

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

1. SOLICITATION NUMBER

2. (X one)

N00173-99-R-RS02

a. SEALED BID

b. NEGOTIATED (RFP)

c. NEGOTIATED (RFQ)

INSTRUCTIONS

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

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

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

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

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

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

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

3. ISSUING OFFICE (Complete mailing address, including ZIP Code)
 PROCURING CONTRACTING OFFICE (CODE 3250.RDS)
 NAVAL RESEARCH LABORATORY
 DEPARTMENT OF THE NAVY
 STENNIS SPACE CENTER, MS 39529-5004

4. ITEMS TO BE PURCHASED (Brief description)

 RESEARCH AND DEVELOPMENT EFFORTS TOWARD DEVELOPMENT OF A FLIGHT DEMONSTRATION MODEL OF A SMALL MASER-STYLE ATOMIC CLOCK

5. PROCUREMENT INFORMATION (X and complete as applicable)

- a. THIS PROCUREMENT IS UNRESTRICTED
- 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](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) Sewell, Richard D.	b. ADDRESS (Include Zip Code) PROCURING CONTRACTING OFFICE (CODE 3250) NAVAL RESEARCH LABORATORY STENNIS SPACE CENTER, MS 39529-5004
c. TELEPHONE NUMBER (Include Area Code and Extension) (NO COLLECT CALLS) (601) 688-5784	

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

DD FORM 1707 REVERSE, MAR 90

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FROM

AFFIX
STAMP
HERE

SOLICITATION NUMBER N00173-99-R-RS02	
DATE (YYMMDD) 14 JUNE 1999	LOCAL TIME 3:30PM

TO

SOLICITATION, OFFER AND AWARD		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING	PAGE OF 1 34 PAGES
2. CONTRACT NO.	3. SOLICITATION NO. N00173-99-R-RS02	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)		5. DATE ISSUED 12 MAY 1999	6. REQUISITION/PURCHASE NO.
7. ISSUED BY PROCURING CONTRACTING OFFICER NAVAL RESEARCH LABORATORY, SSC, CODE 3235.RDS DEPARTMENT OF THE NAVY STENNIS SPACE CENTER, MS 39529-5004			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 03 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in BLDG 1100, SSC, MS 39529-5004 until 3:30 local time 14 JUNE 1999
(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 Richard Sewell	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) (228)688-5784
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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	15-19
<input checked="" type="checkbox"/>	B	SUPPLIES OR SERVICES AND PRICES/COSTS	2-3	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	20
<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	21
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OFFER (Must be fully completed by offeror)

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

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

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

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

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:		23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)	ITEM
<input type="checkbox"/> 10 U.S.C. 2304(c) ()	<input type="checkbox"/> 41 U.S.C. 253(c) ()		
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	28. AWARD DATE
		(Signature of Contracting Officer)	

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 OR SERVICES	ESTIMATED COST	FIXED FEE	TOTAL EST. COST PLUS FIXED FEE
<u>BASIC REQUIREMENT (PHASE I-XDM/FDM STUDY AND DEFINITION)</u>				
0001	The Contractor shall provide the necessary personnel, equipment and facilities to accomplish the work as described in Section C.	\$	\$	\$
0002	Reports, Data, Software and Documentation in accordance with Exhibit A (DD 1423) and Attachment (1)	* NSP	* NSP	* NSP
<u>OPTION ONE (PHASE II-DEVELOPMENT AND TESTING OF THE XDM)</u>				
0003	The Contractor shall provide the necessary personnel, equipment and facilities to accomplish the work as described in Section C.	\$	\$	\$
0004	System Prototypes, Fabrications, Constructs, Components, Parts, Assemblies, Subassemblies, Systems and Subsystems in accordance with Section C and Attachment (1)	* NSP	* NSP	* NSP
0005	Reports, Data, Software and Documentation in accordance with Exhibit A (DD 1423) and Attachment (1)	* NSP	* NSP	* NSP

OPTION TWO (PHASE III-FLIGHT DEMONSTRATION MODEL DEVELOPMENT)

0006	The Contractor shall provide the necessary personnel, equipment and facilities to accomplish the work as described in Section C.	\$	\$	\$
0007	System Prototypes, Fabrications, Constructs, Components, Parts, Assemblies, Subassemblies, Systems and Subsystems in accordance with Section C and Attachment (1)	* NSP	* NSP	* NSP
0008	Reports, Data, Software and Documentation in accordance with Exhibit A (DD 1423) and Attachment (1)	* NSP	* NSP	* NSP

OPTION THREE (PHASE IV-FLIGHT DEMONSTRATION MISSION)

0009	The Contractor shall provide the necessary personnel, equipment and facilities to accomplish the work as described in Section C.	\$	\$	\$
0012	Reports, Data, Software and Documentation in accordance with Exhibit A (DD 1423) and Attachment (1)	* NSP	* NSP	* NSP
TOTAL ESTIMATED COST PLUS FIXED FEE:		\$	\$	\$

* Not Separately Priced

SECTION C**DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK****C-1 STATEMENT OF WORK -**

The Contractor shall furnish the necessary personnel and facilities to perform the required efforts in accordance with (a) Attachment 1.1-The Statement of Work; (b) Attachment 1.2-Contract Data Requirements List (DD Form 1423) with enclosures; (c) the Contractor's technical proposal which may be incorporated by reference in any resulting contract, and (d) any and all other Attachments or Exhibits 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

- 52.246-3 - Inspection Of Supplies- Cost Reimbursement (APR 1984)
- 52.246-5 - Inspection Of Services - Cost Reimbursement (APR 1984)
- 52.246-8 - Inspection Of Research And Development - Cost Reimbursement (APR 1984)

DFARS CLAUSE TITLE

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

E-2 INSPECTION AND ACCEPTANCE

Inspection and acceptance of the final delivery will be accomplished by the Technical Manager (TM) or Contracting Officer Representative (COR) designated in Section G of this contract. Inspection and acceptance will be performed at the Naval Research Laboratory, Washington DC 20375-5320.

**SECTION F
DELIVERIES OR PERFORMANCE**

F-1 DELIVERIES OR PERFORMANCE CLAUSES INCORPORATED BY REFERENCE:

FAR CLAUSE TITLE

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

F-2 PERIOD AND PLACE OF PERFORMANCE

(a) The period of performance of this contract is from the date of contract award through twelve (12) months. The period of performance for options one (Phase II) and two (Phase III), if exercised, shall be for a period of fifteen (15) months each. The period of performance for option three , (Phase IV), if exercised, shall be for a period of twelve months.

(b) The principal place of performance of this contract shall be the Contractor's facilities and the Government's facilities at NRL-DC.

(c) All deliverables required under this Contract shall be shipped FOB Destination, consigned to:

Contracting Officer's Representative: _____ **
Naval Research Laboratory
Contract Number: _____ **
Building Number: _____ Code No.: _____
4555 Overlook Ave., SW
Washington, DC 20375-5326

** = (To be provided at time of award)

SECTION G CONTRACT ADMINISTRATION DATA

G-1 PROCURING OFFICE REPRESENTATIVE

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

Contract Matters – *

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)

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 CONTRACTOR-ACQUIRED PROPERTY

(a) The contractor is authorized to acquire the following items of facilities which are needed to accomplish this contract.

Items to be Acquired

Estimated Cost

(To be filled in at time of award)

(b) This authorization does not constitute any consent required pursuant to the contract clause entitled "Subcontracts" (FAR 52.244-2). Advance notification or requests for consent pursuant to that clause shall be directed to the administrative contracting officer (ACO).

(c) Pursuant to the contract clause entitled "Government Property (Cost-Reimbursement, Time-and-Material, or Labor-Hour Contracts)" (FAR 52.245-5), title to the property shall vest in the Government.

(d) Prior to acquisition of any item of Industrial Plant Equipment, the Contractor must comply with the requirements of Department of Defense Federal Acquisition Regulation Supplement (DFARS 245.302-1(b)(1)(A)). (See DFARS 245.301 for definition of "Industrial Plant Equipment.")

G-5 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

(TO BE FILLED IN AT TIME OF AWARD IF SUBCONTRACT/CONSULTANTS ARE PROPOSED BY THE SUCCESSFUL OFFEROR)

G-6 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-7 PAYMENT OF FIXED FEE (COMPLETION FORM)

The fixed fee set forth in Section B of this contract shall be payable on completion of the work and services required under each CLIN of this contract and their acceptance on behalf of the Government. However, the contractor may bill on each voucher the amount of the fixed fee bearing the same percentage to the amount of cost billed as the total fixed fee bears to the total estimated cost set forth in Section B, subject to the contract clause entitled "Fixed Fee" (FAR 52.216-8). If the fixed fee is reduced pursuant to any clause or requirement of this contract and the reduced fee is less than the sum of all fee payments made to the contractor under this contract, the contractor shall repay the difference to the Government. The total fee paid the contractor shall not exceed the fixed fee set forth in Section B.

G-8 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-9 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.

G-10 ACCOUNTING AND APPROPRIATION DATA

(To be filled in at time of award)

SECTION H SPECIAL CONTRACT REQUIREMENTS

H-1 TYPE OF CONTRACT

(To be filled in at time of award)

H-2 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 5252.235-9714 - 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-4 OPTION(S)

The Government may require performance of the numbered line items identified in the Schedule as optional items at the prices stated in the Schedule. The Contracting Officer may unilaterally exercise the option by written notice to the Contractor anytime prior to the current completion date of the contract.

H-5 ON-SITE USE OF GOVERNMENT PROPERTY

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

H-6 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-7 REPRESENTATIONS AND CERTIFICATIONS

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

H-8 CONTRACTOR'S PROGRAM MANAGER

(a) The Contractor's Program Manager is _____* and is the contractor's authorized supervisor for technical and administrative performance of all work hereunder. The program manager shall provide the single point of contract between the contractor and the Government's contracting Officer's representative (COR). All administrative support of technical personnel required to fulfill the work stated in the contract shall be the responsibility of the contractor.

(b) The Program Manager shall receive and execute, on behalf of the Contractor, such technical directions as the Government's COR may issue within the terms and conditions of the contract

H-9 IDENTIFICATION OF KEY PERSONNEL

The following positions are proposed as Key Personnel positions:

LABOR CATEGORY

*(to be completed as part of initial offeror)

**PART II - CONTRACT CLAUSES
SECTION I
CONTRACT CLAUSES**

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

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

Also, the full text of a clause may be accessed electronically at this/these address(es):

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

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

a. FEDERAL ACQUISITION REGULATION CLAUSES

FAR CLAUSE	TITLE
52.202-1	- Definitions (OCT 1995)
52.203-3	- Gratuities (APR 1984)
52.203-5	- Covenant Against Contingent Fees (APR 1984)
52.203-6	- Restrictions On Subcontractor Sales To The Government (JUL 1995)
52.203-7	- Anti-Kickback Procedures (JUL 1995)
52-203-8	- Cancellation, Rescission, And Recovery Of Funds For Illegal Or Improper Activity (JAN 1997)
52.203-10	- Price Or Fee Adjustment For Illegal Or Improper Activity (JAN 1997)
52.203-12	- Limitation On Payments To Influence Certain Federal Transactions (JUN 1997)
52.204-2	- 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)
52.215-14	- Integrity of Unit Prices (OCT 1997)
52.215-15	- Pension Adjustments and Asset Reversions (DEC 1998)
52.215-17	- Waiver of Facilities Capital Cost of Money (OCT 1997) (<i>will be included if the successful offeror does not propose facilities capital cost of money</i>)
52.215-18	- Reversion or Adjustment of Plans for Post-retirement Benefits (PRB) Other than Pensions (OCT 1997)
52.215-19	- Notification of Ownership Changes (OCT 1997)
52.215-21	- Requirements for Cost and Pricing Data or Information Other Than Cost or

- 52.216-7 - Pricing Data - Modifications (OCT 1997) - Alternate IV (OCT 1997)
- 52.216-8 - Allowable Cost And Payment (APR 1998)
- 52.219-4 - 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)
- 52.222-4 - Contract Work Hours And Safety Standards Act-Overtime Compensation (JUL 1995)
- 52.222-20 - Walsh-Healey Public Contracts Act (DEC 1996)
- 52.222-21 - Prohibition of Segregated Facilities (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 (JAN 1999)
- 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 (JAN 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)
- 52.232-20 - 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)
- 52.233-1 - 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)
- 52.245-18 - Special Test Equipment (FEB 1993)
- 52.245-19 - Government Property Furnished "As-Is" (APR 1984)
- 52.246-23 - Limitation Of Liability (FEB 1997)
- 52.246-24 - Limitation Of Liability - High-Value Items (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)
- 252.204-7000 - 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)
- 252.219-7003 - Small Business and Small Disadvantaged Business Subcontracting Plan (DoD Contracts (APR 1996)
- 252.219-7004 - Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (Test Program)(JUN 1997)
- 252.223-7004 - 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 (JAN 1999)
- 252.225-7021 - Trade Agreements (MAR 1998)
- 252.225-7025 - Restriction On Acquisition Of Forgings (JUN 1997)
- 252.225-7026 - Reporting Of Contract Performance Outside The United States (MAR 1998)
- 252.225-7031 - Secondary Arab Boycott Of Israel (JUN 1992)
- 252.227-7000 - 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)
- 252.227-7027 - Deferred Ordering Of Technical Data Or Computer Software (APR 1988)
- 252.227-7030 - Technical Data--Withholding Of Payment (OCT 1988)
- 252.227-7034 - Patents--Subcontracts (APR 1984)

- 252.227-7036 - 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)
- 252.232-7009 - Payment By Electronic Funds Transfer (CCR) (JUN 1998)
- 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)
- 252.246-7001 - Warranty Of Data (DEC 1991)
- 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).

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

- J-1** Attachment (1): (1.1) Statement Of Work – 13 Pages; (1.2) Exhibit A - DD Form 1423, Contract Data Requirements List – 3 Pages, with Enclosure (1.3) - Instructions For Distribution – 2 Pages, and Enclosure (2) – Monthly Cost/ Performance Reporting Requirements – 1 Page; and DD Form 254 – Contract Security Classification Specification – 2 Pages.

**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 their 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 (OCT 1998)

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.

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)
52.211-2	- Availability of Specifications Listed in the DOD Index of Specifications and Standards (DODISS) and Descriptions Listed in the Acquisition Management Systems and Data Requirements Control List, DOD 5010.12-L (AUG 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)
52.215-1	- Instructions to Offerors- Competitive Acquisition (OCT 1997) Alternate I (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)
52.237-1	- Site Visit (APR 1984)
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 below:

The Offeror shall provide information as required in Section L.11 of this solicitation entitled "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, Research and Development Completion type 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 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-7 DFARS 252.227-7017 - IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS (JUN 1995)

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

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

PREVIOUSLY DELIVERED TO THE GOVERNMENT (JUN 1995)

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

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

L-9 GOVERNMENT-FURNISHED PROPERTY

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

L-10 INQUIRIES CONCERNING THE RFP

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

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

PART L.11.A – GENERAL

(1) Offerors are advised of the possibility that award may be made on the basis of initial proposals without written or oral discussions. Therefore, proposals should be submitted on the most favorable terms from a price and technical standpoint.

(2) Offerors shall submit a completed solicitation document.

(3) In addition to a completed solicitation document, proposals shall be submitted in two readily separable volumes, one original and five copies of Volume I – Technical/ Management Proposal, and one original and three copies of Volume II – Cost/Price proposal. Volume I shall include all data and information required for evaluation, excluding all references to cost and pricing data (see Section L 11.B below). Volume II shall include a

completed solicitation document and a complete and detailed cost/price breakdown (see Section L 11.C below).

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

RFP No. N00173-99-R- RS02
Closing Date: (As specified in Block 9, RFP face page)
Naval Research Laboratory (NRL-SSC)
Attn: Code 3235
Stennis Space Center, MS 39529-5004

PART L.11.B - **TECHNICAL PROPOSAL REQUIREMENTS**

PART L.11.B.0- **GENERAL PROPOSAL CONTENT:**

- (i) Offerors shall furnish an original and five copies of a TECHNICAL PROPOSAL with sufficient detail to show compliance with the requirements stated in each subparagraph of Section C of this solicitation. Specific cost or pricing details shall be omitted from the Technical Proposal.
- (ii) The technical proposal shall include a narrative in the same sequence as the items set out in Section C hereof. The narrative shall describe how each item/effort offered will not meet, will meet, or will exceed the respective stated need of the Government for each subparagraph of Section C. Conclusions such as "meets or exceeds," or "yes," or "o.k." are not technically acceptable. Each response shall furnish the Government with sufficient detail to enable a technical evaluation panel to independently evaluate each item offered against the respective stated need of the Government for each item in Section C and Section M.
- (iii) The technical proposal shall include any drawings, including schematic drawings, which will enable independent technical evaluation of the proposal.
- (iv) The technical proposal shall clearly and concisely identify and discuss the Offeror's technical and managerial qualifications and approaches to accomplishing the requirements outlined in Section C. Further, the technical proposal shall be subdivided into a "Proposal Summary" section, a "Technical Approach" section, a "Specific Expertise" section, a "Corporate Resources" section, a "Corporate Past Performance Information" section, and a "Managerial Approach" section, in that order. The technical proposal shall also contain responses to each of the individual requirements listed both in Section C.3.1 – C.3.9 of Attachment 1.1 and in Attachment 1.2
- (v) You are advised to closely examine the evaluation criteria set forth below prior to preparation of a technical proposal. Your technical proposal will be rated solely against the following criteria.

PART L.11.B.1- PROPOSAL SUMMARY

The proposal summary is an unevaluated requirement. The Offeror shall provide a concise summary, exclusive of cost information, of its proposal. This summary should be complete, stand on its own, and provide executive level reviewers with an understanding of the content of the proposal. The summary should summarize the highlights, plans and qualifications contained in the body of the technical proposal.

PART L.11.B.2- QUALITY OF TECHNICAL APPROACH

The Offeror shall discuss in detail its proposed technical approach for performance of the research and development requirements associated with design, development and production of the Flight Demonstration Model of a small maser-style atomic clock to be used as the atomic reference on a GPS satellite, as required in Section C of this solicitation. More specifically, the Offeror shall respond to (a) General Technical Requirements and Objectives in Section C.1.1 and C.1.2; (b) Phase I requirements for the XDM/FDM Design Study and Definition in Section C.3.1; (c) Phase II requirements for XDM Development and Testing in Section C.3.2; (d) Phase III requirements for Development of the FDM in Section 3.3; and (e) Phase IV requirements for Flight Demonstration Mission Model efforts in Section C.3.4. This discussion shall be in sufficient detail to (a) demonstrate the Offeror's compliance with the requirements specified in Section C of this solicitation; (b) demonstrate the Offeror's technical competence and understanding of the purpose, objectives and scope of the required work; (c) demonstrate the Offeror's understanding of the specific technical issues dealt with in the requirements; (d) present the Offeror's proposed procedures and solutions developed to address the requirements in Section C of this solicitation; and (e) discuss all other pertinent issues.

PART L.11.B.3- SPECIFIC TECHNICAL EXPERTISE

The Offeror shall describe in detail its specific technical expertise (a) in producing atomic clocks of the type proposed; (b) in relevant successful research, development and production of any type of atomic clock; and (c) in relevant development of space hardware.

PART L.11.B.4- CORPORATE RESOURCES

The Offeror shall also describe and document those resources which the firm will make available to this project, including, but not limited to, (a) financial resources, (b) research, development and production facilities and equipment, (c) technically qualified personnel resources, and (d) any other technical resources offered to meet the Government's requirements as stated in Section C of this solicitation.

PART L.11.B.5- CORPORATE PAST PERFORMANCE INFORMATION

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

1. Name of contracting organization
2. Contract number
3. Contract type
4. Total Contract Value
5. Description of the contract work
6. Contracting Officer and telephone number
7. Contracting officer's representative, program manager, or similar Official and telephone number

(ii) Offerors shall contact the contracting organizations identified pursuant to paragraph (a) as

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

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

PART L.11.B.6- MANAGERIAL APPROACH

Pursuant to this requirement, the Offeror shall provide a managerial plan to demonstrate its capability to efficiently, effectively and economically plan, organize, manage and control the work effort required under this solicitation. The Offeror's managerial plan shall address its approach for tracking milestones, costs, subcontractor efforts (if applicable) and deliverables. The Offeror's managerial plan shall also address its proposed internal procedures for assuring timely responses to the Government's research needs on any resulting contract.

PART L.11.C - **BUSINESS PROPOSAL**

L.11.C.1 – COST PROPOSAL

The Offeror shall submit a Cost/Pricing Proposal, which shall include such explanatory data as is necessary to establish that proposed costs are reasonable, allocable, appropriate and allowable pursuant to both Part 31 of the Federal Acquisition Regulation (FAR) and Part 231 of the Defense Federal Acquisition Regulation Supplement (DFARS). More specifically, the Cost/Pricing proposals shall provide the following information:

- (a)
 - (i) Labor to include categories of labor, individuals proposed within each category; hours proposed for each individual, and the hourly rate for each individual;
 - (ii) Indirect or Overhead Rate(s);
 - (iii) Any Direct Materials proposed;
 - (iv) Any Other Direct Costs proposed;
 - (v) General and Administrative Rate(s);
 - (vi) Facilities Capital Cost of Money Rate(s);
 - (vii) Any other applicable rates;
 - (viii) Other supporting costs;
 - (ix) Fee

- (b) Any information reasonably required to explain the Offeror's estimating process, including mathematical algorithms and judgmental factors used in formulating the estimate; and any contingency assumptions employed in arriving at the proposed price

- (c) Consultants/Subcontractors: Offerors shall describe subcontracting arrangements proposed for completing the work required herein. Sub-Contractors shall be identified as well as the portion of the work to be subcontracted. Documents establishing a subcontracting relationship shall be submitted with the cost proposal. Offerors may arrange for proposed subcontractors to submit supporting cost data directly to the Government. Any such submission shall not be deemed to establish privity of contract between the Government and the proposed sub-contractor. With respect to Independent Contractors or Consultants, the Offeror shall document direct labor rates proposed by providing the Government with copies of either letters of intent or Consultant or Independent Contractor Agreements executed between the Offeror and the Independent Contractor. Offerors who intend to include subcontracted effort as part of their proposal are responsible for ensuring that complete information as described above is provided from each subcontractor as part of their response to this solicitation.

L.11.C.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.

L-12 MULTIPLE AWARDS

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

L-13 SECURITY REQUIREMENTS

The following is a MANDATORY REQUIREMENT:

- (1) All Contractor personnel proposed for this effort shall possess, or be capable of acquiring, at least a SECRET security clearance (unless otherwise specified) and be a U.S. citizen.
- (2) The Contractor shall possess, or be capable of acquiring, at least a SECRET facility clearance.

SECTION M EVALUATION FACTORS FOR AWARD

M-1 EVALUATION

Award will be made to that responsible 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 cost, the closer the technical scores of the various proposals are to one another, the more important cost considerations become.

M.2. EVALUATION FACTORS FOR AWARD

Proposals received in response to this solicitation will be evaluated in accordance with the criteria stated in Sections L.11.B.2, L.11.B.3, L.11.B.4, L.11.B.5, and L.11.B.6, which together comprise the Technical Category; and Section L.11.C, which comprises the Cost/Pricing category.

M-2-1 – Technical Category

The technical evaluation will consider the Offeror's overall approach to, understanding of, and capability to adequately perform and provide the requirements listed in the Statement of Work, as reflected in the Offeror's responses to the evaluation criteria listed in Sections L.11.B.2, L.11.B.3, L.11.B.4, L.11.B.5, and L.11.B.6. Technical scores will be based on evaluative determinations of whether the Offeror's proposal meets, does not meet, or exceeds the Government's minimum requirements. Pursuant to FAR 15.306(c), proposals which are found to contain unrealistic technical or schedule terms, which fail to comply with the requirements stated in this RFP, or which are found to be unrealistically high or low in cost/price, may be significantly downgraded or removed from further consideration. Areas within the Offeror's technical proposal which are found to offer technical solutions or effort exceeding the Government's minimum requirements may receive maximum technical scores.

Evaluated Components within the Technical area include "Quality of Technical Approach", "Specific Technical Expertise", "Corporate Resources", "Corporate Past Performance Experience", and "Managerial Approach". The Component "Quality of Technical Approach" is composed of five (5) sub-components of equal weight. Within the Technical category, the component "Quality of Technical Approach" has a significantly higher weight than the component "Corporate Resources", which has a higher weight than the categories "Specific Technical Expertise", "Managerial Approach" and "Corporate Past Performance Experience", each of which are weighted equally.

Past Performance – Past performance will be evaluated on the basis of quality of work performed, timeliness of performance, cost control, and business relations. The evaluation will be based on the information provided pursuant to Contract Section L.11.B.5 and other sources, if available. Offerors that have no relevant performance history or for which past performance information is not available will not be evaluated favorably or unfavorably on past performance. The Government may begin proposal evaluation prior to receipt of past performance information. If, after completion of proposal evaluation except evaluation of past performance, the contracting officer determines that evaluation of past performance will not affect the outcome of competitive selection, the contracting officer may waive its evaluation in accordance with FAR 15.304(c)(3)(iii).

M-2-2 - Cost/Price Proposal-RFP Requirements

(a) Cost/Price considerations are of less importance than the combined Technical factors. The degree of Cost/Price importance will increase with the degree of equality of the proposals in relation to Technical capability, or when cost/price is so significantly high as to diminish the value of the technical superiority to the Government.

(1) If any resulting Cost Proposal is so unreasonably high or unrealistically low that meaningful discussions with the offeror are precluded, further evaluation will be discontinued and the overall proposal may be considered unacceptable.

(b) Each Offeror's cost proposal will be evaluated to calculate a most-probable cost. The Government will conduct a cost realism analysis on each proposal to determine if the proposed cost (a) represents the most-probable cost, (b) are realistic for the work to be performed, (c) reflect a clear understanding of the requirements, and (d) are consistent with the various elements of the Offeror's technical proposal. The Cost realism analysis will also include an evaluation of the likelihood that the risks inherent in the offeror's technical approach will result in higher actual costs than anticipated. The Government may adjust the proposed cost for purposes of evaluation based upon the results of the cost realism evaluation.

In conducting the cost realism analysis, the Government will assess all elements of proposed cost and fee, and supporting data, including the following: (1) Realism of all costs associated with all proposed labor categories, including rates per hour, number of hours proposed, and labor escalation rates; (2) Realism of the cost of indirect cost, proposed travel, per diem, other direct costs, consultant and subcontracting costs, other costs proposed and fee; (3) Realism of any other costs necessary to fulfill the requirements of the work described in the solicitation; (4) Reasonableness of the maximum cost-plus-fixed-fee stated in Section B measured against the technical effort proposed by the offeror.

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 this 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

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interest, 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).

Attachment 1:

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SECTION C: STATEMENT OF WORK FOR A FLIGHT DEMONSTRATION MODEL ADVANCED TECHNOLOGY SMALL MASER

C.1. BACKGROUND

C.1.1 SCOPE

Presently, there are two types of atomic clocks used in or proposed for the NAVSTAR Global Positioning System (GPS) Block IIA, IIR and IIF satellites. These are rubidium vapor standards and cesium beam tube standards. The latest rubidium standards developed for the Block IIR satellites are demonstrating excellent frequency stability performance in both ground testing and in operation on-orbit. They do, however, exhibit a large yet relatively constant frequency drift that must be monitored and compensated by the GPS control segment. The existing cesium beam tube standards do not generally exhibit a large drift but their short-term frequency stability is not as good as the stability of the available rubidium standards. Thus, the use of available cesium standards in the GPS compromises the achievable short-term performance of the system, while the use of available rubidium standards compromises the achievable unattended long-term performance of the system.

The hydrogen maser is one type of available atomic clock that has demonstrated both excellent short-term and long-term performance. However, mainly because of the large size of the microwave cavity needed in a hydrogen maser, readily available hydrogen masers are too large to be used in a GPS satellite. Several types of compact hydrogen masers have been developed over the years (e.g., small self-oscillating, Q-enhanced or passive), but none has yet been demonstrated in an orbiting space mission. Other masers such as the Rubidium Maser, the Cesium Maser or the Double Bulb Rubidium Maser have a natural size advantage over hydrogen masers. The oscillation frequency is much higher in these masers and therefore substantially smaller microwave cavities are more easily designed. However, for a number of technical reasons, no other maser design has as yet been demonstrated with both the short term and long term performance as well as the reliability of the hydrogen maser.

The goal of this effort is to design and produce a Flight Demonstration Model (FDM) of a small maser-style atomic clock that can be used as the atomic reference on a GPS satellite. General performance requirements for the FDM include: (a) Stability and drift performance which is roughly comparable to a high-quality full-size atomic hydrogen maser; (b) physical compatibility with the Block IIF satellites; (c) Designed to use modern digital signal processing techniques and digital servo systems where possible with the goal of producing a high-performance, self-optimizing and self-diagnosing digital atomic clock that can be used within the GPS; and, (d) performance of this FDM to be proven on-board a future GPS satellite.

C.1.1.1 : Flight Demonstration Model (FDM) Definition

The FDM shall satisfy the following requirements:

- (a) It shall demonstrate the potential for a small maser design to satisfy physical, performance and operational requirements for GPS satellite use. The performance goal for this small maser design is specified by the Allan deviation limits. Specifically, these limits are $2E-13$ per root tau for tau greater than 10 seconds with a flicker floor not to exceed $1E-15$ and frequency drift less than $5E-16$ per day.
- (b) It shall closely approximate the design of a production unit. It shall have the required form, employ space qualified or NRL-approved components and meet the requirements for full functional and operational compatibility with the GPS. System reliability and radiation hardening will be examined. The FDM will also be used in the ground qualification tests required of a Block IIF atomic clock to determine its suitability for the GPS mission.
- (c) It shall include subsystems to provide monitoring and diagnostic information that will be telemetered to the ground upon command. It shall also include subsystems that will allow for the maser to be placed in a self-optimization mode upon command from the ground. In the self-optimization mode, the significant parameters of maser operation will be measured and used to optimize maser performance by taking advantage of the flexibility of the digital control loop.

C.1.2 TECHNICAL OBJECTIVE

The principal objective of this program is to develop an economical small maser atomic clock FDM suitable for flight test in a NAVSTAR GPS Block IIF satellite. Therefore, the FDM will serve to verify the final maser design as a viable flight candidate for the GPS. The Government anticipates that this objective will be approached as a phased development effort consisting of four phases:

- (a) The first phase shall include development of the overall maser design and experimental verification of all critical design parameters necessary to determine suitability of the design for the GPS application. The designed electrical and physical characteristics and the projected performance of the FDM will be among factors considered by NRL in assessment of the first phase development. Acceptable design development in the first phase shall be a necessary prerequisite of approval to proceed into the second phase of this project
- (b) The second phase shall include the development and testing of an FDM working prototype. This prototype will be referred to as the Experimental Development Model (XDM). The XDM will be used to verify performance of the FDM design developed in Phase I and allow for the convenient performance of those experimental studies necessary to optimize the FDM design.
- (c) The third phase shall include fabrication of the final FDM and any testing or additional efforts necessary for the production of an acceptable FDM.
- (d) The fourth phase shall (1) include integration and flight testing of the FDM in a GPS satellite, and (2) analysis of the flight test results.

The FDM shall be designed for operation in one of the GPS Block IIF satellites under development for the Air Force GPS Joint Program Office. The FDM design will be evaluated for suitability for GPS satellite application in the areas of (a) frequency stability, (b) physical size, (c) weight and power,

and (d) remote operability. Adequacy of the final design will be determined by successful completion of the Block IIF environmental testing at qualification levels by the FDM.

The Contractor shall plan, organize, manage and control all operations associated with this program to achieve the aforementioned objectives and meet the scheduling guidelines of the overall flight demonstration program in an efficient, effective and economical manner.

C.2 APPLICABLE DOCUMENTS

The demonstration performance capability, interoperability goals and lifetime will be in accordance with the specification entitled "Specifications for Flight Demonstration Models of Advanced Technology Atomic Clocks for NAVSTAR Global Positioning System Satellites".

C.3 PHASE AND TASK REQUIREMENTS

The contractor's effort shall include, but may not be limited to, (a) formulation and preparation of work, (b) performance of tests, and (c) submission of written documentation showing the results of this developmental effort, in accordance with both the items described elsewhere in this Statement of Work and DD Form 1423, the Contract Data Requirements Lists. This project will be a phased, incrementally funded development. Approval to proceed from one task to the next phase will be dependent upon successful completion of earlier phases. The developmental phases and associated tasks include the following:

C.3.1 PHASE I XDM/FDM DESIGN STUDY AND DEFINITION

The first phase of this effort shall be a thorough design study directed toward developing a compact maser design for an FDM that is capable of achieving performance similar to a full size commercial hydrogen maser. Exploration of extensions, variations or modifications of existing maser technology proposed for this effort shall be submitted for C.O.R. approval prior to study initiation. Analysis, simulation or experimentation can be used to verify design possibilities with C.O.R. review and approval. Control systems for the FDM design shall be digitally implemented where technically feasible without incurring a demonstrable performance penalty. Digital signal processing techniques shall be used in any areas of the critical electronics systems where they provide a performance or reliability advantage over conventional analog techniques. The Contractor shall include at least one computer controller in the system design that will perform internal monitoring, optimization, diagnostics and telemetry functions as well as provide a TBD interface to an external computer for use during the development, production and testing of the XDM/FDM.

The successful Contractor shall, as a minimum, investigate and refine design parameters and tradeoffs, identify technical areas to be investigated, and provide a study which will recommend both a specific design for an XDM and a general design for an FDM. The purpose of the XDM is to serve as an experimental prototype for the final development of the FDM. For this reason, the XDM systems will be functionally and operationally similar to the final FDM systems. The design of the XDM may, however, differ from the FDM in ways that allow for ease of assembly, optimization or other experimentation that make the XDM useful as a prototype but would not otherwise be suitable for the FDM.

Specific spacecraft electrical and physical interface development during this study will be guided by the interface requirements of the GPS Block IIF spacecraft. The anticipated period of performance for Phase I of this contract will be from award date through 12 months After Receipt of Contract (ARC).

C.3.1.1

TASK 1.1: SPECIFY CRITICAL DESIGN REQUIREMENTS

The successful Contractor shall establish a set of Critical Design Requirements (CDRs) for the proposed FDM in the assumed GPS mission. The required set of CDRs shall be submitted to the COR for review and approval in accordance with DD Form 1423, CDRL A003. For example, Contractor shall determine the magnetic field environment so that proper magnetic shields can be designed. As another example, the Contractor shall study and understand the launch vibration environment so that the mechanical structure of the FDM can be designed to survive launch.

The Critical Design Requirements shall, as a minimum, address: (a) clock performance specifications, (b) the effects of the thermal environment, (c) the ionizing radiation environment, (d) the electromagnetic interference environment, (e) electrical power requirements, (f) size, (g) weight, and (h) reliability or lifetime requirements. Other factors may be submitted to the COR for review and approval. All pertinent factors will be evaluated for their impact on the FDM maser design. One measure of the success of the XDM/FDM design phase will be based upon how well the resulting design meets the list of Critical Design Requirements.

C.3.1.2

TASK 1.2. COMPACT HYDROGEN MASER STUDY

The Contractor shall perform a study to develop a maser design that is capable of meeting both the performance goals of the FDM and the Critical Design Requirements for the GPS mission as detailed in Task 1. To achieve these goals, the Contractor may consider any design based on the principles of the maser atomic clock. Possible designs based on self-oscillating active masers, Q-enhanced active masers optically pumped or passive masers may be considered. Design candidates shall be submitted to the COR for review and will be judged based on their projected capacity to produce a successful FDM. Analysis, simulation or experimental work may be proposed to the COR and used upon approval. The results of this study, along with the list of Critical Design Requirements, will be used to determine the baseline design for the XDM/FDM.

A report describing the Critical Design Requirements, the design candidates investigated and the relevant and specific tradeoffs for each design candidate will be due at a TBD time less than 6 months ARC, in accordance with DD Form 1423, CDRL A003.

C.3.1.3

TASK 1.3: DEVELOP A PRELIMINARY BASELINE DESIGN

The Contractor shall use the results developed in Task 2 to choose a baseline design for submission to the COR for review and approval. Upon receipt of approval, the Contractor shall complete the design of the FDM in sufficient detail to permit useful estimates of power requirements, overall dimensions, mass and other critical design parameters to be evaluated for flight potential.

The Contractor shall prepare and submit preliminary designs for all of the following elements of the XDM physics package and of the XDM electronics package by the end of Phase I (12 months ARC).

PHYSICS PACKAGE:

- Microwave cavity storage bulb assembly
- Magnetic shield and solenoid system
- Magnetic field servo systems as needed
- Any Zeeman coils as needed

- Thermal control systems
- Atomic dissociator as needed
- Atomic flux control system
- Atomic state selection system
- Vacuum system
- Physical support structure for the physics package
- Other necessary systems supporting the atomic resonance

ELECTRONICS PACKAGE:

- Thermal control electronics
- C-field control electronics
- Oscillator servo system
- Cavity servo system as needed
- Vacuum system electronics
- Computer control systems
- Power supplies
- Other necessary electronic systems

The Contractor shall communicate its proposed approach and implementation plans for the systems or subsystems in the physics or electronics packages listed above to the COR for review and approval.

C.3.1.4 TASK 1.4: SELF-DIAGNOSTICS AND OPTIMIZATION

The Contractor shall develop approaches and algorithms to provide the FDM with self-diagnostic and self-optimization capabilities for the COR's review and approval. Subsequent to COR approval, the Contractor shall incorporate these approaches and algorithms into the XDM system design for testing. A final version of these techniques shall be included in the design of the FDM.

C.3.1.5 TASK 1.5: MONTHLY TECHNICAL PROGRESS REPORTS

The Contractor shall provide the COR with monthly technical progress reports to document the status of Phase I efforts in accordance with DD Form 1423, CDRL A005. The required Technical Progress Report shall discuss in detail the status to date of the Phase I effort along with any technical problems and their possible solutions. Format and content for the required technical progress reports shall be at the Contractor's discretion as approved by the COR.

C.3.1.6 TASK 1.6: TECHNICAL INTERCHANGE MEETINGS (TIM)

The Contractor shall conduct monthly informal TIMs to review work in progress in accordance with DD Form 1423, CDRL A006. Attendees at these TIMs may include Contractor and NRL personnel, and other involved parties as necessary. These TIMS shall be scheduled within two weeks after receipt of the monthly technical reports by the COR. The Contractor shall use these meetings to update Phase I status to date and to discuss both problems and successes affecting the effort since the previous meeting.

The Contractor shall present the final design of an XDM/FDM produced during this phase of the effort at a formal TIM, scheduled by the COR, which may involve the Joint Program Office (JPO), NRL and others entities participating in the overall program.

C.3.1.7 TASK 1.7: PROVIDE AN XDM/FDM DESIGN REPORT

Upon completion of Phase I (12 months ARC), the Contractor shall produce an XDM/FDM design report which shall document the preliminary design phase and shall, as a minimum, include reports on tests, analyses and simulations conducted in arriving at the proposed baseline design. The report shall completely document the FDM baseline design as well as describe the XDM to be built in Phase II. Proposed experimental work to be performed on or with the XDM shall be provided. The XDM/FDM Design Report shall be submitted to the COR for review and approval. The decision to proceed to Phase II will be based on this design report and NRL's judgement as to the likelihood of a successful FDM development.

C.3.2 PHASE II: DEVELOPMENT AND TESTING OF THE XDM

Phase II shall consist of the development, assembly, and testing of the XDM with the goal of refining the design of the FDM. Phase II shall be a 15 month period and shall result in a final design for the FDM. Satisfactory completion of Phase II, as judged by the COR, is required prior to initiation of Phase III.

C.3.2.1 TASK 2.1: COMPLETE XDM DESIGN

The Contractor shall produce and submit a final design version of the XDM developed in Phase I. The resulting final design shall, as closely as possible, emulate the baseline design of the FDM without sacrificing any of the experimental goals of the XDM. Designs for any significant equipment or software that will be needed for development, construction or testing of the XDM/FDM shall be included. The design shall be complete within approximately 4 months after the start of Phase II. A design package shall be delivered to the COR, who shall promptly schedule a design review meeting. Upon satisfactory completion of the design review, the COR will authorize initiation of construction of the XDM.

C.3.2.2 TASK 2.2: CONSTRUCTION OF THE XDM

Upon satisfactory completion of the design review referenced in Task 2.1 above, the Contractor shall begin construction of the XDM and any required test equipment and software in accordance with the approved final design. Any deviations from the approved final design shall be forwarded to the COR for review and approval prior to implementation.

C.3.2.3 TASK 2.3: MONTHLY TECHNICAL PROGRESS REPORTS

The Contractor shall provide the COR with monthly technical progress reports to document the status of Phase II, in accordance with DD Form 1423, CDRL A005 . The required Technical Progress Reports shall discuss in detail the status to date of the Phase II effort along with any technical problems and their potential solutions as well as any necessary or suggested design modifications. Format for the required technical progress reports shall be at the Contractor's discretion as approved by the COR.

C.3.2.4 TASK 2.4: PERFORM TESTS AND MEASUREMENTS USING THE XDM

In accordance with direction from the COR, the Contractor shall conduct tests and perform measurements using the XDM both during and after construction of the XDM for the purpose of

optimizing or refining the final design of the FDM. The Contractor shall document and report the goals, procedures, and results of any such tests in the monthly reports. The Contractor shall use the XDM as completely as possible to uncover and solve possible problems in the baseline FDM design.

C.3.2.5 TASK 2.5: DEVELOP COMPLETE DESIGN FOR THE FDM

The Contractor shall develop a complete and final design for the FDM during Phase II, which shall be tested using the XDM. Any significant differences between the XDM and the final FDM shall be tested on the XDM.

C.3.2.6 TASK 2.6: TECHNICAL INTERCHANGE MEETINGS

The Contractor shall conduct monthly informal TIMs to review work in progress. Attendees at these TIMs may include Contractor and NRL personnel, as well as other involved parties as necessary. These TIMs shall be scheduled within two weeks after the receipt of the monthly technical progress reports by the COR. The Contractor shall use these meetings to update Phase II status to date and to discuss both problems and successes affecting the effort since the previous meeting.

The Contractor shall present the final design from this phase of the effort at a formal Technical Interchange Meeting, scheduled by the COR, which may involve the JPO, COR, and other entities participating in the overall program.

C.3.2.7 TASK 2.7: PROVIDE AN XDM/FDM DESIGN REPORT

The Contractor shall provide an XDM/FDM Design Report to document the results of XDM testing and the FDM final design. This report shall, as a minimum, include the results of tests, analyses and simulations conducted pursuant to development of the proposed FDM design. This report shall also discuss the projected performance of the FDM as well as any factors relevant to the Critical Design Requirements developed in Phase I.

C.3.3 PHASE III: FLIGHT DEMONSTRATION MODEL DEVELOPMENT

Phase III of this effort will consist of the construction of an FDM for experimental spaceflight. The final design of the FDM will be a direct result of the Phase I and Phase II efforts. The Government anticipates that the proposed spacecraft for the demonstration flight will be a GPS Block IIF satellite. The Contractor shall identify any limitations to spaceflight aboard space vehicles other than those indicated during the development to maintain the possibility of alternate spaceflight options. The Contractor shall construct the FDM for the purpose of validating the design usefulness of this new atomic clock. The Contractor shall demonstrate expected system lifetimes through analysis, given that the required lifetimes of 12 years or more will be impractical to demonstrate experimentally. Consequently, fully space-qualified parts will not be required but legacy to such parts will be maintained and approved by NRL. The Contractor shall also satisfy on-orbit ionizing radiation requirements.

After completion of Phase III, the Contractor shall deliver the FDM to NRL where it will be tested in simulated flight conditions prior to integration for spaceflight. Upon successful completion of the environmental and performance tests, the COR will make a decision for spaceflight.

The anticipated period of performance for Phase III is 15 months beginning after approval to proceed beyond Phase II has been obtained from NRL.

C.3.3.1 TASK 3.1: FABRICATE FDM HARDWARE AND SOFTWARE

The Contractor shall fabricate the hardware and software components and subsystems necessary to build and test the FDM. This shall include (a) all components of the complete physics package assembly, (b) all electronics systems, (c) all packaging systems, and (d) any and all software necessary to operate the FDM.

C.3.3.2 TASK 3.2: TEST THE HARDWARE AND SOFTWARE COMPONENTS

After fabrication, the Contractor shall test all subsystems to demonstrate their compliance with the FDM design. The Contractor shall re-design and re-evaluate all hardware elements found to be inadequate to bring them into compliance with the FDM requirements. The Contractor shall also conduct and demonstrate functional tests on system software to confirm compliance with FDM requirements. Software found to be non-compliant with the requirements shall be revised to become compliant. Testing shall include, as a minimum, a structural test, thermal test and functional test of all critical components.

C.3.3.3 TASK 3.3: PROVIDE CONFIGURATION MANAGEMENT

The Contractor shall incorporate final modifications to the existing FDM design into the final FDM detailed design and assembly drawings package. The Contractor shall incorporate all COR-approved revisions and improvements to the baseline design, as determined by analysis or testing, into the final detailed design and assembly drawings. The Contractor shall maintain strict version control of the developed software. The Contractor shall generate production-like procurement specifications for all subcontracted components. The Contractor shall generate, manage and control FDM drawings and specifications using the same standards practices and procedures employed by the Contractor for space flight hardware and software. All parts used for this requirement shall be based on standard space qualified approved components and shall be approved by the COR for this demonstration mission.

C.3.3.4 TASK 3.4: ASSEMBLE FDM

The Contractor shall assemble the FDM using space flight assembly techniques and procedures (See Section C.2). The Contractor shall also propose standards they intend to use in testing critical components and subsystems during assembly to ensure that all critical criteria are met.

C.3.3.5 TASK 3.5: PROVIDE FDM FABRICATION AND QUALITY ASSURANCE

The Contractor shall fabricate the FDM hardware (in accordance with the final drawings and specifications referenced in Task 3.3) using standard industrial procedures normally employed in the construction of flight units, and shall maintain the same levels of quality control, inspection and traceability through proper documentation.

C.3.3.6 TASK 3.6: SPECIFY SYSTEM QUALIFICATION TEST PLANS

The Contractor shall develop and submit specifications and detailed plans for a series of tests to simulate all environments and operating conditions expected from the assumed mission identified in Phase 1. The tests shall simulate as closely as possible a final system qualification test of flight hardware and software. The required test plan shall be written prior to final testing and shall contain a definition of each of the tests to be conducted together with the testing sequence. The required test plan shall be submitted to the COR for review and approval prior to test initiation.

Progress of the test program will be subject to periodic data reviews by the COR. These reviews will be scheduled by the COR to occur following each major milestone of the test program.

C.3.3.7 TASK 3.7: CONDUCT QUALIFICATION TESTS

The Contractor shall conduct a complete series of life cycle environmental simulation tests at qualification levels. The tests shall, as a minimum, include launch vibration, solar thermal-vacuum, and magnetic field tests. The Contractor shall perform functional evaluations of the FDM, in accordance with the qualification test plan (reference Task 3.6). The Contractor shall document and provide demonstrable proof that the FDM meets the functional and environmental specification requirements through incorporation of approved safety factors in the system design.

C.3.3.8 TASK 3.8: MONTHLY TECHNICAL REPORTS

The Contractor shall provide the COR with monthly technical progress reports to document the status of Phase III, in accordance with DD Form 1423, CDRL A005. The required Technical Progress Reports shall discuss in detail the status to date of the Phase III effort along with technical problems, their possible solutions, and any suggested design modifications. Format for the required technical progress reports shall be at the Contractor's discretion as approved by the COR.

C.3.3.9 TASK 3.9: TECHNICAL INTERCHANGE MEETINGS

The Contractor shall hold monthly informal TIMs to review work in progress. These TIMs shall be scheduled within two weeks after the receipt of the monthly technical progress reports by the COR. The Contractor shall use these meetings to update Phase III status to date and to discuss both problems and successes affecting the effort since the previous meeting.

Monthly TIMs falling near a design review shall be scheduled to coincide with the design review to make efficient use of time.

C.3.3.10 TASK 3.10: PROVIDE AN FDM FINAL DEVELOPMENT REPORT

The Contractor shall provide an FDM Final Development Report to document the total results of the FDM program in small maser technology. The required report shall, as a minimum, include a thorough discussion of the project as well as a complete set of drawings for the FDM. The report shall also include (a) copies of all software developed under this contract, and (b) complete documentation for all software provided.

C.3.3.11 TASK 3.11: CONDUCT DESIGN REVIEWS

During Phase III, the COR shall conduct the following design and developmental reviews:

- (a) A Formal Preliminary Design Review (PDR) at the beginning of Phase III to describe the design approach and projected FDM development process and schedule in detail.
- (b) A Final Development Review at the completion of fabrication and testing to describe results of fabrication and qualification testing. This will constitute completion of the FDM and support flight readiness status.

C.3.4 PHASE IV: FLIGHT DEMONSTRATION MISSION

Phase IV of the effort shall consist of (a) integration of the FDM unit into a GPS Block IIF or similar satellite, and (b) on-orbit flight testing of the FDM unit. The Flight Demonstration phase of this contract is intended to validate feasibility and operational performance of the FDM as well as to gather data that may be useful to enhance the performance of future devices derived from the FDM. The actual test will constitute on-orbit operation for a period yet to be determined. The anticipated period of performance for the Flight Demonstration Phase will be no less than one year.

C.3.4.1 TASK 4.1: SPACECRAFT INTEGRATION EFFORTS

The Contractor shall provide (a) hardware and software integration efforts, (b) technical consultations, and (c) test and analysis efforts pursuant to incorporating the FDM into the designated spacecraft. The spacecraft to be used as the demonstration vehicle will be designated by the COR. As noted previously, efforts associated with hardware and software requirements during integration will be identified during the Phase III development of the FDM. The Government will ultimately be responsible for spacecraft integration and coordination with the spacecraft operators.

C.3.4.2 TASK 4.2: ON-ORBIT OPERATION AND ANALYSIS EFFORTS

Once the spacecraft is placed into orbit, the Contractor shall perform efforts associated with on-orbit testing and analysis of flight and telemetry data as directed by the COR, in accordance with Section G-3 of this Contract.

C.3.4.3 TASK 4.3: FDM DESIGN IMPROVEMENT ANALYSIS

As a result of the on-orbit operation of the FDM, the Contractor shall review the FDM technical design and identify possible design improvements. These improvements shall be determined as a result of analyzing FDM telemetry and on-orbit operation, and will support future operation as the GPS satellite operational primary standard. Review and recommendation reports shall be provided to the COR for evaluation and approval.

C.3.4.4 TASK 4.4: TECHNICAL INTERCHANGE MEETINGS

TIMs in Phase IV will be held at intermittent intervals during the on-orbit operation of the FDM, as directed by the COR. The Contractor shall coordinate results and clarify operation to GPS JPO personnel and their contractors by providing technical input at scheduled TIMs.

C.3.4.5 TASK 4.5: SPECIAL ANALYSIS AND PROGRESS REPORTS

The Contractor shall provide Progress Reports monthly for the duration of this phase. The Contractor shall also provide Special Analysis Reports dealing with on-orbit operational anomalies, unexpected operation issues, or other associated topics, as required by the COR.

C.4 INTERFACE EFFORTS

Pursuant to the requirements of this contract, the Contractor shall interface with personnel from NRL, other Government Agencies or their designated representative, and GPS Contractors, as directed by the COR.”

C.5 PROJECT STATUS MEETINGS

Project Status/Technical Interchange Meetings will be held as required elsewhere in this Statement of Work, and in accordance with Attachment 1.2 – DD Form 1423, Contract Data Requirements List.

C.6 SPECIAL ANALYSES

The Contractor may initiate, or the COR may request, Special Analysis Studies consisting of technical analyses and/or studies of unique system problems and requirements deserving of special attention. If initiated by the Contractor, the Contractor shall forward an abstract of the proposed study to the COR for review and approval prior to study initiation. If approved by the COR, the scope and extent of the analysis/study will be defined and incorporated into existing plans or schedules.

C.7 SYSTEM INTERFACES

The Contractor shall perform development, maintenance and documentation efforts for all interface requirements both within the FDM and between the FDM and the satellite. These interfaces shall be documented, coordinated, updated and distributed to affected agencies or groups involved, as directed by the COR.

C.8 TECHNICAL DRAWINGS, DESIGNS AND DOCUMENTATION

The Contractor shall provide documentation in the quantities and timeframes required both in this Statement of Work and Attachment 1.2, DD Form 1423 – Contract Data Requirements List . The required documentation shall include

- (a) Critical Design Requirements;
- (b) Hydrogen Maser Study report;
- (c) Preliminary Baseline Design recommendation;
- (d) Preliminary XDM Physics and Electronics Package Designs;
- (e) Self-Diagnostic and Optimization approaches and algorithms;
- (f) Technical progress reports;
- (g) Preliminary, intermediate and final System Design Documentation for both the XDM and

FDM, which shall include contractor in-house drawings in the preliminary and intermediate system design reports and commercial level circuitry and mechanical drawings and diagrams in the final system design reports;

- (h) System calibration, performance and measurement test plans and results;
- (i) System qualification test plans and results;
- (j) FDM Final Development Report;
- (k) FDM Design Improvement Recommendations;
- (l) Special Analysis Reports;
- (m) System Operation and Maintenance Manuals; and
- (n) Software and Software Documentation

C.9 FULLY OPERATIONAL, FUNCTIONAL AND INTEGRATED SYSTEM

The Contractor shall provide a fully operational, fully functional, and fully-integrated system.

For the purpose of this document, a fully operational, fully functional, fully integrated system is defined as a family of sub-elements (materials, parts, assemblies and sub-assemblies, components and sub-components, systems and sub-systems, hardware, software, firmware, etc.) which, when assembled, form an integrated complex whole that is structured so that its constituent parts perform in a functionally and operationally compatible manner.

CONTRACT DATA REQUIREMENTS LIST <i>(2 Data Items)</i>						<i>Form Approved</i> OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 220 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed forms to the Government Landlord Contracting Officer for the Contractor PR No. listed in Block E.							
A. CONTRACT LINE ITEM NO. 0002, 0005, 0008, 0010		B. EXHIBIT A		C. CATEGORY: TDP _____ TMB _____ OTHER _____			
D. SYSTEM / ITEM			E. CONTRACT / PR NO. N00173-99-R-RS02		F. CONTRACTOR (TBD at Time of Award)		
1. DATA ITEM NO. A001	2. TITLE OF DATA ITEM Monthly Cost and Performance Reports				3. SUBTITLE		
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE Sections B, C, & H		6. SECURITY OFFICE NRL CODE (TBD)		
7. DD FORM REQ LT	8. DIRT STATEMENT REQUIRED	10. FREQUENCY MONTHLY	12. DATE OF FIRST SUBMISSION See Blk. 16		14. DISTRIBUTION		
9. APP CODE	11. AS OF DATE See Blk. 16	13. DATE OF SUBSEQUENT SUBMISSION See Blk. 16		a. ADDRESSEE		b. COPIES	
16. REMARKS Written Reports, in accordance with Enclosure (2) - Reporting Requirements Instructions, shall be made monthly. Block 12 - 15 days after the end of the first month after contract execution. Block 13 - 15 days after the end of each subsequent month. For written technical reports and for letter reports containing scientific or technical information, the distribution in Enclosure (1) applies.				NRL CODE (TBD)		Draft	Final
				ACO		Reg	Reps
				(Trx. Ltr. Only)			
				(See Enclosure 1)			
				15. TOTAL →		2	
1. DATA ITEM NO. A002	2. TITLE OF DATA ITEM Contract Final Report				3. SUBTITLE		
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE Sections B, C, & H		6. SECURITY OFFICE NRL CODE (TBD)		
7. DD FORM REQ DD**	8. DIRT STATEMENT REQUIRED	10. FREQUENCY One/R	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION		
9. APP CODE	11. AS OF DATE See Section F	13. DATE OF SUBSEQUENT SUBMISSION		a. ADDRESSEE		b. COPIES	
16. REMARKS A Final Report is defined as a scientific or technical report which summarizes all work accomplished under the Contract. Reprints of published articles may be accepted as technical reports with the concurrence of the COR. ** DD 250 required only for acceptance by the COR designated in Section G.				NRL CODE (TBD)		Draft	Final
				ACO		Reg	Reps
				(Trx. Ltr. Only)			
				(See Enclosure 1)			
				15. TOTAL →		2	
G. PREPARED BY NRL-SSC Code 3235:RDS			H. DATE 13 APR 1999	I. APPROVED BY		J. DATE	

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

CONTRACT DATA REQUIREMENTS LIST <i>(2 Data Items)</i>						<i>Form Approved</i> OMB No. 0784-0188			
Public reporting burden for this collection of information is estimated to average 220 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington, Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0784-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Buying Contracting Officer for the Contract/P.R. No. listed in Block E.									
A. CONTRACT LINE ITEM NO. 0002, 0005, 0008, 0010		B. EXHIBIT A		C. CATEGORY: TDP _____ TR _____ OTHER _____					
D. SYSTEM / ITEM			E. CONTRACT / PR NO. N00173-99-R-RS02		F. CONTRACTOR TBD AT TIME OF AWARD				
1. DATA ITEM NO. A003	2. TITLE OF DATA ITEM Formal and Informal Technical Reports				3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE Sections B, C, & H		6. REQUIRING OFFICE NRL Code (TBD)				
7. DO 250 REQ LT	8. DUTY STATEMENT REQUIRED	9. FREQUENCY ONE/R		12. DATE OF FIRST SUBMISSION **		14. DISTRIBUTION			
8. APP CODE		11. AS OF DATE 0	13. DATE OF SUBSEQUENT SUBMISSION **		a. ADDRESSEE	9. COPIES			
				Draft		Final Reg Repr			
16. REMARKS For the Purpose of this document, "technical reports" shall include, but may not be limited to: Critical Design Requirement; Compact Hydrogen Maser Studies; Preliminary, Intermediate and Final XDM/FDM Design Reports; XDM and FDM Designs, Drawings, and Assembly Drawing Packages; System Qualification Test Plans and Results; FDM Final Development Reports, Design Improvement Analysis Reviews and Reports, and Special Analysis Reports. See Enclosure (3) to Attachment 1.3 for Specific Reporting Requirements.						NRL Code (TBD)		1	
						ACO			
						(Trx. Ltr. Only)			
						(See Enclosure 1)			
15. TOTAL →						1			
1. DATA ITEM NO. A004	2. TITLE OF DATA ITEM Software, Databases, Models, Algorithms, Documentation, Instructions, Source Code, etc.				3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE Sections B, C, & H		6. REQUIRING OFFICE NRL CODE (TBD)				
7. DO 250 REQ LT	8. DUTY STATEMENT REQUIRED	9. FREQUENCY ONE/R		12. DATE OF FIRST SUBMISSION SEE BLK. 16		14. DISTRIBUTION			
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION SEE BLK. 16		a. ADDRESSEE	9. COPIES			
				Draft		Final Reg Repr			
16. REMARKS Block 12 - 30 days after completion of task or end of the period of performance Block 13 - 2 weeks after notification from the COR. This requirement shall include, but may not be limited to, computer models, data bases; algorithms, documentation, application software, utility software, upgrades enhancements, updates or expansions to existing models, components or algorithms; computer processes, technical manuals and user's guides; user training manuals; and, as applicable, software component and system design documents and source codes. All deliverables shall be computer compatible and in the format specified by the COR in accordance with the Contract clause entitled "Technical Direction Memorandum"						NRL Code (TBD)		1	
						ACO			
						(Trx. Ltr. Only)			
						(See Enclosure 1)			
15. TOTAL →						2			
G. PREPARED BY NRL-SSC Code 3235:RDS			H. DATE 13 APR 1999	I. APPROVED BY		J. DATE			

17. PRICE GROUP

18. ESTIMATED TOTAL PRICE

17. PRICE GROUP

18. ESTIMATED TOTAL PRICE

INSTRUCTIONS FOR REPORT DISTRIBUTION

DEFINITIONS

Final Technical Report: A final technical report is issued at the completion of the contract and will include (1) a summary of all work accomplished, with references to appropriate technical reports which provide details, (2) an index of all technical reports, and (3) an index of all publications.

Monthly Cost and Performance Reports: Non-technical, administrative report setting forth current progress, predictions and plans for reporting period, and information required in Enclosure Number 2.

MINIMUM DISTRIBUTION

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	CLASSIFIED/ LIMITED AND CLASSIFIED
Contracting Officer's Representative (COR) (See Section F.2)	N00173	1	1
Administrative Contracting Officer (ACO) (Block 6 SF 26)	(****)	1	1
Director, Naval Research Laboratory ATTN: Code 5227, Wash., DC 20375	N00173	1	1
Naval Research Laboratory - SSC, ATTN: Code 7035, SSC, MS 39529-5004	N00173	3	3

(NRL-SSC Code 7035 will provide the required number of copies to Defense Technical Information Center (DTIC)).

If the Contracting Officer directs, the Contractor shall make additional distribution of technical reports in accordance with a supplemental distribution list provided by the Contracting Officer. The supplemental distribution list shall not exceed 250 addresses.

Non-Technical Reports: The minimum distribution for non-technical reports submitted in connection with this contract is as follows:

ADDRESSEE	DODAAD CODE	NUMBER OF COPIES	
		UNCLASSIFIED/ UNLIMITED	CLASSIFIED/ LIMITED AND CLASSIFIED
COR	N00173	1	1
ACO (****) - To be provided at time of award	(****)	1	1

ENCLOSURE NUMBER 2 TO DD FORM 1423 (ATTACHMENT 1.2)
CONTRACT DATA REQUIREMENTS LIST

1. INSTRUCTIONS FOR MONTHLY COST AND PERFORMANCE REPORTING REQUIREMENTS

This report shall specify:

1. Contract Number;
2. Reporting Period Covered by Report;
3. Total Amount Funded for Contract;
4. *Total Amount Invoiced to Date;
5. *Total Amount Invoiced for this Reporting Period ;
6. Estimated Cost to complete - with explanation if more than Total Amount Funded for Contract (See # 3, above);
7. Schedule Status - indicate if efforts are on schedule, or if not, indicate reason(s) for delay and how it affects final delivery;
8. Contractor hours expended on NRL property. This portion of the report shall include the following information: (a) employee name; (b) number of hours worked; and (c) specific contract task involved for each employee;
9. Technical Progress - brief narrative indicating technical progress made, significant accomplishments or meetings attended and/or participated in;
10. Briefs/Reports generated;
11. Travel Activity;
12. Plans for next month;
13. Technical problem areas and potential solutions.

*This shall also include a breakdown by ACRNs prorated in proportion to the unliquidated balance. (See Section G.)

ENCLOSURE NUMBER 3 TO DD FORM 1423 (ATTACHMENT 1.3)
CONTRACT DATA REQUIREMENTS LIST

1. SPECIFIC REPORTING REQUIREMENTS FOR CDRL A003 REPORTS

(A) Critical Design Requirements (Phase I):

In accordance with Contract Section C.3.1.1, the Contractor shall provide the Government with a set of Critical Design Requirements on a One Time with Revisions (One/R) basis not later than six (6) months after contract award.

(B) Compact Hydrogen Maser Studies (Phase I):

In accordance with Contract Section C.3.1.2, the Contractor shall provide the Government with a Compact Hydrogen Maser Study on a One Time with Revisions (One/R) basis not later than six (6) months after contract award.

(C) Preliminary XDM Designs (Phase I):

In accordance with Contract Sections C.3.1.3, the Contractor shall provide the Government with preliminary baseline designs for all elements of the XDM Physics and Electronics packages on a One Time with Revisions (One/R) basis not later than 12 months after contract award.

(D) Phase I XDM/FDM Design Report (Phase I):

In accordance with Contract Section C.3.1.7, the Contractor shall provide the Government with an XDM/FDM Design Report to document efforts performed and results achieved on Phase 1. The Report shall be provided on a One Time with Revisions (One/R) basis at the end of Phase I (12 months after contract award).

(E) Complete XDM Design (Phase II):

In accordance with Contract Section C.3.2.1, the Contractor shall produce and submit a final design for the XDM developed in Phase I. The Design shall be provided on a One Time with Revisions (One/R) basis not later than four (4) months after the exercise of Option 1 for Phase II efforts.

(F) Tests and Measurements Reports (Phase II)

In accordance with Contract Section C.3.2.4, the Contractor shall provide Tests and Measurements Reports to the COR on a Monthly basis in coordination with submission of the Monthly Technical Progress Reports.

(G) Final and Complete FDM Design (Phase II):

In accordance with Contract Section C.3.2.5, the Contractor shall provide the Government with a complete and final FDM design as developed in Phase II of this effort. Design shall be submitted on a One Time with Revisions (One/R) basis not later than fifteen (15) months after the exercise of option one for Phase II efforts.

(H) Phase II XDM/FDM Design Report (Phase II):

In accordance with Contract Sections C.3.2.7, the Contractor shall provide the Government with an XDM/FDM Design Report to document the results of XDM testing and the FDM final design. The Report shall be provided on a One Time with Revisions (One/R) basis at the end of Phase II (15 months after the exercise of option one for Phase II efforts).

(I) Hardware and Software Component Tests Results (Phase III):

In accordance with Contract Section C.3.3.2, the Contractor shall provide the Government with Hardware and Software Component Test Results on an intermittent As Required basis in accordance with COR technical direction (reference Contract Section G-3).

(J) Configuration Management Documentation (Phase III):

In accordance with Contract Section C.3.3.3, the Contractor shall provide Configuration Management Documentation to include (i) COR-approved revisions and improvements to the baseline design, (ii) final detailed design and assembly drawings which incorporate all approved revisions and improvements, (iii) production-like procurement specifications for all subcontracted components, and (iv) all FDM drawings and specifications. This documentation shall be provided on an As Required (ASREQ) basis in accordance with COR technical direction (reference Contract Section G-3).

(K) System Qualification Test Plans (Phase III):

In accordance with Contract Section C.3.3.6, the Contractor shall develop and submit specifications and detailed plans for a series of tests to simulate all environments and operating conditions the FDM will be subject to. The Test Plans shall be provide on a One Time with Revisions (One/R) basis as required through COR technical direction (reference Contract Section G-3).

(L) System Qualification Test Results (Phase III):

In accordance with Contract Section C.3.3.7, the Contractor shall provide the Government with System Qualification Test Results which document and provide demonstrable proof that the FDM meets functional and environmental specification requirements. The System Qualifications Test Results shall be provided on a One Time with Revisions (One/R) basis as required through COR technical direction (reference Contract Section G-3).

(M) FDM Final Development Report (Phase III):

In accordance with Contract Section C.3.3.10, the Contractor shall provide the Government with an FDM Final Development Report to document the total results of the FDM program in small maser technology. The Report shall be provided on a One Time with Revisions (One/R) basis at the end of Phase III (15 months after exercise of Option 2 for Phase III).

(N) FDM Design Improvement Analysis and Review (Phase IV):

In accordance with Contract Section C.3.4.3, the Contractor shall provide the Government with (i) Reviews of the FDM technical design under operating circumstance, and (ii) Recommendations for possible FDM design improvements. These reports shall be provided to the COR on an As Required (ASREQ) basis.

(O) Special Analysis Reports (Phase IV):

In accordance with Contract Sections C.3.4.5 and C.6, the Contractor may initiate or the COR may request the development and delivery of Special Analysis Reports on an As Required (ASREQ) basis.

**DEPARTMENT OF DEFENSE
CONTRACT SECURITY CLASSIFICATION SPECIFICATION**
(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)

1. CLEARANCE AND SAFEGUARDING	
a. FACILITY CLEARANCE REQUIRED	SECRET
b. LEVEL OF SAFEGUARDING REQUIRED	SECRET

2. THIS SPECIFICATION IS FOR: <i>(X and complete as applicable)</i>		3. THIS SPECIFICATION IS: <i>(X and complete as applicable)</i>	
a. PRIME CONTRACT NUMBER	<input checked="" type="checkbox"/>	a. ORIGINAL <i>(Complete date in all cases)</i>	Date (YYMMDD) 990416
b. SUBCONTRACT NUMBER		b. REVISED <i>(Supersedes all previous specs)</i>	Revision No. Date (YYMMDD)
c. SOLICITATION OR OTHER NUMBER N00173-99-R-RS02	Due Date (YYMMDD)	c. FINAL <i>(Complete item 5 in all cases)</i>	Date (YYMMDD)

4. IS THIS A FOLLOW-ON CONTRACT? YES NO **NO.** If Yes, complete the following:
Classified material received or generated under _____ (Preceding Contract Number) is transferred to this follow on contract.

5. IS THIS A FINAL DD FORM 254? YES NO **NO.** If Yes, complete the following:
In response to the contractor's request dated _____, retention of the classified material is authorized for the period of _____

6. CONTRACTOR *(Include Commercial and Government Entity (CAGE) Code)*

a. NAME, ADDRESS, AND ZIP CODE FOR RFP PURPOSES ONLY, NOT VALID FOR ACTUAL CONTRACT	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>
---	--------------	---

7. SUBCONTRACTOR

a. NAME, ADDRESS, AND ZIP CODE	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>
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8. ACTUAL PERFORMANCE

a. LOCATION	b. CAGE CODE	c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>
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9. GENERAL IDENTIFICATION OF THIS PROCUREMENT
RESEARCH AND DEVELOPMENT EFFORTS TOWARDS DEVELOPMENT OF A FLIGHT DEMONSTRATION MODEL OF A SMALL MASER-STYLE ATOMIC CLOCK.

10. CONTRACTOR WILL REQUIRE ACCESS TO:		YES	NO	11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL:		YES	NO
a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION			<input checked="" type="checkbox"/>	a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY			<input checked="" type="checkbox"/>
b. RESTRICTED DATA			<input checked="" type="checkbox"/>	b. RECEIVE CLASSIFIED DOCUMENTS ONLY			<input checked="" type="checkbox"/>
c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION			<input checked="" type="checkbox"/>	c. RECEIVE AND GENERATE CLASSIFIED MATERIAL	<input checked="" type="checkbox"/>		
d. FORMERLY RESTRICTED DATA			<input checked="" type="checkbox"/>	d. FABRICATE, MODIFY, OR STORE CLASSIFIED HARDWARE			<input checked="" type="checkbox"/>
e. INTELLIGENCE INFORMATION			<input checked="" type="checkbox"/>	e. PERFORM SERVICES ONLY			<input checked="" type="checkbox"/>
(1) Sensitive Compartmented Information (SCI)			<input checked="" type="checkbox"/>	f. HAVE ACCESS TO U.S. CLASSIFIED INFORMATION OUTSIDE THE U.S., PUERTO RICO, U.S. POSSESSIONS AND TRUST TERRITORIES			<input checked="" type="checkbox"/>
(2) Non-SCI			<input checked="" type="checkbox"/>	g. BE AUTHORIZED TO USE THE SERVICES OF DEFENSE TECHNICAL INFORMATION CENTER (DTIC) OR OTHER SECONDARY DISTRIBUTION CENTER			<input checked="" type="checkbox"/>
f. SPECIAL ACCESS INFORMATION			<input checked="" type="checkbox"/>	h. REQUIRE A COMSEC ACCOUNT			<input checked="" type="checkbox"/>
g. NATO INFORMATION			<input checked="" type="checkbox"/>	i. HAVE TEMPEST REQUIREMENTS			<input checked="" type="checkbox"/>
h. FOREIGN GOVERNMENT INFORMATION			<input checked="" type="checkbox"/>	j. HAVE OPERATIONS SECURITY (OPSEC) REQUIREMENTS			<input checked="" type="checkbox"/>
i. LIMITED DISSEMINATION INFORMATION			<input checked="" type="checkbox"/>	k. BE AUTHORIZED TO USE THE DEFENSE COURIER SERVICE			<input checked="" type="checkbox"/>
j. FOR OFFICIAL USE ONLY INFORMATION			<input checked="" type="checkbox"/>	l. OTHER <i>(Specify)</i>			<input checked="" type="checkbox"/>
k. OTHER <i>(Specify)</i>			<input checked="" type="checkbox"/>				

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, 20375-5000, CODE 8151

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 the 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 SECRET facility clearance and SECRET storage capabilities.

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 David R. ANDERSON	b. TITLE Contracting Officer, Security	c. TELEPHONE (Include Area Code) (228) 688-4049
---	---	--

d. ADDRESS (Include Zip Code)
Naval Research Laboratory Detachment
Stennis Space Center Code 7030.1
Bay St. Louis, MS 39529-5004

e. SIGNATURE


17. REQUIRED DISTRIBUTION

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