

<b>SOLICITATION, OFFER AND AWARD</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)		RATING	PAGE OF PAGES 1 32
2. CONTRACT NUMBER	3. SOLICITATION NUMBER N00133-08-R-KK04	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	5. DATE ISSUED 06 MAY 08	6. REQUISITION/PURCHASE NUMBER	
7. ISSUED BY Naval Research Laboratory 4555 Overlook Ave. SW Washington, D.C. 20375-5326		CODE N00173	8. ADDRESS OFFER TO (If other than Item 7)		

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

**SOLICITATION**

9. Sealed offers in original and 2 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in Bldg. 222, Room 115 until 4:00 p.m. local time 10 JUN 08  
(Hour) (Date)

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

10. FOR INFORMATION CALL:	A. NAME Kevin M. King	B. TELEPHONE (NO COLLECT CALLS)		C. E-MAIL ADDRESS Kevin.King@nrl.navy.mil
		AREA CODE 202	NUMBER 767-1495	EXT.

**11. TABLE OF CONTENTS**

(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES			
	A	SOLICITATION/CONTRACT FORM	1		I	CONTRACT CLAUSES	12
	B	SUPPLIES OR SERVICES AND PRICES/COSTS	2	PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.			
	C	DESCRIPTION/SPECS./WORK STATEMENT	2		J	LIST OF ATTACHMENTS	18
	D	PACKAGING AND MARKING	3	PART IV - REPRESENTATIONS AND INSTRUCTIONS			
	E	INSPECTION AND ACCEPTANCE	3		K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	18
	F	DELIVERIES OR PERFORMANCE	3		L	INSTRS., CONDS., AND NOTICES TO OFFERORS	23
	G	CONTRACT ADMINISTRATION DATA	4		M	EVALUATION FACTORS FOR AWARD	30
	H	SPECIAL CONTRACT REQUIREMENTS	7				

**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)	<input type="checkbox"/> 10 CALENDAR DAYS (%)	<input type="checkbox"/> 20 CALENDAR DAYS (%)	<input type="checkbox"/> 30 CALENDAR DAYS (%)	<input type="checkbox"/> CALENDAR DAYS (%)
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14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated):	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

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

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

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION	
22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304(c) ) <input type="checkbox"/> 41 U.S.C. 253(c) ( )		23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)	ITEM
24. ADMINISTERED BY (If other than Item 7) CODE		25. PAYMENT WILL BE MADE BY CODE	

26. NAME OF CONTRACTING OFFICER (Type or print)	27. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	28. AWARD DATE
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**PART I - THE SCHEDULE  
SECTION B  
SUPPLIES OR SERVICES AND PRICES/COSTS**

**B-1 SUPPLIES/SERVICES AND COSTS**

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

\* Not Separately Priced

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

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

**C-1 STATEMENT OF WORK**

The work and services to be performed hereunder shall be subject to the requirements and standards contained in Attachment (1), Statement of Work, with Exhibit A, Contract Data Requirements List, and all other Attachments cited in Section J, which are incorporated by reference into Section C.

**C-2 REQUIREMENTS FOR ON-SITE CONTRACTORS**

For those portions of the work under this contract performed at any NRL site, the contractor shall comply with the Requirements for On-Site Contractors dated 01 June 2007 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/13onsite.htm>

### C-3 SUBCONTRACTING PLAN

Subcontracting Plan \_\_\_\_\_ dated \_\_\_\_\_ is hereby incorporated by reference and made a material part of this contract.

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

## SECTION D PACKAGING AND MARKING

### D-1 PACKAGING AND MARKING

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

## SECTION E INSPECTION AND ACCEPTANCE

### E-1 INSPECTION AND ACCEPTANCE CLAUSES INCORPORATED BY REFERENCE

#### FAR CLAUSE    TITLE

52.246-9       -    Inspection Of Research And Development (Short Form) (APR 1984)

#### DFARS CLAUSE    TITLE

252.246-7000   -    Material Inspection And Receiving Report (MAR 2003)

### E-2 INSPECTION AND ACCEPTANCE

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

## SECTION F DELIVERIES OR PERFORMANCE

### F-1 DELIVERIES OR PERFORMANCE CLAUSES INCORPORATED BY REFERENCE:

#### FAR CLAUSE    TITLE

52.242-15     -    Stop-Work Order (AUG 1989) - Alternate I (APR 1984)

52.247-34     -    F.O.B. Destination (NOV 1991)

### F-2 PERIOD AND PLACE OF PERFORMANCE

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

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

Washington, D.C., although some work may be performed at the Contractor's facility at \_\_\_\_\_  
\_\_\_\_\_ \* \_\_\_\_\_ .

\* To be filled in at time of award.

### F-3 PLACE OF DELIVERY - FOB DESTINATION

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

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

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

## SECTION G CONTRACT ADMINISTRATION DATA

### G-1 PROCURING OFFICE REPRESENTATIVE

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

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

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

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

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

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

\* @nrl.navy.mil is hereby designated the cognizant COR who will represent the Contracting Officer in the technical monitoring and administration of this contract. In accordance with Section E, the COR will accomplish inspection and acceptance of deliverables under this contract. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the

Contracting Officer or the Government. The COR does not have the authority to alter the Contractor's obligations or change the specifications in the contract. If, as a result of technical discussions, it is desirable to alter contract obligations or the statement of work, a modification must be issued in writing and signed by the Contracting Officer. Unless terminated sooner, this appointment is effective for the period of performance of this contract including any options, if exercised. COR authority may not be redelegated. No change in COR assignment shall be made without written notice by the Contracting Officer, who will modify the contract to reflect the change of COR assignment.

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

### **G-3 TECHNICAL DIRECTION MEMORANDUM (TDM)**

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

#### G-4 SUBCONTRACTORS/CONSULTANTS

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

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

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

#### G-5 INCREMENTAL FUNDING

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

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

#### G-6 INFORMATIONAL SUBLINE ITEMS

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

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

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

#### G-8 PAYMENT AND VOUCHER INSTRUCTIONS

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

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

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

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

If the contract contains multiple accounting classification reference numbers (ACRNs), the ACRN(s) from which payment is to be made must be cited on the voucher. If more than one ACRN is cited, the voucher must indicate the amounts to be paid from each. Information may be obtained from the COR to assist the contractor in determining the appropriate ACRNs from which payment is to be made.

ROUTING TABLE DATA REQUIRED FOR SUBMISSION OF INVOICE TO WAWF	
Document Type	Cost Voucher
Contract Number	N00173-08-
Issued By DoDAAC	N00173
Admin By DoDAAC	
Pay DoDAAC	
LPO	N00173
Ship To DoDAAC	N00173 Extension
Service Acceptor	N00173 Extension
DCAA Auditor DoDAAC	
CAGE Code	

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

Send More Email Notifications	
Acceptor email	@nrl.navy.mil

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

For assistance with the WAWF system, you may contact the Navy WAWF Assistance Line : 1-800-559-WAWF(9293).

## SECTION H SPECIAL CONTRACT REQUIREMENTS

### H-1 TYPE OF CONTRACT

This is a \*

(\*To be completed at time of award)

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

- (a) The Contractor agrees to assign to the contract tasks those persons whose resumes were submitted with its proposal and who are necessary to fulfill the requirements of the contract as "key personnel". No substitutions may be made except in accordance with this clause.
- (b) The Contractor understands that during the first ninety (90) days of the contract performance period, no personnel substitutions will be permitted unless these substitutions are unavoidable because of the incumbent's sudden illness, death or termination of employment. In any of these events, the Contractor shall promptly notify the Contracting Officer and provide the information described in paragraph (c) below. After the initial ninety (90) day period the Contractor must submit to the Contracting Officer all proposed substitutions, in writing, at least thirty (30) days in advance (sixty (60) days if security clearance must be obtained) of any proposed substitution and provide the information required by paragraph (c) below.
- (c) Any request for substitution must include a detailed explanation of the circumstances necessitating the proposed substitution, a resume for the proposed substitute, and any other information requested by the Contracting Officer. Any proposed substitute must have qualifications equal to or superior to the qualifications of the incumbent. The Contracting Officer or his/her authorized representative will evaluate such requests and promptly notify the Contractor of his/her approval or disapproval thereof.
- (d) In the event that any of the identified key personnel cease to perform under the contract and the substitute is disapproved, the contract may be immediately terminated in accordance with the Termination clause of the contract.

The following are identified as key personnel: \*

(\*To be completed at time of award)

Labor Category	First/M/Last Name
Researcher – Ultrafast Laser Spectroscopy	
Research Scientist – Optoelectronic Device Development	
Researcher – Radiation Characterization of Devices and Integrated Circuits	
Electrical Engineer – Power Circuit Design and Power Device Test	

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

- (a) The Contractor agrees to provide the total level of effort specified in the next sentence in performance of the work described in this contract. The total level of effort for performance of this contract shall be 37,200 total hours of direct labor, and 37,200 total hours per year for each option year, if exercised, including subcontractor direct labor for those subcontractors specifically identified in the Contractor's proposal as having hours included in the proposed level of effort. A breakdown of labor categories and hours is set forth in paragraph (k) below.
- (b) The level of effort for this contract shall be expended at an average rate of 3,100 hours per month for the base period and each option year, if exercised. It is understood and agreed that the rate of hours per month may fluctuate in pursuit of the technical objective, provided such fluctuation

does not result in the use of the total hours of effort prior to the expiration of the term of the contract.

(c) The Contractor is required to notify the Contracting Officer when any of the following situations occur, or are anticipated to occur: If during any three consecutive months the monthly average is exceeded by 25% or, if at any time it is forecast that during the last three months of the contract less than 50% of the monthly average will be used during any given month; or, when 85% of the total level of effort has been expended.

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

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

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

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

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

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

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

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

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

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

Labor Hours – Basic Award and  
 Each Option, if exercised

**On-Site Direct Labor (at NRL)**

Labor Category

Processing Technician	4,800
MBE Technician	1,700
Electrical Engineer	2,000
Microwave Modeling and Simulation Engineer	1,000
RF Microwave Hardware Technician	4,000
Electrical Engineer – Electrical Circuit Design	2,000
Research Scientist – Optoelectronic Device Development	2,000
Research Scientist – Material Growth/ Wafer Bonding	100
Researcher – Pulsed Laser Simulation	2,000
Researcher – Radiation Effects Measurements - Solar Cells	2,600
Researcher – Ultrafast Laser Spectroscopy	2,000
Researcher – Radiation Damage	2,800
Researcher – Radiation Effects Measurements- Modeling	800
Researcher – Photoinjection Measurements and Analysis	1,300
Processing/Characterization/Testing Technician	800
Electrical Engineer – Power Circuit Design and Power Device Test	2,800
Researcher – Radiation Characterization of Devices and Integrated Circuits	3,000
Researcher- Modeling of Processes for Radiation Hardening	500
Researcher – Fabrication of Rad-Hard Test Structures	500
Subtotal	36,700

**Contractor Facility Direct Labor**

Researcher-Radiation Characterization of Devices and Integrated Circuits	500
<b>TOTAL</b>	<b>37,200</b>

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

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

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

#### **H-5 ELECTRONIC AND INFORMATION TECHNOLOGY (EIT)**

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

#### **H-6 OPTION TO EXTEND THE TERM OF THE CONTRACT**

This contract shall be renewable at the unilateral option of the Government by the Contracting Officer giving written notice of renewal to the Contractor within the existing term of the contract. The Government may exercise its option to renew the contract a total of 4 times and each such renewal shall extend the term of the contract by twelve (12) months. The Contractor agrees that performance under each such renewal shall be accomplished in accordance with all of the terms and conditions of this contract and at the estimated cost and fixed fee set forth below:

##### **First Option**

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

##### **Second Option**

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

##### **Third Option**

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

#### Fourth Option

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

#### H-7 ON-SITE USE OF GOVERNMENT PROPERTY

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

#### H-8 PROTECTION OF HUMAN SUBJECTS

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

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

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

### PART II - CONTRACT CLAUSES SECTION I CONTRACT CLAUSES

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

This contract incorporates one or more clauses by reference, with the same force and effect as if

they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

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

**a. FEDERAL ACQUISITION REGULATION CLAUSES**

<u>FAR CLAUSE</u>	<u>TITLE</u>
52.202-1	- Definitions (JUL 2004)
52.203-3	- Gratuities (APR 1984)
52.203-5	- Covenant Against Contingent Fees (APR 1984)
52.203-6	- Restrictions On Subcontractor Sales To The Government (SEP 2006)
52.203-7	- Anti-Kickback Procedures (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 (SEP 2007)
52.203-13	- Contractor Code Of Business Ethics And Conduct (DEC 2007)
52.203-14	- Display Of Hot-line Poster(s) (DEC 2007)
52.204-2	- Security Requirements (AUG 1996)
52.204-4	- Printed Or Copied Double-Sided On Recycled Paper (AUG 2000)
52.204-7	- Central Contractor Registration (JUL 2006)
52.204-9	- Personal Identity Verification Of Contractor Personnel (SEP 2007)
52.209-6	- Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (SEP 2006)
52.211-15	- Defense Priority And Allocation Requirements (SEP 1990)
52.215-2	- Audit And Records-Negotiation (JUN 1999)
52.215-8	- Order Of Precedence - Uniform Contract Format (OCT 1997)
52.215-10	- Price Reduction For Defective Cost Or Pricing Data (OCT 1997)
52.215-12	- Subcontractor Cost Or Pricing Data (OCT 1997)
52.215-14	- Integrity Of Unit Prices (OCT 1997)
52.215-15	- Pension Adjustments And Asset Reversions (OCT 2004)
52.215-17	- Waiver Of Facilities Capital Cost Of Money (OCT 1997) ( will be included if the successful offeror does not propose facilities capital cost of money)
52.215-18	- Reversion Or Adjustment Of Plans For Post-Retirement Benefits (PRB) Other Than Pensions (JUL 2005)
52.215-19	- Notification Of Ownership Changes (OCT 1997)
52.215-21	- Requirements For Cost Or Pricing Data Or Information Other Than Cost or Pricing Data -Modifications (OCT 1997)
52.216-7	- Allowable Cost And Payment (DEC 2002) (fill in <u>30th</u> )
52.216-8	- Fixed-Fee (MAR 1997)
52.219-4	- Notice Of Price Evaluation Preference For HUBZone Small Business Concerns (JUL 2005) <input type="checkbox"/> Offeror elects to waive the evaluation preference.
52.219-8	- Utilization Of Small Business Concerns (MAY 2004)
52.219-9	- Small Business Subcontracting Plan (NOV 2007) - Alternate II (OCT 2001)
52.219-16	- Liquidated Damages-Subcontracting Plan (JAN 1999)
52.219-25	- Small Disadvantaged Business Participation Program-Disadvantaged Status And

- Reporting (OCT 1999)
- 52.222-2 - Payment For Overtime Premiums (JUL 1990) -The Use Of Overtime Is Authorized Under This Contract If The Overtime Premium Does Not Exceed "0"
- 52.222-3 - Convict Labor (JUN 2003)
- 52.222-19 - Child Labor – Cooperation With Authorities And Remedies (AUG 2007)
- 52.222-20 - Walsh-Healey Public Contracts Act (DEC 1996)
- 52.222-21 - Prohibition Of Segregated Facilities (FEB 1999)
- 52.222-26 - Equal Opportunity (MAR 2007)
- 52.222-35 - Equal Opportunity For Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (SEP 2006)
- 52.222-36 - Affirmative Action For Workers With Disabilities (JUN 1998)
- 52.222-37 - Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, And Other Eligible Veterans (SEP 2006)
- 52.222-39 - Notification Of Employee Rights Concerning Payment Of Union Dues Or Fees (DEC 2004)
- 52.222-50 - Combating Trafficking In Persons (AUG 2007)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)
- 52.223-5 - Pollution Prevention And Right-To-Know Information (AUG 2003)
- 52.223-6 - Drug-Free Workplace (MAY 2001)
- 52.223-14 - Toxic Chemical Release Reporting (AUG 2003)
- 52.225-13 - Restrictions On Certain Foreign Purchases (FEB 2006)
- 52.227-1 - Authorization And Consent (DEC 2007)- Alternate I (APR 1984)
- 52.227-2 - Notice And Assistance Regarding Patent And Copyright Infringement (DEC 2007)
- 52.227-10 - Filing Of Patent Application- Classified Subject Matter (DEC 2007)
- 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 2005)
- 52.232-9 - Limitation On Withholding Of Payments (APR 1984)
- 52.232-17 - Interest (JUN 1996)
- 52.232-18 - Availability Of Funds (APR 1984)
- 52.232-20 - Limitation Of Cost (APR 1984) (Applicable when the contract or task order is fully funded)
- 52.232-22 - Limitation Of Funds (APR 1984) (Applicable when the contract or task order is not fully funded)
- 52.232-23 - Assignment Of Claims (JAN 1986) Alternate I (APR 1984)
- 52.232-25 - Prompt Payment (OCT 2003)
- 52.232-25 - Prompt Payment (OCT 2003) Alternate I(FEB 2002)
- 52.232-33 - Payment By Electronic Funds Transfer-Central Contractor Registration (OCT 2003)
- 52.233-1 - Disputes (JUL 2002) - Alternate I (DEC 1991)
- 52.233-3 - Protest After Award (AUG 1996) - Alternate I (JUN 1985)
- 52.233-4 - Applicable Law For Breach Of Contract Claim (OCT 2004)
- 52.237-2 - Protection Of Government Buildings, Equipment And Vegetation (APR 1984)
- 52.237-3 - Continuity Of Services (JAN 1991)
- 52.242-1 - Notice Of Intent To Disallow Costs (APR 1984)
- 52.242-3 - Penalties For Unallowable Costs (MAY 2001)
- 52.242-4 - Certification of Final Indirect Costs (JAN 1997)
- 52.242-13 - Bankruptcy (JUL 1995)

- 52.243-2 - Changes - Cost-Reimbursement (AUG 1987) - Alternate V (APR 1984)
- 52.243-6 - Change Order Accounting (APR 1984)
- 52.243-7 - Notification Of Changes (APR 1984)fill in 30
- 52.244-2 - Subcontracts (JUN 2007) - Alternate I (JUN 2007)
- 52.244-5 - Competition In Subcontracting (DEC 1996)
- 52.244-6 - Subcontracts For Commercial Items (MAR 2007)
- 52.245-1 - Government Property (JUN 2007)
- 52.245-9 - Use And Charges (JUN 2007)
- 52.246-23 - Limitation Of Liability (FEB 1997)
- 52.246-25 - Limitation Of Liability - Services (FEB 1997)
- 52.247-1 - Commercial Bill Of Lading Notations (FEB 2006)
- 52.247-63 - Preference For U. S. Flag Air Carriers (JUN 2003)
- 52.249-6 - Termination (Cost-Reimbursement) (MAY 2004)
- 52.249-14 - Excusable Delays (APR 1984)
- 52.252-6 - Authorized Deviations in Clauses (APR 1984)( fill in Defense Federal Acquisition Regulation Supplement (48 CFR Chapter 2))
- 52.253-1 - Computer Generated Forms (JAN 1991)

**b. DEPARTMENT OF DEFENSE FEDERAL ACQUISITION REGULATION CLAUSES**

**DFARS CLAUSE    TITLE**

- 252.201-7000 - Contracting Officer's Representative (DEC 1991)
- 252.203-7001 - Prohibition On Persons Convicted Of Fraud Or Other Defense Contract Related Felonies (DEC 2004)
- 252.203-7002 - Display Of DoD Hotline Poster (DEC 1991)
- 252.204-7000 - Disclosure Of Information (DEC 1991)
- 252.204-7003 - Control Of Government Personnel Work Product (APR 1992)
- 252.204-7004 - Alternate A Central Contractor Registration (SEP 2007)
- 252.204-7005 - Oral Attestation Of Security Responsibilities (NOV 2001)
- 252.205-7000 - Provision Of Information To Cooperative Agreement Holders (DEC 1991)
- 252.209-7004 - Subcontracting With Firms That Are Owned Or Controlled By The Government Of A Terrorist Country (DEC 2006)
- 252.211-7003 - Item Identification And Valuation (JUN 2005) (fill in none in (c)(1)(ii) and (c)(1)(iii) )
- 252.211-7006 - Radio Frequency Identification (FEB 2007)
- 252.215-7000 - Pricing Adjustments (DEC 1991)
- 252.215-7002 - Cost Estimating System Requirements (DEC 2006)
- 252.215-7004 - Excessive Pass-Through Charges (APR 2007)
- 252.219-7003 - Small Business Subcontracting Plan (DoD Contracts) (APR 2007)
- 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 (JUN 2005)
- 252.225-7002 - Qualifying Country Sources As Subcontractors (APR 2003)
- 252.225-7006 - Quarterly Reporting Of Actual Contract Performance Outside The United States (MAY 2007)
- 252.225-7012 - Preference For Certain Domestic Commodities (MAR 2008)
- 252.225-7021 - Trade Agreements (NOV 2006)

- 252.225-7031 - Secondary Arab Boycott Of Israel (JUN 2005)
- 252.225-7043 - Antiterrorism/Force Protection Policy For Defense Contractors Outside The United States (MAR 2006) (fill in : Naval Criminal Investigative Service (NCIS), Code 24, telephone, DSN 228-9113 or commercial (202)433-9113)
- 252.226-7001 - Utilization of Indian Organizations, Indian-Owned Economic Enterprises, And Native Hawaiian Small Business Concerns (SEP 2004)
- 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)
- 252.227-7016 - Rights In Bid Or Proposal Information (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 (MAR 2000)
- 252.227-7037 - Validation Of Restrictive Markings On Technical Data (SEP 1999)
- 252.227-7038 - Patent Rights-Ownership By The Contractor (Large Business) (DEC 2007)
  
- 252.231-7000 - Supplemental Cost Principles (DEC 1991)
- 252.232-7003 - Electronic Submission of Payment Requests and Receiving Reports (MAR 2008)
- 252.232-7010 - Levies On Contract Payments (DEC 2006)
- 252.235-7010 - Acknowledgment Of Support And Disclaimer (MAY 1995)
- 252.235-7011 - Final Scientific Or Technical Report (NOV 2004)
- 252.242-7004 - Material Management And Accounting System (NOV 2005)
- 252.243-7002 - Requests For Equitable Adjustment (MAR 1998)
- 252.244-7000 - Subcontracts For Commercial Items And Commercial Components (DoD Contracts) (JAN 2007)
- 252.246-7001 - Warranty Of Data (DEC 1991)
- 252.247-7023 - Transportation Of Supplies By Sea (MAY 2002)
- 252.247-7024 - Notification Of Transportation Of Supplies By Sea (MAR 2000)  
(will be included if the successful offeror made a negative response to the inquiry at DFARS 252.247-7022)
  
- 252.251-7000 - Ordering From Government Supply Sources (NOV 2004)

**I-2 FAR 52.219-28 - POST-AWARD SMALL BUSINESS PROGRAM REREPRESENTATION  
(JUNE 2007)**

(a) Definitions. As used in this clause—

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

Small business concern means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR part 121 and the size standard in paragraph (c) of this clause.

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

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

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

(3) For long-term contracts—

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

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

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

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

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

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

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

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

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

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

### I-3 FAR 52.223-11 - OZONE-DEPLETING SUBSTANCES (MAY 2001)

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

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

(2) Class II, including, but not limited to, hydrochlorofluorocarbons.

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

and 40 CFR Part 82, Subpart E, as follows:

**WARNING**

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

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

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

- J-1 Attachment (1) - Statement Of Work - 16 Pages, With Exhibit A - DD Form 1423, Contract Data Requirements List, 4 Pages.**
- J-2 Attachment (2) - DD Form 254, Contract Security Classification Specification, Ser: 027-08 Dated 04/04/2008, 2 Pages.**
- J-3 Attachment (3) – Personnel Qualifications, 4 Pages.**
- J-4 Attachment (4) – Accounting and Appropriation Data- 1 page. \***  
(\* To be included at time of award)

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

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

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

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

**K-2 FAR 52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2006)**

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is see Section K-3 [insert NAICS code].

(2) The small business size standard is see Section K-3 [insert size standard].

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

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

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

(i) Paragraph (c) applies.

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

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

FAR CLAUSE #	TITLE	DATE	CHANGE

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

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

The fill in information is as follows:

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

**K-4 FAR 52.230-1 COST ACCOUNTING STANDARDS NOTICES AND CERTIFICATION  
(JUNE 2000)**

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

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

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

**I. DISCLOSURE STATEMENT—COST ACCOUNTING PRACTICES AND CERTIFICATION**

(a) Any contract in excess of \$500,000 resulting from this solicitation will be subject to the requirements of the Cost Accounting Standards Board (48 CFR Chapter 99), except for those contracts which are exempt as specified in 48 CFR 9903.201-1.

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

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

(c) Check the appropriate box below:

(1) *Certificate of Concurrent Submission of Disclosure Statement.* The offeror hereby certifies that, as a part of the offer, copies of the Disclosure Statement have been submitted as follows:

(i) Original and one copy to the cognizant Administrative Contracting Officer (ACO) or cognizant Federal agency official authorized to act in that capacity (Federal official), as applicable; and

(ii) One copy to the cognizant Federal auditor.

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

Date of Disclosure Statement: \_\_\_\_\_  
Name and Address of Cognizant ACO or Federal Official Where Filed:  
\_\_\_\_\_

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

(2) *Certificate of Previously Submitted Disclosure Statement.* The offeror hereby certifies that the required Disclosure Statement was filed as follows:

Date of Disclosure Statement: \_\_\_\_\_  
Name and Address of Cognizant ACO or Federal Official Where Filed:  
\_\_\_\_\_

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

(3) *Certificate of Monetary Exemption.* The offeror hereby certifies that the offeror, together with all divisions, subsidiaries, and affiliates under common control, did not receive net awards of negotiated prime contracts and subcontracts subject to CAS totaling \$50 million or more in the cost accounting period immediately preceding the period in which this proposal was submitted. The offeror further certifies that if such status changes before an award resulting from this proposal, the offeror will advise the Contracting Officer immediately.

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

Caution: Offerors currently required to disclose because they were awarded a CAS-covered prime contract or subcontract of \$50 million or more in the current cost accounting period may not claim this exemption (4). Further, the exemption applies only in connection with proposals submitted before expiration of the 90-day period following the cost accounting period in which the monetary exemption was exceeded.

## II. COST ACCOUNTING STANDARDS—ELIGIBILITY FOR MODIFIED CONTRACT COVERAGE

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

The offeror hereby claims an exemption from the Cost Accounting Standards clause under the provisions of 48 CFR 9903.201-2(b) and certifies that the offeror is eligible for use of the Disclosure and Consistency of Cost

Accounting Practices clause because during the cost accounting period immediately preceding the period in which this proposal was submitted, the offeror received less than \$50 million in awards of CAS-covered prime contracts and subcontracts. The offeror further certifies that if such status changes before an award resulting from this proposal, the offeror will advise the Contracting Officer immediately.

Caution: An offeror may not claim the above eligibility for modified contract coverage if this proposal is expected to result in the award of a CAS-covered contract of \$50 million or more or if, during its current cost accounting period, the offeror has been awarded a single CAS-covered prime contract or subcontract of \$50 million or more.

III. ADDITIONAL COST ACCOUNTING STANDARDS APPLICABLE TO EXISTING CONTRACTS

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

[ ]     [ ] No  
Yes

(End of provision)

*Alternate I (Apr 1996).* As prescribed in 30.201-3(b), add the following paragraph (c)(5) to Part I of the basic provision:

[ ] (5) *Certificate of Disclosure Statement Due Date by Educational Institution.* If the offeror is an educational institution that, under the transition provisions of 48 CFR 9903.202-1(f), is or will be required to submit a Disclosure Statement after receipt of this award, the offeror hereby certifies that (check one and complete):

[ ] (i) A Disclosure Statement Filing Due Date of \_\_\_\_\_ has been established with the cognizant Federal agency.

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

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

\_\_\_\_\_  
\_\_\_\_\_

**K-5 FAR 52.230-7 PROPOSAL DISCLOSURE—COST ACCOUNTING PRACTICE CHANGES (APR 2005)**

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

[ ]     [ ] No  
Yes

If the offeror checked "Yes" above, the offeror shall—

(1) Prepare the price proposal in response to the solicitation using the changed practice for the period of performance for which the practice will be used; and

(2) Submit a description of the changed cost accounting practice to the Contracting Officer and the Cognizant Federal Agency Official as pricing support for the proposal.

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

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

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

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

**FAR CLAUSE TITLE**

- 52.204-6 - Data Universal Numbering System (DUNS) Number (OCT 2003)
- 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 (JAN 2004)
- 52.215-5 - Facsimile Proposals (OCT 1997)  
Paragraph (c) is completed as follows: (202) 767-1495 (primary) or (202) 767-0494 (alternate). In addition proposals may be transmitted by e-mail to Kevin.King@nrl.navy.mil (primary) or Jan.Bays @.nrl.navy.mil (alternate) in either Microsoft Word (2000 or earlier) or pdf format.
- 52.215-16 - Facilities Capital Cost Of Money (JUN 2003)
- 52.219-24 - Small Disadvantaged Business Participation Program - Targets (OCT 2000)
- 52.222-24 - Preward On-Site Equal Opportunity Compliance Evaluation (FEB 1999)
- 52.237-10 - Identification Of Uncompensated Overtime (OCT 1997)

**DFAR CLAUSE TITLE**

- 252.209-7001- Disclosure Of Ownership Or Control By The Government Of A Terrorist Country (OCT 2006)
- 252.215-7003 - Excessive Pass-Through Charges—Identification Of Subcontract Effort (APR 2007)

**L-2 INSTRUCTIONS FOR SUBMISSION OF PROPOSALS/OFFERS**

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

**Contracting Officer, ATTN: Code 3220.KK**

RFP No. N00173-08-R-KK04  
Naval Research Laboratory  
4555 Overlook Avenue, S.W.  
Washington, D.C. 20375

Closing Date:

Time:

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

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

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

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

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

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

(b) Please provide information to permit an adequate evaluation of the proposed price in accordance with FAR 15.403-3 and the requirements of Section L-13, Business Proposal

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

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

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

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

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

**L-7 DFARS 252.227-7017 - IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS (JUN 1995)**

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

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

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

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

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

\*\* Generally, development at private expense, either exclusively or partially, is the only basis for asserting restrictions. For technical data, other than computer software documentation,

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

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

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

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

Date \_\_\_\_\_

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

Signature \_\_\_\_\_

(End of identification and assertion)

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

#### **L-8 DFARS 252.227-7028 - TECHNICAL DATA OR COMPUTER SOFTWARE PREVIOUSLY DELIVERED TO THE GOVERNMENT (JUN 1995)**

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

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

#### **L-9 GOVERNMENT-FURNISHED PROPERTY**

No material, labor, or facilities will be furnished by the Government unless 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 representative at the contact location noted in blocks 7 and 10 of the Standard Form 33, Solicitation, Offer and Award. Offerors are cautioned against directing any questions concerning this RFP to

technical personnel at the Naval Research Laboratory.

### **L-11 PROPOSAL ORGANIZATION**

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

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

### **L-12 VOLUME I - TECHNICAL/MANAGEMENT PROPOSAL**

#### **REQUIRED COPIES: 1 ORIGINAL AND 6 COPIES .**

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

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

(a) The proposal must contain resumes which demonstrate that the proposed personnel meet the personnel qualifications as stated in the Personnel Qualifications, Attachment No. 2. The proposals should also include the background, pertinent experience, length of time each individual will be working on the project, education level, and experience (both general and project related) of the individuals proposed. The proposal should also indicate the availability of sufficient key contractor personnel.

(b) The proposal must demonstrate that the offeror has a thorough understanding of the purposes and objectives of the scope of work, comprehends the technical problems, and has a sound technical understanding of the objectives and requirements of the Statement of Work. The proposal must also demonstrate that the offeror has a clear understanding of semiconductor device and circuit fabrication, evaluation, and performance, including the interaction between device/circuit design, fabrication, performance and reliability.

(c) 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 three contracts or subcontracts completed by the offeror or predecessor companies during the past three years for services similar in nature to this requirement. Include in the three any current contracts or subcontracts for similar services that were awarded at least one year prior to the date of this solicitation. This list must contain a narrative description of company experience on similar or related projects which clearly shows the relationship to this project, a project description, and the identity of the sponsoring agency.

Offerors that have no similar previous or current contracts should provide the requested information

for proposed subcontractors that will perform major or critical aspects of the requirement or for the proposed project manager or key personnel responsible for major or critical aspects of the requirement.

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

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

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

(d) The proposal must include details on facilities available to and being offered by the offeror, especially regarding the total ionizing dose radiation facility

(e) The proposal must provide details concerning the offeror's management plan for accomplishing the Statement of Work. .

## **L-13 VOLUME II - BUSINESS PROPOSAL**

REQUIRED COPIES: 1 ORIGINAL AND 6 COPIES

### **(1) COST PROPOSAL**

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

### **(2) SMALL BUSINESS PARTICIPATION**

(a) In addition to complying with the clause at FAR 52.219-9, Small Business Subcontracting Plan (NOV 2007) with its Alternate II (OCT 2001), proposals must include information to permit evaluation of the extent of participation of small businesses and historical black colleges or universities and minority institutions in performance of the contract. Participation to be identified may be in the form of a joint venture, teaming arrangement, or subcontract. Small business concerns that are not required by FAR 52.219-9 to submit a subcontracting plan must indicate the extent to which proposed joint ventures, teaming arrangements, or subcontracts are with historically black colleges or universities and minority institutions. Information provided should include the extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

(b) Proposals must also include information to permit evaluation of the extent of participation of small disadvantaged business concerns in performance of the contract. See the provision at FAR 52.219-24, Small Disadvantaged Business Participation Program--Targets (OCT 2000), and the clause at 52.219-25, Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting (OCT 1999). Any targets will be incorporated into and become part of any resulting contract. Information provided should include the extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform. Offerors are required to provide, with their offers, targets, expressed as dollars and percentages of total contract value, in each of the applicable, authorized NAICS Industry Subsector, and a total target for SDB participation by the contractor, including joint venture partners, and team members, and a total target for SDB participation by subcontractors. An SDB offeror that waives the SDB price evaluation adjustment in the clause at 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns, shall provide with its offer a target for the work that it intends to perform as the prime contractor. Contractors with SDB participation targets shall be required to report SDB participation.

#### **L-14 TRAVEL ESTIMATE**

For the purpose of preparing their proposals, offerors should utilize the following estimate per year for material requirements. Offerors should note that these are direct costs, and that they should add any applicable indirect costs. During the term of the contract, the contractor will be reimbursed actual and verifiable material and other direct expenses. The Government estimates the travel costs for this effort to be \$90,000 for the basic award and \$90,000 per year for each option year if exercised.

#### **L-15 MATERIALS ESTIMATE**

For the purpose of preparing their proposals, offerors should utilize the following estimate per year for material requirements. Offerors should note that these are direct costs, and that they should add any applicable indirect costs. During the term of the contract, the contractor will be reimbursed actual and verifiable material and other direct expenses.

The Government estimates the material costs for this effort to be \$170,000 for the basic award and \$170,000 per year for each option year if exercised.

#### **L-16 CONSULTANTS**

For the purpose of preparing their proposals, offerors should utilize the following estimates per year for consulting requirements. These estimates are based on historical data and/or estimates of future needs available to the Government.

It is anticipated that consultants will be necessary to provide guidance in the design, modeling, performance and applications of solid state microwave devices and circuits, solid state materials, devices and circuits, and the effects of radiation on the design modeling, performance and applications of solid state materials, devices, circuits, and systems.

It is anticipated that these consultants will be in addition to the anticipated level of effort stated in Clause H-3 above. Offerors should note that this is an estimate of the amount of subcontracting/consultants which may be required. Offerors should note that these are direct costs and that they should add any applicable indirect costs.

The Government estimates the consultant costs for this effort to be \$100,000 for the basic award and \$100,000 per year for each option year if exercised.

## **SECTION M EVALUATION FACTORS FOR AWARD**

### **M-1 EVALUATION**

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

### **M-2 EVALUATION FACTORS FOR AWARD**

Proposals will be evaluated in accordance with the following criteria. The technical factor is more important than the cost factor. Technical subfactors are listed in descending order of importance. Technical subfactors 4 and 5 are equal in value.

#### **M-2-1. TECHNICAL/MANAGEMENT**

##### **(1) PERSONNEL QUALIFICATIONS**

The proposals will be evaluated on the extent to which the proposed personnel meet the Personnel Qualifications set forth in Attachment No. 2, including the amount of time each of the proposed individuals will be working on this project. Also to be evaluated is the availability of sufficient key project personnel and the quantity and quality of the Offeror's corporate experience relevant to the proposed tasks.

##### **(2) TECHNICAL UNDERSTANDING**

The proposals will be evaluated on the extent to which the contractor demonstrates a thorough

understanding of the purpose and objectives of the Statement of Work, and the extent to which the offeror comprehends the problems associated with the performance of the Statement of Work. Also to be evaluated is the extent to which the offeror understands ; (1) solid state device and circuit design, fabrication, evaluation, and performance; (2) the relationships between device and circuit design, fabrication, performance, and reliability and (3) test methods and procedures necessary to evaluate device performance, radiation tolerance and reliability.

(3) PAST PERFORMANCE

The proposals will be evaluated for past performance on the basis of the quality of the work performed, timeliness of performance, cost control, and business relations. The evaluation will be based on the information provided pursuant to Section L-12 and other sources if available. The evaluation will take into account past performance information regarding predecessor companies, subcontractors that will perform major or critical aspects of the requirement, or the proposed project manager or key personnel responsible for major or critical aspects of the requirement. Offerors that have no relevant performance history or for which past performance information is not available will not be evaluated favorably or unfavorably on past performance. The government may begin proposal evaluation prior to receipt of past performance information. If, after completion of proposal evaluation except evaluation of past performance, the contracting officer determines that evaluation of past performance will not affect the outcome of competitive selection, the contracting officer may waive its evaluation in accordance with FAR 15.304(c)(3)(iv).

(4) FACILITIES

The proposals will be evaluated on the adequacy of the total ionizing dose irradiation facility proposed.

(5) MANAGEMENT

The proposals will be evaluated on the soundness of the Offeror's project management approach for accomplishing the task.

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**M-2-2 COST TO THE GOVERNMENT**

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

**M-2-3 SMALL BUSINESS PARTICIPATION**

(a) The extent of participation of small businesses and historically black colleges or universities and minority institutions in performance of the contract will be evaluated on the basis of the proposed extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

(b) The extent of participation of small disadvantaged business concerns in performance of the contract will be evaluated on the basis of the proposed extent of participation of such firms in terms of the value of the total acquisition and the complexity and variety of the work such firms are to perform.

**M-3 FAR 52.217-5 - EVALUATION OF OPTIONS (JUL 1990)**

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

## **STATEMENT OF WORK**

### **RESEARCH SUPPORT for ELECTRONIC DEVICES AND MATERIALS**

#### **1.0 INTRODUCTION**

The Naval Research Laboratory, Electronics Science and Technology Division (NRL-ESTD) conducts a broad range of research efforts linked to electronic devices, materials, circuits and assemblies. The work is both theoretical and experimental and involves the development of analytical, fabrication, diagnostic and characterization techniques. The objective of this electronics research is to provide new state-of-the-art electronic devices, circuits and components for experimental systems used to solve problems of military significance. Areas of emphasis include solid state electronics, power electronics, biochemical sensors, micromechanical devices, semiconductors having narrow to wide bandgaps, surface and interface science, microstructures, nanostructures, opto-electronics, microwave devices and components, vacuum electronics and quantum devices and phenomena. Special emphasis is placed on silicon, III-V compound semiconductors, narrow and wide bandgap materials, reliability physics of electron devices, radiation hardening and vulnerability assessment of electron devices, components and assemblies, the development of high-performance microwave and millimeter wave tubes and components, and the development of submicron fabrication techniques.

#### **2.0 SCOPE**

These research efforts require the expertise of skilled, highly-technically qualified scientists, engineers and technicians to carry out these studies. The range in skills required include: reliability physics analysis, reliability testing development, analysis and data reduction; solid state device fabrication; maintenance, operation and upgrade experience of molecular beam epitaxy (MBE) machines; maintenance, operation and upgrade experience of ion implanters; microwave measurements, microwave device modeling and simulation; microwave circuit design, fabrication and testing; fabrication and evaluation of infrared (IR) imaging devices; growth of MBE layers for IR devices; maintenance, operation and upgrade of electron-beam lithography equipment; integrated circuit assembly; maintenance, operation and upgrade of high resolution

photolithography equipment, radiation response measurement and characterization of electronic and opto-electronic devices, modeling and analysis of space radiation environments.

The R&D requirements include interrelated tasks that vary considerably in their scope and complexity. However the tasks support the central mission of the Division and must be coordinated with each other.

### **3.0 TASK DESCRIPTIONS**

#### **3.1 TASK 1: MICROWAVE SOLID-STATE TECHNOLOGY SUPPORT**

##### **3.1.1 Background**

The Microwave Technology Branch, Code 6850, carries out a variety of research and development activities involving the design, development and application of microwave solid-state devices, including failure physics, reliability investigations, growth of semiconductor heterostructures, microwave device and circuit fabrication and testing, and theoretical studies of device structures.

##### **Sub-Task 1: Reliability Testing of Devices**

The contractor shall design, assemble and maintain RF and dc test apparatus for reliability testing, design and construction of test fixtures, monitoring of reliability tests, and measurement of pertinent RF and dc parameters during test. Before initiating reliability testing, the contractor shall characterize the electrical, optical and/or thermal properties of the devices. The contractor shall then perform electrical stress tests to establish limits for RF and dc operation for lifetests. In most cases, the contractor shall also perform temperature stress tests under RF operation to establish the temperature limits for reliability testing. The contractor shall conduct Lifetests at elevated temperatures, under dc bias, and at RF frequencies. Test data shall be accumulated, reduced and made available to NRL scientists on a device-by-device as-well-as a device-class basis.

The contractor shall perform failure analysis of the failed devices to determine failure modes and mechanisms. This will entail analyzing lifetest data to calculate median time to failure, activation energies for particular failure mechanisms and standard deviations. The contractor shall also determine sources of error. The contractor shall employ numerous analytical techniques to evaluate changes in physical and chemical properties, thermal profiles, and trapping phenomena related to device aging. These evaluation techniques include: infrared imaging, atomic-force-microscopy, scanning electron microscopy, electron beam induced current detection and deep level transient

spectroscopy. Raw data, graphical data and photographs pertinent to these tests shall be provided to NRL scientists.

Radiation-effects testing of semiconductor devices shall also be occasionally required. The contractor shall irradiate state-of-the-art devices by using pulsed electrons or flash X-rays. The contractor shall evaluate d before, during and after irradiation. The contractor shall study heavy ion effects to understand single event and total fluence effects.

### **Sub-Task 2: Fabrication of Solid-State Devices**

The contractor shall provide hands-on assistance in the routine chemical processing of solid-state devices, including metal and dielectric evaporation, wet etching and photolithography. This assistance will entail maintenance and repair of laboratory and specialized processing equipment as well as monitoring the supply of chemicals needed in the processing laboratory and replenishing them when appropriate.

### **Sub-Task 3: Maintenance, Operation and Upgrading of the III-V Molecular Beam Facility**

The contractor shall maintain operate and upgrade the Varian 360 and V088 III-V MBE machines. The contractor shall perform routine maintenance tasks as well as the trouble-shooting and repair of the machines when they fail. The contractor shall execute routine growth programs on the machine. The contractor shall provide assistance to plan and execute upgrades to the machines to enhance output or to increase overall capability.

### **Sub-Task 4: Microwave Measurements**

The contractor shall use network analyzers, spectrum analyzers and other microwave test equipment to determine the linear and/or nonlinear characteristics of passive and active microwave devices. Linear testing typically consists of obtaining small-signal scattering parameters over a range of frequency after appropriate calibration and de-embedding procedures to remove intrinsic test-set and fixture errors. S-parameters are reduced to key performance factors or parameters useful for device modeling by use of suitable commercial or specialized software. Nonlinear testing consists of measuring such parameters as total power output, gain compression and intermodulation distortion and harmonic generation.

### **Sub-Task 5: Microwave Device Modeling and Simulation**

The contractor shall develop equivalent circuit device models from measured data. The contractor shall model such devices as FETs, HEMTs and

HBTs. The contractor shall use commercial software design tools where applicable. A second element of this sub-task is the development and application of specialized physics-based codes to better understand the basic operation of a given device. These codes shall also be used to evaluate failure mechanisms in various device structures. The overall goal of this sub-task is to gain a better understanding of ultimate device limitations In order to guide the realization of improved device designs.

### **Sub-Task 6: Microwave Circuit Design , Fabrication and Testing**

The contractor shall develop hybrid microwave integrated circuits to perform given system or sub-system functions, e.g. communication, radar-jamming or surveillance. Work entails use of commercial RF computer-aided-design tools for circuit design and optimization. Circuits shall commonly be fabricated using printed circuit board techniques with commercial components but on occasion specially developed NRL components shall be utilized. The contractor shall evaluate circuits in the laboratory using standard commercial test-equipment such as network analyzers, spectrum analyzers and sampling oscilloscopes. Occasionally circuits will be subjected to -off-site tests for evaluation in an operational setting.

## **3.2 TASK 2: DEVELOPMENT AND EVALUATION OF OPTO-ELECTRONIC MATERIALS AND DEVICES**

### **3.2.1 Background**

The programs of the Imagers and Detectors Section, Code 6818, of the Electronics Science and Technology Division require expert assistance with the growth and evaluation of opto-electronic materials and the fabrication and characterization of microelectronic devices. Current programs involve research and development on:

- (1) fabrication and characterization of infra-red (IR) imaging devices,
- (2) growth of heterostructure layers by molecular beam epitaxy (MBE) for IR devices,
- (3) development and characterization of advanced photovoltaic devices

For each sub-task described below, the contractor shall keep complete records of all work performed, including fabrication procedures, physical and electrical characterization, and data analysis. The contractor shall maintain records and provide them to the Government on a monthly basis. The contractor shall consult with navy personnel on the design of electronic test structures and the development of designs that meet the needs of the experimental program at the Naval Research Laboratory (NRL) and which can best be achieved with existing technologies and equipment.

**Sub-Task 1: Fabrication and characterization of IR imaging devices.**

This task consists of work in three areas: materials preparation, fabrication of IR imager and test devices, and material and device evaluation.

1a) Materials preparation.

The contractor shall be responsible for evaluation and surface preparation of materials used as substrates for MBE growth. Generally these materials shall be gallium-antimonide (GaSb), gallium arsenide (GaAs), and silicon (Si) or other common semiconductors. The contractor shall determine the procedures needed to prepare a planar, specular, single crystal surface for growth. Suitable processes are mechanical, and chemical-mechanical polishing and chemical etching. The contractor shall evaluate the substrate material properties using Fourier Transform Infrared Spectroscopy (FTIR), ellipsometry, and chemical decoration etch processes.

1b) Fabrication of IR imager and test devices

The contractor shall fabricate test structures as well as photo-conductive, photo-voltaic, and metal-insulator-semiconductor (MIS) devices [capacitors, FETs, diodes, photoconductors, and transfer registers], using semiconductor materials such as Si, GaAs, GaSb, and MBE grown layers. The contractor shall fabricate devices from materials, crystal wafers, epitaxially grown layered crystalline films and other raw materials, supplied by the Government. Dielectric passivation schemes are used to form passivation layers on these semiconductor materials at temperatures compatible with the specific material. The contractor shall use existing, government owned equipment for the chemical-vapor deposition (CVD) of SiO<sub>2</sub> layers in the fabrication of photovoltaic and MIS devices. The contractor shall perform the necessary processing sequences such as polishing, etching, surface passivation, photolithographic pattern definition, dicing, metal deposition, and wire bonding.

1c) Material and device evaluation.

The contractor shall electrically characterize test structures, analyze the data, and interpret the results. The contractor shall use device measurements to calculate material properties as a guide to the grown material properties. The contractor shall record and reduce the data into a format suitable for analysis. Evaluations will include the standard measurements of device properties such as current-voltage (I-V), capacitance-voltage (C-V), and ac conductance. The contractor shall measure bulk material properties and processed surface properties to validate the usefulness of subsequent

processing steps. This will be done using Hall effect measurements, ellipsometry, optical microscopy and other materials measurement procedures as required. The contractor shall also suggest and design novel test devices and structures to provide information on the use of these novel materials.

**Sub-Task 2: Growth of heterostructure layers by molecular beam epitaxy (MBE) for IR devices.**

The contractor shall use an NRL MBE machine to deposit single crystal layers of narrow gap semiconductors using elements such as indium, gallium, etc., and other atoms suitable for depositing single crystal and superlattice materials. This task shall include the following responsibilities:

- The selection and preparation of single crystal substrates.
- The evaluation of substrate quality and suitability, using techniques such as X-ray diffraction, optical microscopy, defect etching and other suitable analysis tools.
- The preparation of substrates by cleaning, polishing and etching where needed.
- The operation of a computer controlled MBE machine to deposit the necessary layers.
- The evaluation of the electrical, structural and surface properties of the completed layers.
- The design and fabrication of suitable device structures to evaluate the suitability of the layers for use as narrow gap IR sensing devices.

The contractor shall operate and maintain the RIBER machine, including the handling of the necessary source materials and the typical procedures to load MBE cells. The contractor shall evaluate materials by making Hall measurements to characterize the electrical properties of the layers deposited, and using x-ray diffraction and FTIR transmission and reflection spectroscopy to characterize the structural and optical properties of the layers deposited. The contractor shall cooperate with NRL personnel to design and deposit tailored superlattice layer structures to evaluate deposition processes and fabricate unique devices.

**Sub-Task 3: Development and characterization of advanced photovoltaic devices**

This sub-task consists of work in two primary areas: space solar cell development, measurement and characterization; and integrated power source development.

**3a) Space solar cell development, measurement and characterization**

The contractor shall design new photovoltaic materials and structures to yield higher efficiency and more radiation resistant solar cells for use on spacecraft. In addition, the contractor shall operate and maintain state-of-the-art solar simulation equipment and operate the NRL solar cell measurement and characterization facility. This facility includes both single and multi- source solar simulators and spectral response measurement equipment. The contractor must be experienced in the handling of spaceflight hardware.

**3b) Integrated power source development**

The contractor shall provide expertise to projects involved in the design of photovoltaic based power sources that are directly integrated into deployed systems. This work includes development of survivable solar cell devices for use in extreme environments such as underwater or within a radio-isotope power source. The contractor must have intimate knowledge of the physics of photovoltaic devices and the effects of such extreme environments on their operation to adequately design survivable systems. The contractor shall have knowledge of small scale power system design that enables direct integration of the solar cell to the deployed system architecture.

**3.3 TASK 3: SPACE ENVIRONMENTAL EFFECTS EXPERIMENTAL WORK****3.3.1 Background**

The Solid State Devices Branch, Code 6810, performs basic and applied research in the effects of the space environment on microelectronic devices, materials, and systems. These effects include low energy plasma charging effects and radiation effects. The sources of radiation include the natural radiation environment of space and, at high altitude radiation from nuclear events. The microelectronic devices include advanced digital and analog technologies such as quantum devices and commercial microprocessors. The materials include a wide range of advanced technologies such as SiGe HBTs, carbon nanotube based logic and memory devices, SOI and advanced solar cells, LT-GaAs, SOI, The systems include subsystems for space systems. Effects include single event effects, total dose changes (especially including space low-dose-rate effects), displacement damage effects, weapon dose-rate effects and other system effects.

**Sub-Task 1: Experiments and testing**

The Contractor shall carry out the following radiation effects experimental work at NRL and other radiation facilities as required:

Perform particle and gamma irradiations at various facilities on various kinds of advanced devices such as solar cells, integrated circuits detectors, metal oxide semiconductor field effect transistors (MOSFETS's), charge coupled devices (CCD'S), high temperature superconductors, and Resonant Tunneling Devices (RTD) quantum devices. Schedule time and oversee dosimetry in a coordinated radiation and device environment. Characterize devices before and after irradiation, including post irradiation effects and annealing.

Characterize properties of semiconductor materials and devices such as carrier concentration, minority carrier lifetime, trapping levels and cross sections, conversation efficiency and mobility using a range of experimental techniques such as Hall effect, electrochemical capacitance profiling, deep level transient spectroscopy, quantum efficiency and reflectance, and current-voltage measurements made both in the dark and illuminated. The characterization is to be made over a range of temperatures and other environmental conditions. This effort includes support of an experimental program testing single event effects induced by ions and pulsed lasers on advanced integrated circuits and technologies.

**Sub Task 2: Modeling:**

The contractor shall carry out the following radiation effects modeling work as required:

Extend various modeling and statistical techniques to energy deposition for both ionizing and non ionizing effects in semiconductor and dielectric materials and devices, with feature sizes covering the macro-, micro, and nano-regimes. Apply difference modeling and statistical approaches to space radiation environmental effects such as solar proton events and trapped radiation belts.

Perform calculations using various computer codes available at NRL on the response of test structures and integrated circuits to energetic ion and pulsed laser perturbations on a picosecond time scale. This will include the effects of the radial extent and shape of the initial charge track and timing effects related to the relationship between the time of interaction and the changing bias conditions of a dynamic circuit.

Support research investigation on the basic mechanisms of radiation effects including total ionizing dose, dose rate, particle properties and fabrication technology.

### **3.4 TASK 4: POWER ELECTRONIC TECHNOLOGY SUPPORT**

#### **3.4.1 Background**

The Power Electronics Branch, Code 6880 carries out a variety of activities including:

- 1) Simulation fabrication, design, and testing of both low voltage and high voltage analog circuits, power converter circuits, power switching devices, solid-state devices, power packages, and bus power distribution simulation and test.
- 2) Fabrication, growth, and characterization of novel heterojunction and wide bandgap material layers.

The contractor shall keep complete records of all work performed, including fabrication procedures, physical and electrical characterization, and data analysis. The contractor shall consult with Navy personnel on the design of electronic test structures and the development of designs that meet the needs of the experimental program at NRL.

#### **Sub Task 1: Power Electronic Devices and Circuit Design, Testing, and Fabrication**

The contractor shall develop, fabricate, and test analog circuits, power converter circuits, power switching devices, solid-state devices, power packages, reliability characterization, and bus power distribution simulation and test. The contractor shall use commercial computer-aided design (CAD) for circuit design and optimization, and for layout of power devices and circuits. The contractor shall evaluate circuits in the laboratory using standard commercial test equipment such as oscilloscopes and spectrum analyzers. The contractor shall design experiments and perform fabrication of power electronic devices and shall also electrically characterize both low voltage and high voltage power electronic devices.

#### **Sub Task 2: Material Growth, Fabrication and Characterization**

The contractor shall fabricate new types of electronics material substrates, film deposition, and new types of electronic devices by using technologies such as epitaxial growth, film deposition, bulk crystal growth, atomic layer deposition, and direct wafer bonding. The epitaxial growth, film deposition, and direct bonded wafers will include substrates of silicon, silicon germanium, silicon carbide, gallium nitride, gallium arsenide, and other materials. The contractor shall

develop methods for cleaning and etching the semiconductor surfaces prior to epitaxial growth, film deposition, and direct wafer bonding. The contractor shall use existing Government owned equipment for epitaxial growth, film deposition, bulk crystal growth and bonding of semiconductor substrates. The contractor shall investigate electronic properties the material. The contractor shall fabricate both homojunction and heterojunction devices. The fabricated electronic devices include low voltage solid-state devices, high voltage power devices, and microwave devices.

### **3.5 TASK 5: RADIATION HARDENING OF MOS TECHNOLOGY**

#### **3.5.1 Background**

As described in Task 3, NRL 6810 performs basic and applied research in the effects of the space environment on microelectronic devices, materials, and systems. These effects include low energy plasma charging effects and radiation effects. The sources of radiation include the natural radiation environment of space and, at high altitude radiation from nuclear events. The microelectronic devices include advanced digital and analog technologies such as quantum devices and commercial microprocessors. The materials include a wide range of advanced technologies such as SiGe HBTs, carbon nanotube based logic and memory devices, SOI and advanced solar cells. LT-GaAs, SOI, and advanced solar cells. The systems include subsystems for space systems. Effects include single event effects, total dose changes (especially including space low-dose-rate effects), displacement damage effects, weapon dose-rate effects and other system effects.

In addition to the efforts described in Task 3, The Radiation Effects Section, Code 6816 is engaged in specific research and development programs for the hardening of CMOS and CMOS/SOI technologies. Task 5 address these specific programs. The technologies involved include state-of-the-art CMOS and CMOS/SOI (Silicon-on-Insulator) technologies. These technologies for producing radiation hard devices are usually based on techniques for compensating trapped holes in the oxide by electron traps at the Si/SiO<sub>2</sub> interface and/or in the oxide. These methods of masking one type of defect (hole traps) with another (electron traps) have been developed in a completely empirical manner and present many theoretical and practical problems as the integrated circuit feature size is reduced in each successive generation. Total ionizing dose (TID) and single event upset (SEU) related problems and their potential solutions will be addressed by this task. The assessment of progress requires a variety of sophisticated measurements using computer-controlled instrumentation. Analysis of the data requires a considerable amount of operator insight and interaction. Because of the dynamic nature of this field, it will be necessary to develop and or modify these programs and systems to

perform the full range of testing required for evaluating nanoelectronic devices.

An important part of the effort is the acquisition of large amounts of data on the radiation response of a wide variety of CMOS and CMOS/SOI devices and circuits. The acquisition of this data requires the use of several highly sophisticated pieces of computer controlled equipment. Techniques implemented using this equipment include photoinjection, transistor transfer curves, electron spin resonance, and capacitance-voltage curves. The resulting data must then be analyzed to obtain interface state densities, threshold voltage, flatband voltage, and other parameters relevant to the radiation response of the test structures. The equipment needed, the parameters to be measured, and the computer programs used for data acquisition and analysis are always subject to change, improvement, and updating.

### **Sub Task 1: Operation of a Total Ionizing Dose Irradiation Facility**

The contractor shall provide a total ionizing dose (TID) irradiation facility in Oxon Hill, Maryland, including 10 KeV X-ray generators and supporting electronic measurement equipment.

### **Sub Task 2: Perform Irradiation and Related Testing**

The contractor shall irradiate integrated circuits (ICs), MOS capacitors, and transistors, using  $^{60}\text{Co}$  gamma rays, X-rays, electrons, protons, neutrons, and/or other energetic particles as required to evaluate total ionizing dose, dose rate and single event effects. Perform temperature bias testing on irradiated ICs, MOS capacitors, and transistors. Design and fabricate electrical and mechanical test jigs to perform these tests. Furthermore, the contractor shall perform particle and gamma irradiations at various facilities on various kinds of advanced devices. The contractor shall be responsible for scheduling time and overseeing dosimetry in a coordinated radiation and device environment. The contractor shall characterize devices before and after irradiation, including post irradiation effects and annealing. Hot-carrier and negative-bias-temperature-instability (NBTI) tests will be performed on MOS transistors.

### **Sub Task 3: Characterization**

The contractor shall characterize properties of semiconductor materials, such as carrier concentration, minority carrier lifetime, trapping levels and cross sections, conversation efficiency and mobility using a range of experimental techniques such as Hall effect, electron spin resonance (ESR), vacuum ultra violet (VUV) and UV photo-injection, electrochemical capacitance profiling, deep level transient spectroscopy, quantum efficiency and reflectance, and current-voltage

measurements made both in the dark and illuminated. This characterization is to be made over a range of temperatures and other environmental conditions.

#### **Sub Task 4: Radiation Effects and Radiation Hardening**

The contractor shall research the basic mechanisms of radiation effects and radiation hardening, including total ionizing dose, dose rate, particle properties, and fabrication technology. The contractor shall analyze Electron and hole trapping within dielectric/semiconductor structures and model them regarding radiation effects and hardening for various materials and geometries.

#### **Sub Task 5: Fabrication Technology**

The contractor shall use fabrication technology, including chemical processing of solid-state test devices, such as metal and dielectric evaporation, wet etching, thermal oxidation/annealing, photolithography, wire-bonding, and packaging. The contractor shall maintain and repair laboratory apparatus (including the non-radiative In-Source metal deposition system), and specialized processing equipment. The contractor shall monitor the supply of chemicals needed in the processing laboratory and replenish them when appropriate. The contractor shall fabricate thin film delay elements needed for SEU hardening. The contractor shall fabricate and evaluate advanced resistor and capacitor structures.

### **4.0 DELIVERABLES**

The contractor shall provide documents describing all test procedures used or developed under this program so that persons unfamiliar with the tests can do them successfully.

Experimental data and data in a form suitable for presentation at briefings and conferences shall be provided as required. This shall include, but is not limited to, presentation of written reports, annotated plots and graphs, charts, tables, and explanatory material in bullet form.

The contractor shall provide a monthly on-site labor report by the fifth working day of each month, for the preceding month. This report must include the reporting period, contract number, contract value, current funding, data submitted and on-site labor hours.

The contractor shall provide a monthly report to the COR by the fifteenth day of each month, for the preceding month. This report shall include a report of all

labor expenditures (person, hours worked, cost); materials (description, cost, and use on contract); and travel (traveler's name, dates of trip, and cost).

The contractor shall provide a quarterly progress report to the COR. This report shall include progress made for the quarter and work planned for the following quarter.

The contractor shall provide a yearly technical report to the COR within thirty days after the completion of each calendar year of the contract. This report shall include a yearly 1-2 page technical summary for each task.

The contractor shall provide a final technical report to the COR within sixty days of completion of the contract. This report shall include a comprehensive interpretation of findings on this contract.

The contractor shall provide data documentation to the COR as required. This documentation may include data reduced and analyzed data, data collection, analysis, papers, reports, view graphs and instrumentation control software developed in carrying out the research effort.

All reporting shall be done in accordance with Exhibit A – DD Form 1423.



**CONTRACT DATA REQUIREMENTS LIST**  
(2 Data Items)

Form Approved  
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 220 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services and Communications Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please do not return your form to the above organization. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

<b>A. CONTRACT LINE ITEM NO.</b> 0002	<b>B. EXHIBIT</b> A	<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____
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<b>D. SYSTEM/ITEM</b>	<b>E. CONTRACT/PR NO.</b> N00173-00-D-2000	<b>F. CONTRACTOR</b> SFA, Inc.
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<b>1. DATA ITEM NO.</b> A002	<b>2. TITLE OF DATA ITEM</b> Monthly Cost Reports	<b>3. SUBTITLE</b>
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<b>4. AUTHORITY (Data Acquisition Document No.)</b>	<b>5. CONTRACT REFERENCE</b> SOW, Para. 4.0	<b>6. REQUIRING OFFICE</b> NRL Code 6801
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<b>7. DD 250 REQ</b> No	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> MTHLY	<b>12. DATE OF FIRST SUBMISSION</b> 45 DAC	<b>14. DISTRIBUTION</b>		
<b>8. APP CODE</b> N/A		<b>11. AS OF DATE</b> 30 DAC	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> ea. 30 days	<b>a. ADDRESSEE</b>		<b>b. COPIES</b>
					Draft	Final
					Reg	Repro

<b>16. REMARKS</b> Covers monthly expenditure of funds. This report shall include a report of all labor expenditures (person, hours worked, cost), materials (description, cost and use on contract); and travel (traveler's name, dates of trip, and cost). Report must also show reporting period, the contract value, remaining funding, and provide a breakdown by employee of number of hours worked on site and which task was worked on. E-mail one copy to sleger@estd.nrl.navy.mil	NRL 6801	1	
	NRL 6802B	1	
	NRL 6810	1	
	NRL 6850	1	
	NRL 6880	1	
	NRL 6816	1	
	<b>15. TOTAL</b> →	0	6

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

<b>1. DATA ITEM NO.</b> A003	<b>2. TITLE OF DATA ITEM</b> Quarterly Letter/Technical Reports	<b>3. SUBTITLE</b>
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<b>4. AUTHORITY (Data Acquisition Document No.)</b>	<b>5. CONTRACT REFERENCE</b> SOW, Para. 4.0	<b>6. REQUIRING OFFICE</b> NRL Code 6801
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<b>7. DD 250 REQ</b> No	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> QRTLY	<b>12. DATE OF FIRST SUBMISSION</b> 105 DAC	<b>14. DISTRIBUTION</b>		
<b>8. APP CODE</b> N/A		<b>11. AS OF DATE</b> 90 DAC	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> ea. 90 days	<b>a. ADDRESSEE</b>		<b>b. COPIES</b>
					Draft	Final
					Reg	Repro

<b>16. REMARKS</b> Report on Technical Progress for each task as defined in the Statement of Work for the past three months and future plans for the next three months. E-mail one copy to sleger@estd.nrl.navy.mil	NRL 6801	1	
	NRL 6802B	1	
	NRL 6810	1	
	NRL 6850	1	
	NRL 6880	1	
	NRL 6816	1	
	<b>15. TOTAL</b> →	0	6

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

<b>G. PREPARED BY</b> NRL Code 6801	<b>H. DATE</b> 13 APR 07	<b>I. APPROVED BY</b>	<b>J. DATE</b>
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**CONTRACT DATA REQUIREMENTS LIST**  
(2 Data Items)

Form Approved  
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 220 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Services and Communications Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please do not return your form to the above organization. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

<b>A. CONTRACT LINE ITEM NO.</b> 0002	<b>B. EXHIBIT</b> A	<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____
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<b>D. SYSTEM/ITEM</b>	<b>E. CONTRACT/PR NO.</b>	<b>F. CONTRACTOR</b>
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<b>1. DATA ITEM NO.</b> A006	<b>2. TITLE OF DATA ITEM</b> Miscellaneous Data Documentation	<b>3. SUBTITLE</b>
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<b>4. AUTHORITY (Data Acquisition Document No.)</b>	<b>5. CONTRACT REFERENCE</b> SOW, Para. 4.0	<b>6. REQUIRING OFFICE</b> NRL Code 6801
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<b>7. DD 250 REQ</b> No	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ	<b>12. DATE OF FIRST SUBMISSION</b>	<b>14. DISTRIBUTION</b>		
<b>8. APP CODE</b> N/A		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>	<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
					Draft	Final
					Reg	Repro

<b>16. REMARKS</b> The contractor shall provide data documentation to the COR as required.	<b>15. TOTAL</b> → 0 0 0
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<b>17. PRICE GROUP</b>
<b>18. ESTIMATED TOTAL PRICE</b>

<b>1. DATA ITEM NO.</b> A007	<b>2. TITLE OF DATA ITEM</b> Test Procedures	<b>3. SUBTITLE</b>
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<b>4. AUTHORITY (Data Acquisition Document No.)</b>	<b>5. CONTRACT REFERENCE</b> SOW, Para. 4.0	<b>6. REQUIRING OFFICE</b> NRL Code 6801
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<b>7. DD 250 REQ</b> LT	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> ASREQ	<b>12. DATE OF FIRST SUBMISSION</b>	<b>14. DISTRIBUTION</b>		
<b>8. APP CODE</b> N/A		<b>11. AS OF DATE</b>	<b>13. DATE OF SUBSEQUENT SUBMISSION</b>	<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
					Draft	Final
					Reg	Repro

<b>16. REMARKS</b> The contractor shall provide documents to the COR describing all test procedures used or developed under this program so that persons unfamiliar with the tests can do them successfully. Experimental data and data in a form suitable for presentation at briefings and conferences shall be provided. This shall include, but not be limited to, presentation of written reports, annotated plots and graphs, charts, tables, and explanatory material in bullet form. E-mail one copy to sleger@std.nrl.navy.mil.	<b>15. TOTAL</b> → 0 1 0
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<b>17. PRICE GROUP</b>
<b>18. ESTIMATED TOTAL PRICE</b>

<b>G. PREPARED BY</b> NRL Code 6801	<b>H. DATE</b> 02 APR 08	<b>I. APPROVED BY</b>	<b>J. DATE</b>
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SER:027-08

DEPARTMENT OF DEFENSE CONTRACT SECURITY CLASSIFICATION SPECIFICATION <i>(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)</i>				1. CLEARANCE AND SAFEGUARDING			
				a. FACILITY CLEARANCE REQUIRED <b>SECRET</b>			
				b. LEVEL OF SAFEGUARDING REQUIRED <b>SECRET</b>			
2. THIS SPECIFICATION IS FOR: <i>(X and complete as applicable)</i>			3. THIS SPECIFICATION IS: <i>(X and complete as applicable)</i>				
a. PRIME CONTRACT NUMBER		<input checked="" type="checkbox"/>		a. ORIGINAL <i>(Complete date in all cases)</i>	DATE (YYYYMMDD) 2008/04/03		
b. SUBCONTRACT NUMBER				b. REVISED <i>(Supersedes all previous specs)</i>	REVISION NO. DATE (YYYYMMDD)		
<input checked="" type="checkbox"/> c. SOLICITATION OR OTHER NUMBER 68-0008-08		DUE DATE (YYYYMMDD)		c. FINAL <i>(Complete Item 5 in all cases)</i> DATE (YYYYMMDD)			
4. IS THIS A FOLLOW-ON CONTRACT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO. If Yes, complete the following: Classified material received or generated under <u>N00173-00-D-2000</u> <i>(Preceding Contract Number)</i> is transferred to this follow-on contract.							
5. IS THIS A FINAL DD FORM 254? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO. If Yes, complete the following: In response to the contractor's request dated _____, retention of the classified material is authorized for the period of _____							
6. CONTRACTOR <i>(Include Commercial and Government Entity (CAGE) Code)</i>							
a. NAME, ADDRESS, AND ZIP CODE  FOR RFP PURPOSES ONLY, NOT VALID FOR ACTUAL CONTRACT AWARD		b. CAGE CODE		c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>  N/A			
7. SUBCONTRACTOR							
a. NAME, ADDRESS, AND ZIP CODE  N/A		b. CAGE CODE		c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>  N/A			
8. ACTUAL PERFORMANCE							
a. LOCATION  N/A		b. CAGE CODE		c. COGNIZANT SECURITY OFFICE <i>(Name, Address, and Zip Code)</i>  N/A			
9. GENERAL IDENTIFICATION OF THIS PROCUREMENT  CONDUCTING A BROAD RANGE OF RESEARCH EFFORTS LINKED TO ELECTRONIC DEVICES, MATERIALS, CIRCUITS AND ASSEMBLIES.							
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					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>		
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 20375-5320, CODE 6801

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

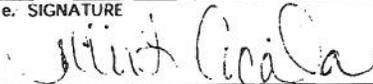
13. **SECURITY GUIDANCE.** The security classification guidance needed for this classified effort is identified below. If any difficulty is encountered in applying this guidance or if any other contributing factor indicates a need for changes in this guidance, the contractor is authorized and encouraged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

Access to classified information is not required for the purpose of submitting a bid/proposal for this statement of work. However, prior to award of contract, the successful contractor will be required to have a SECRET facility clearance, and personnel available with final DoD granted personnel security clearances commensurate with level of access required for performance of contract.

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

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

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

a. TYPED NAME OF CERTIFYING OFFICIAL	b. TITLE	c. TELEPHONE ( <i>Include Area Code</i> )
VICKI CICALA	CONTRACTING OFFICER, SECURITY	(202) 767-2240/2576
d. ADDRESS ( <i>Include Zip Code</i> )	17. <b>REQUIRED DISTRIBUTION</b>	
NAVAL RESEARCH LABORATORY	<input checked="" type="checkbox"/> a. CONTRACTOR	
4555 OVERLOOK AVE. SW	<input type="checkbox"/> b. SUBCONTRACTOR	
WASHINGTON, DC 20375-5320	<input checked="" type="checkbox"/> c. COGNIZANT SECURITY OFFICE FOR PRIME AND SUBCONTRACTOR	
e. SIGNATURE	<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 1226.2, 6802, 6801	

## PERSONNEL QUALIFICATIONS

The minimum qualifications for the required personnel mix is as follows:

### **Processing Technician**

High school diploma or GRE equivalent. At least ten years practical experience in semiconductor photolithography techniques including experience with optical aligners, thermal and e-beam deposition, plasma and wet etching. Experience in the trouble-shooting and repair of equipment to perform these operations is also required.

### **Processing/Characterization/Testing Technician**

High school diploma plus college training in physics and chemistry disciplines. At least 10 years experience in semiconductor device fabrication, semiconductor device reliability characterization, computer aided circuit design/optimization. Must be able to design experiments required to characterize and test power electronic semiconductor devices.

### **MBE Technician**

High school diploma or GRE equivalent. At least ten years practical experience in growth of III-V materials via Molecular-Beam-Epitaxy (MBE). Experience in trouble-shooting and repair of MBE machines is also required.

### **\*Electrical Engineer-Power Circuit Design and Power Device Test**

B.S. in Electrical Engineering or Physics. At least five years experience in electrical design, with familiarity with power switching devices, power converter circuit design, power converter circuit testing, high voltage power device testing, packaging power devices, reliability characterization, and power distribution simulations and test. Demonstrated experience and knowledge of contemporary computer-aided design tools for analog circuit and power converter circuit design. Demonstrated experience in testing analog and power circuits.

### **Electrical Engineer**

B.S. in Electrical Engineering or Physics. At least ten years experience in electrical design with familiarity with both digital and analog circuits. Demonstrated experience and knowledge of

application contemporary computer-aided-design tools to circuit design. Demonstrated experience in testing analog, digital, or microwave circuits.

### **Microwave Modeling and Simulation Engineer**

Ph.D. in Physics, Electrical Engineering with at least ten years experience in the development and application of physics-based computer codes for microwave devices. Familiarity with commercial microwave device modeling tools.

### **RF-Microwave Hardware Technician**

B.S. in EE or Physics or a non degree technician.. Shall be capable of general laboratory work in the areas of hardware design, assembly, calibration and testing of microwave and millimeter wave components and subsystems. Expertise in the areas of network analyzer use, detector calibration and spectrum analyzer measurements are required. Additional capability in 2D or 3D computer aided design and machining experience are desired. Shall participate in field tests as needed.

### **Electrical Engineer-Electrical Circuit Design**

B.S. in Electrical Engineering or Physics. At least 10 years experience in electrical design with familiarity with both digital and analog circuits. Demonstrated knowledge and experience with the application of contemporary computer aided design tools to circuit design. Demonstrated experience in testing analog and digital circuits.

### **Research Scientist-Material Growth and Wafer Bonding**

Ph.D in physics, chemistry, materials or engineering. At least 2 years experience in semiconductor material growth, processing, surface physics or wafer bonding. Familiar with semiconductor material evaluation techniques.

### **Researcher-Pulsed Laser Simulation**

Ph.D in Physics and 10 years experience in area of pulsed laser simulation of single event effects, radiation effects mechanisms in semiconductors, measurements of radiation effects in advanced integrated circuits and integrated circuit modeling using computer codes.

### **Researcher-Radiation Effects Measurements-Solar Cell Materials**

Ph.D in Physics and at least 5 years of experience or BS with 10 years of experience making radiation effects measurements on solar cells and solar cell materials and modeling the results.

**\*Researcher-Ultrafast Laser Spectroscopy**

Ph.D in Physics or Chemistry with experience in ultrafast laser spectroscopy, nonlinear optics, excited-state molecular photophysics and the use of tailored optical pulses to gain enhanced control of photophysical and photochemical events.

**Researcher-Radiation Damage**

B.S./B.E.E. and at least 10 years experience in the field of radiation damage including effects in solar cells, modeling the effects of the natural space radiation environment and the models of the space environment.

**Researcher-Radiation Effects Measurements-Modeling**

Ph.D in Physics or Engineering and at least 10 years of experience or B.S. and 15 years experience in radiation effects measurements and modeling, especially with photonics systems and devices.

**Researcher- Photoinjection Measurements and Analysis**

Ph.D in Physics and at least 10 years experience in electro-optical measurement techniques injecting electrons and holes selectively into dielectric/semiconductor structures. Both vacuum ultra violet (VUV), and UV sources will be used.

**\*Research Scientist-Optoelectronic Device Development**

Ph.D in physics, chemistry, materials or engineering. At least 2 years experience in optoelectronic semiconductor material growth, processing, fabrication, and characterization. Familiar with semiconductor material evaluation techniques

**\*Researcher- Radiation Characterization of Devices and Integrated Circuits**

Ph.D in Physics or Electrical Engineering with ten or more years experience in making radiation effects measurements on CMOS integrated circuits and modeling the results.

**Researcher-Modeling of Processes for Radiation Hardening**

Ph.D in Physics and at least 10 years experience in the investigation of the basic mechanisms of radiation effects and radiation hardening, including total ionizing dose, dose rate, particle properties and fabrication technology. Electron and hole trapping within dielectric/semiconductor structures will be analyzed and modeled regarding radiation effects and hardening for various materials and geometries.

**Researcher- Fabrication of Rad-Hard Test Structures**

Ph.D in Physics or chemistry and at least 10 years experience in the fabrication of test structures, such as point-contact-transistors and MOS capacitors. Shall be able to perform ellipsometric measurements of dielectric films for refractive index and thickness and other appropriate parameters necessary for fabrication.

\*These individuals shall be considered key personnel for the purposes of Clause H-2, Key Personnel