<b>J. DATE</b>

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OMB No. 0704-0188

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<b>A. CONTRACT LINE ITEM NO.</b> 0002, 0004, 0006, 0008, 0010		<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____	
<b>D. SYSTEM / ITEM</b>			<b>E. CONTRACT / PR NO.</b> N00173-99-R-MS04		<b>F. CONTRACTOR</b>
<b>1. DATA ITEM NO.</b> A021	<b>2. TITLE OF DATA ITEM</b> *			<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.14		<b>6. REQUIRING OFFICE</b> NRL CODE 5580
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ	<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		
<b>16. REMARKS</b> * Complete Documentation of Algorithms, Architecture Designs, Test Plans and Results and Inventories					<b>15. TOTAL</b> →
<b>17. PRICE GROUP</b>		<b>18. ESTIMATED TOTAL PRICE</b>			

<b>1. DATA ITEM NO.</b> A022		<b>2. TITLE OF DATA ITEM</b> Quarterly Status Reports Describing Progress		<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.15		<b>6. REQUIRING OFFICE</b> NRL CODE 5580
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> QTRLY	<b>12. DATE OF FIRST SUBMISSION</b> *		<b>14. DISTRIBUTION</b>
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		
<b>16. REMARKS</b> The report must contain the technical progress of the previous unreported period and any problems encountered or anticipated. * Three months after contract award of the above task.					<b>15. TOTAL</b> →
<b>17. PRICE GROUP</b>		<b>18. ESTIMATED TOTAL PRICE</b>			

<b>1. DATA ITEM NO.</b> A023		<b>2. TITLE OF DATA ITEM</b> Lessons Learned		<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.10		<b>6. REQUIRING OFFICE</b> NRL CODE 5580
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ	<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		
<b>16. REMARKS</b>					<b>15. TOTAL</b> →
<b>17. PRICE GROUP</b>		<b>18. ESTIMATED TOTAL PRICE</b>			

<b>1. DATA ITEM NO.</b> A024		<b>2. TITLE OF DATA ITEM</b> System Configuration Documentation		<b>3. SUBTITLE</b>	
<b>4. AUTHORITY (Data Acquisition Document No.)</b>			<b>5. CONTRACT REFERENCE</b> SOW 3.13		<b>6. REQUIRING OFFICE</b> NRL CODE 5580
<b>7. DD 250 REQ</b> N	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ	<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>
<b>8. APP CODE</b> N		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		
<b>16. REMARKS</b>					<b>15. TOTAL</b> →
<b>17. PRICE GROUP</b>		<b>18. ESTIMATED TOTAL PRICE</b>			

<b>G. PREPARED BY</b> Mary M. Sandy		<b>H. DATE</b> 5/6/99	<b>I. APPROVED BY</b>		<b>J. DATE</b>
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# CONTRACT DATA REQUIREMENTS LIST

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<b>A. CONTRACT LINE ITEM NO.</b> 0002, 0004, 0006, 0008, 0010				<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____			
<b>D. SYSTEM / ITEM</b>				<b>E. CONTRACT / PR NO.</b> N00173-99-R-MS04		<b>F. CONTRACTOR</b>			
<b>1. DATA ITEM NO.</b> A025		<b>2. TITLE OF DATA ITEM</b> Quarterly Technical Reports				<b>3. SUBTITLE</b>			
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.16		<b>6. REQUIRING OFFICE</b> NRL CODE 5580			
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> QTRLY		<b>12. DATE OF FIRST SUBMISSION</b> 90 DAC		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	
								<b>b. COPIES</b>	
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								Final	
								Reg	
								Repro	
<b>16. REMARKS</b> The report must contain the technical progress of the previous unreported period and any problems encountered or anticipated.						<b>See Distribution</b>			
						<b>15. TOTAL</b> →			
<b>1. DATA ITEM NO.</b> A026		<b>2. TITLE OF DATA ITEM</b> Monthly Progress Reports				<b>3. SUBTITLE</b>			
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.16		<b>6. REQUIRING OFFICE</b> NRL CODE 5580			
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> MNTHLY		<b>12. DATE OF FIRST SUBMISSION</b>		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b>				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	
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<b>16. REMARKS</b>						<b>15. TOTAL</b> →			
<b>1. DATA ITEM NO.</b> A027		<b>2. TITLE OF DATA ITEM</b> Briefing Materials				<b>3. SUBTITLE</b>			
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.16		<b>6. REQUIRING OFFICE</b> NRL CODE 5580			
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	
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								Repro	
<b>16. REMARKS</b>						<b>15. TOTAL</b> →			
<b>1. DATA ITEM NO.</b> A028		<b>2. TITLE OF DATA ITEM</b> Plans for Coordination with Standard Bodies				<b>3. SUBTITLE</b>			
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.16		<b>6. REQUIRING OFFICE</b> NRL CODE 5580			
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>	
<b>8. APP CODE</b> N				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<b>a. ADDRESSEE</b>	
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								Repro	
<b>16. REMARKS</b>						<b>15. TOTAL</b> →			
<b>G. PREPARED BY</b> Mary M. Sandy				<b>H. DATE</b> 5/6/99		<b>I. APPROVED BY</b>		<b>J. DATE</b>	

<b>17. PRICE GROUP</b>
<b>18. ESTIMATED TOTAL PRICE</b>

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<b>A. CONTRACT LINE ITEM NO.</b> 0002, 0004, 0006, 0008, 0010				<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM- _____ OTHER _____													
<b>D. SYSTEM / ITEM</b>				<b>E. CONTRACT / PR NO.</b> N00173-99-R-MS04		<b>F. CONTRACTOR</b>													
<b>1. DATA ITEM NO.</b> A029		<b>2. TITLE OF DATA ITEM</b> *				<b>3. SUBTITLE</b>													
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b> SOW 3.16		<b>6. REQUIRING OFFICE</b> NRL CODE 5580													
<b>7. DD 250 REQ</b> N		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b> ASREQ		<b>12. DATE OF FIRST SUBMISSION</b> ASREQ		<b>14. DISTRIBUTION</b>											
<b>8. APP CODE</b> N				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2"><b>a. ADDRESSEE</b></td> <td colspan="2"><b>b. COPIES</b></td> </tr> <tr> <td rowspan="2">Draft</td> <td colspan="2">Final</td> <td rowspan="2">Repro</td> </tr> <tr> <td>Reg</td> <td>Reg</td> </tr> </table>		<b>a. ADDRESSEE</b>		<b>b. COPIES</b>		Draft	Final		Repro	Reg	Reg
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Draft	Final		Repro																
	Reg	Reg																	
<b>16. REMARKS</b> * Interim & Final Versions of Software Products in Source Code as Relevant								See Distribution											
								<b>15. TOTAL</b> →											

<b>1. DATA ITEM NO.</b>		<b>2. TITLE OF DATA ITEM</b>				<b>3. SUBTITLE</b>													
<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b>		<b>6. REQUIRING OFFICE</b>													
<b>7. DD 250 REQ</b>		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b>		<b>12. DATE OF FIRST SUBMISSION</b>		<b>14. DISTRIBUTION</b>											
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	Reg	Reg																	
<b>16. REMARKS</b>								<b>15. TOTAL</b> →											

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<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b>		<b>6. REQUIRING OFFICE</b>													
<b>7. DD 250 REQ</b>		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b>		<b>12. DATE OF FIRST SUBMISSION</b>		<b>14. DISTRIBUTION</b>											
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<b>7. DD 250 REQ</b>		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b>		<b>12. DATE OF FIRST SUBMISSION</b>		<b>14. DISTRIBUTION</b>											
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<b>4. AUTHORITY (Data Acquisition Document No.)</b>				<b>5. CONTRACT REFERENCE</b>		<b>6. REQUIRING OFFICE</b>													
<b>7. DD 250 REQ</b>		<b>9. DIST STATEMENT REQUIRED</b>		<b>10. FREQUENCY</b>		<b>12. DATE OF FIRST SUBMISSION</b>		<b>14. DISTRIBUTION</b>											
<b>8. APP CODE</b>				<b>11. AS OF DATE</b>		<b>13. DATE OF SUBSEQUENT SUBMISSION</b>		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2"><b>a. ADDRESSEE</b></td> <td colspan="2"><b>b. COPIES</b></td> </tr> <tr> <td rowspan="2">Draft</td> <td colspan="2">Final</td> <td rowspan="2">Repro</td> </tr> <tr> <td>Reg</td> <td>Reg</td> </tr> </table>		<b>a. ADDRESSEE</b>		<b>b. COPIES</b>		Draft	Final		Repro	Reg	Reg
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	Reg	Reg																	
<b>16. REMARKS</b>								<b>15. TOTAL</b> →											

<b>G. PREPARED BY</b> Mary M. Sandy				<b>H. DATE</b> 5/6/99		<b>I. APPROVED BY</b>		<b>J. DATE</b>	
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<b>18. ESTIMATED TOTAL PRICE</b>

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<b>18. ESTIMATED TOTAL PRICE</b>



**SOLICITATION NUMBER: N00173-99-R-MS04  
ATTACHMENT (1)**

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

**DISTRIBUTION OF TECHNICAL REPORTS**

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

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

**DISTRIBUTION OF NON-TECHNICAL REPORTS**

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

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

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

<b>DEPARTMENT OF DEFENSE</b> <b>CONTRACT SECURITY CLASSIFICATION SPECIFICATION</b> <i>(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)</i>				<b>1. CLEARANCE AND SAFEGUARDING SER: 006-99</b> a. FACILITY CLEARANCE REQUIRED <b>TOP SECRET</b> b. LEVEL OF SAFEGUARDING REQUIRED <b>NONE</b>	
<b>2. THIS SPECIFICATION IS FOR: (X and complete as applicable)</b>			<b>3. THIS SPECIFICATION IS: (X and complete as applicable)</b>		
a. PRIME CONTRACT NUMBER		<b>X</b>		a. ORIGINAL (Complete date in all cases) Date (YYMMDD) 990212	
b. SUBCONTRACT NUMBER				b. REVISED (Supersedes all previous specs) Revision No. Date (YYMMDD)	
c. SOLICITATION OR OTHER NUMBER		Due Date (YYMMDD)		c. FINAL (Complete Item 5 in all cases) Date (YYMMDD)	
<b>X</b> 55-7013-99					
<b>4. IS THIS A FOLLOW-ON CONTRACT?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO. If Yes, complete the following: Classified material received or generated under _____ (Preceding Contract Number) is transferred to this follow-on contract.					
<b>5. IS THIS A FINAL DD FORM 254?</b> <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 identified classified material is authorized for the period of _____.					
<b>6. CONTRACTOR (Include Commercial and Government Entity (CAGE) Code)</b>					
a. NAME, ADDRESS, AND ZIP CODE		b. CAGE CODE		c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)	
FOR RFP PURPOSES ONLY, NOT VALID FOR ACTUAL CONTRACT AWARD					
<b>7. SUBCONTRACTOR</b>					
a. NAME, ADDRESS, AND ZIP CODE		b. CAGE CODE		c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)	
N/A				N/A	
<b>8. ACTUAL PERFORMANCE</b>					
a. LOCATION		b. CAGE CODE		c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)	
N/A				N/A	
<b>9. GENERAL IDENTIFICATION OF THIS PROCUREMENT</b>  Scientific, Engineering, Technical and Analytical support to research and development in the areas of Information Technology.					
<b>10. THIS CONTRACT WILL REQUIRE ACCESS TO:</b>			<b>11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL:</b>		
a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION			a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY		
b. RESTRICTED DATA			b. RECEIVE CLASSIFIED DOCUMENTS ONLY		
c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION			c. RECEIVE AND GENERATE CLASSIFIED MATERIAL		
d. FORMERLY RESTRICTED DATA			d. FABRICATE, MODIFY, OR STORE CLASSIFIED HARDWARE		
e. INTELLIGENCE INFORMATION:			e. PERFORM SERVICES ONLY		
(1) Sensitive Compartmented Information (SCI)			f. HAVE ACCESS TO U.S. CLASSIFIED INFORMATION OUTSIDE THE U.S., PUERTO RICO, U.S. POSSESSIONS AND TRUST TERRITORIES		
(2) Non-SCI			g. BE AUTHORIZED TO USE THE SERVICES OF DEFENSE TECHNICAL INFORMATION CENTER (DTIC) OR OTHER SECONDARY DISTRIBUTION CENTER		
f. SPECIAL ACCESS INFORMATION			h. REQUIRE A COMSEC ACCOUNT		
g. NATO INFORMATION			i. HAVE TEMPEST REQUIREMENTS		
h. FOREIGN GOVERNMENT INFORMATION			j. HAVE OPERATIONS SECURITY (OPSEC) REQUIREMENTS		
i. LIMITED DISSEMINATION INFORMATION			k. BE AUTHORIZED TO USE THE DEFENSE COURIER SERVICE		
j. FOR OFFICIAL USE ONLY INFORMATION			l. OTHER (Specify)		
k. OTHER (Specify)					

**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.

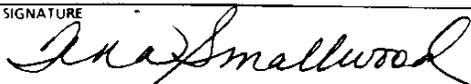
**13. SECURITY GUIDANCE.** The security classification guidance needed for this classified effort is identified below. If any difficulty is encountered in applying this guidance or if any other contributing factor indicates a need for changes in this guidance, the contractor is authorized and encouraged 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. (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.)  Yes  No

**15. INSPECTIONS.** Elements of this contract are outside the inspection responsibility of the cognizant security office. (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.)  Yes  No

**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 <b>TINA SMALLWOOD</b>		b. TITLE <b>Contracting Officer, Security</b>	c. TELEPHONE (Include Area Code) <b>202-767-2240/2521</b>
d. ADDRESS (Include Zip Code) <b>Naval Research Laboratory Washington, DC 20375-5320</b>		<b>17. REQUIRED DISTRIBUTION</b>	
e. SIGNATURE 		<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 1221.11, 1223.1, 5580, ONI-532	

## PERSONNEL QUALIFICATIONS

### Task 3.1 Computer Engineer I

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.

### **E-3 TASK 3.2 SENIOR ENGINEER/ANALYST I**

Education: BS 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.

### **E-4 TASK 3.2. ENGINEER/COMPUTER SCIENTIST I**

Education: BS 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, and Windows NT workstations and servers are required.

**E-5 TASK 3.2. ENGINEER/COMPUTER SCIENTIST II**

Education: BS 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 2000 parallel systems, SGI Infinite Reality servers, Sun Microsystems distributed GlobalWorks and Wildfire parallel systems are required.

**E-6 TASK 3.3 ENGINEER/COMPUTER SCIENTIST III**

Education: BS 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 2000 parallel systems, SGI Infinite Reality servers, Sun Microsystems distributed GlobalWorks and Wildfire parallel systems are required.

**E-7 TASK 3.3 ENGINEER/COMPUTER SCIENTIST IV**

Education: BS 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 2000 parallel systems, SGI Infinite Reality servers, Sun Microsystems distributed GlobalWorks and Wildfire parallel systems are required.

**Task 3.4 Engineer/Computer Scientist V:**

Education: BS in electrical engineering or computer science 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 PDU's for distributed simulation, internet protocols, DSI protocols and evolving ATM and IP protocol.

**Task 3.4 Senior Engineer/Computer Scientist I:**

Education: BS in electrical engineering or computer science is required.

Experience: Five 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 PDU's for distributed simulation, internet protocols, DSI protocols and evolving ATM and IP protocols and Kerberos authentication including experience in developing network traffic tests and stimulation models for such tests.

**Task 3.5 Engineer/Computer Scientist/Operations Research Analyst I:**

Education: BS in either electrical engineering, computer science or operations research is required.

Experience: Three years of experience in working with decision support system technology and a working knowledge of UNIX, C++, and software design tools and techniques are required. Current SBI is required.

**Task 3.5 Senior Engineer/ Computer Scientist/ Operations Research Analyst I:**

Education: BS in either engineering, computer scientist, or operations research is required.

Experience: One year of graduate experience in statistical analysis and 5 years of experience in designing, building and interfacing decision support technology is required. A working knowledge of UNIX, C++, and software design tools and techniques as well as understanding of military systems, sensors, communications, and operations is required. The ability to obtain an SBI is required.

**Task 3.6 Engineer/ Computer Scientist VI:**

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

Experience: Three years of experience in hardware and software design of device interfaces and experience in the design and development of hardware and software systems for robotic devices are required.

**Task 3.7.1 Data Management Security Analyst I:**

Education: BS degree in either Mathematics, Computer Science, or Engineering is required.

Experience: Three years of experience in database security research as evidenced by at least 5 referred publications in the field are required.

**Task 3.7.1 Secure Systems Analysts I:**

Education: BS degree in either Mathematics, Computer Science, or Engineering is required.

Experience: Three years experience in MLS prototyping as evidenced by the development of software that executes on a trusted platform and the integration of trusted components are required.

**Task 3.7.1 Secure Systems Analysts II:**

Education: BS in either Mathematics, Computer Science, or Engineering is required.

Experience: Three years experience in performance simulation and testing and experience with the conflicts that arise when trusted systems must also exhibit good performance, as evidenced by publication of results in these areas are required.

**Task 3.7.1 Secure Systems Analysts III:**

Education: BS degree in either Mathematics, Computer Science, or Engineering is required.

Experience: Three years experience in analyzing system security requirements and architectures, ways for achieving high assurance, and designing and implementing MLS systems are required. Publications and successful high assurance, MLS systems are evidence of this expertise.

**Task 3.7.2 Secure Systems Analysts IV:**

Education: BS bachelor's degree in either mathematics or computer science with graduate study in areas of secure systems is required.

Experience: Two years of experience in dealing with security protocols, Prolog tools, and analysis of user response to security tools are required.

**Task 3.8 Computer Scientist/ Mathematician/ Physicist/ Physical Scientist I:**

Education: BS in either computer science, mathematics, physics or other physical science 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 operating system, IP and ATM network protocol, C or Fortran programming languages, consisting of three years of experience working with parallel decomposition of software applications and one year of experience in parallel software analysis in the area of the SGI cc:NUMA Origin 2000 parallel system are required.

**Task 3.9 \*Engineer/Computer Scientist VII:**

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

Experience: Three years of experience in designing and developing virtual environments and interfacing devices to those environments and a working knowledge of UNIX, C, graphics programming, and such software packages as Wavefront and Performer are required.

**Task 3.10.1 Senior Analyst I:**

Education: BS degree in electrical engineering 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 3.10.2 Senior Analyst II:**

Education: BS degree in either electrical engineering, mathematics, 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 3.10.3 Senior Analyst III:**

Education: BS degree in electrical engineering 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 3.10.4 Senior Analyst IV:**

Education: BS in engineering or computer science 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 3.10.5 Senior Research Analyst I:**

Education: Ph.D. in electrical engineering 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 3.10.6 Senior Analyst III:**

Education: BS degree in electrical engineering 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 3.11 Engineer/Computer Scientist VIII:**

Education: Master 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.

**Task 3.12 Project Resource & Management Specialist I:**

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 3.13 \*Engineer/Computer Scientist IX:**

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

Combinations of course work and practical experience can be substituted for the BS 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.

**Task 3.14.1 Electronics Engineer I:**

Education: BS in electrical engineering or Computer Science is required.

Experience: Two years of experience in communication system design, software design and development, signal processing concepts, and digital hardware design is required. This must include experience with communication signal intercept systems. Two year's experience in C programming, real time programming, and the use and operation of PCs, and in digital filtering, spectral analysis, signal simulations, digital signal processing devices, and microprocessor hardware and software design is required. Years of experience may be inclusive or concurrent. Current SBI is required.

**Task 3.14.2 Electronics Engineer II:**

Education: BSEE or BS in Physics is required.

Experience: Five of years experience in the design of shipboard RF systems is required. This must include US Navy communication systems operation, capabilities, and limitations; the design, fabrication, and testing of RF components and antennas; and experience with high temperature superconducting materials and the fabrication of devices using these materials. Secret clearance is required.

**Task 3.14.3 Electronics Technician I:**

Experience: Five years of experience in the measurement and evaluation of global communication systems is required. Must have experience with the design and evaluation of low-noise amplifiers, telemetry systems, pulse and timing circuitry, and university-level knowledge of electronics, digital techniques, integrated circuits, and transistors. Must also have experience in a broad knowledge and familiarity with data analysis techniques with current experience in computer programming and digital tape recording. Secret clearance is required.

**Task 3.15 System Engineer I:**

Education: Ph.D. in Electrical Engineering or Computer Science is required.

Experience: 15 + years experience in signal processing and algorithm design, knowledge of military systems with embedded special purpose processing devices, knowledge of the Unix environment and modern development tools available in the Unix environment, knowledgeable with C/C++ is required. One year of experience in processing graph and data flow paradigms is required.

**Task 3.15 Computer Engineer II:**

Education: BS in Electrical Engineering or Computer Science is required.

Experience: Five years experience in Unix, Motif, X, JAVA, and C/C++ with experience in algorithm design and use of OOD CASE tools is required.

**Task 3.15 Mathematician/Physicist I:**

Education: BS degree in either mathematics, physics, engineering, or computer science is required.

Experience: Seven years experience in signal processing and algorithm design, stochastic processes, mathematical statistics, and ability to code in the C/C++ programming languages is required.

**Task 3.15 Engineer, Computer Scientist, or Mathematician I:**

Education: BS in engineering, computer science, or mathematics is required.

Experience: Course work or experience in algorithm design and ability to code in the C/C++ programming languages is required.

**Task 3.16 \*Senior Research Analyst II:**

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

Experience: Ten years experience in developing data standards and environment concept models is required. Direct involvement with DMSO, NAVSEA, Navy Modeling & Simulation Management Office, PEO-TAD, and other targeted programs is essential.

**Task 3.16 \*Engineer/Computer Scientist X:**

Education: MS degree in either engineering, computer science, physics, or math is required.

Experience: Two year's experience developing specifications in engineering languages such as UML is required.

**Tasks 3.17.1-3.17.4 Senior Engineer/ Computer Scientist/ Operations Research Analyst I:**

Education: BS degree in either engineering, computer science, or operations research is required.

Experience: Five years of experience in designing, building and interfacing decision support technology is required. Knowledge of UNIX, C++ and software design tools and techniques as well as understanding of military systems, sensors, communications, and operations is required. Two years of graduate experience in statistical analysis is required. The ability to obtain an SBI is required.

**Tasks 3.17.1 - 3.17.4 Engineer/Computer Scientist VIII:**

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

Experience: Five years experience in formal methods and software design methodologies and five years experience with the UNIX operating system, the C, C++ programming languages is required. Must have working knowledge with emerging formal methods of object-oriented software specification, design, and programming. The ability to obtain an SBI is required.

**Task 3.17.5 Subcontract Administrator:**

Education: Bachelor's 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.

**\* Denotes Key Personnel. Only the categories denoted as Key Personnel are subject to the requirements as set forth under Section H-2, Key Personnel.**