

<b>SOLICITATION, OFFER AND AWARD</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING <b>D0-C9</b>	PAGE OF <b>1</b>   <b>31</b> PAGES
2. CONTRACT NO.	3. SOLICITATION NO. <b>N00173-01-R-JW02</b>	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)		5. DATE ISSUED <b>09 MAY 01</b>	6. REQUISITION/PURCHASE NO. <b>67-1263-01</b>
7. ISSUED BY <b>CONTRACTING OFFICER NAVAL RESEARCH LABORATORY ATTN: CODE 3230.JW WASHINGTON DC 20375-5326</b>			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 1 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, RM 115 until 4:00 P local time 07 JUNE 01  
(Hour) (Date)

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

10. FOR INFORMATION CALL:	A. NAME <b>JAMES P. WALDENFELS</b>	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) <b>(202) 767-3003</b>
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**OFFER (Must be fully completed by offeror)**

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

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

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

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

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

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION	
22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <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)		25. PAYMENT WILL BE MADE BY	CODE
26. NAME OF CONTRACTING OFFICER (Type or print)		27. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	28. AWARD DATE

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

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

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

<b>ITEM NUMBER</b>	<b>SUPPLIES OR SERVICES</b>	<b>ESTIMATED COST</b>	<b>FIXED FEE</b>	<b>TOTAL EST. COST PLUS FIXED FEE</b>
0001	The contractor shall perform services involving advanced research in pulsed power and plasma physics as described in Section C.	\$	\$	\$
0002	Data in accordance with Exhibit A (DD 1423).	* NSP	* NSP	* NSP
TOTAL ESTIMATED COST PLUS FIXED FEE FOR CLINS 0001 AND 0002		\$	\$	\$
0003	The contractor shall perform services involving advanced research in pulsed power and plasma physics as described in Section C.	\$	\$	\$
0004	Data in accordance with Exhibit A (DD 1423).	* NSP	* NSP	* NSP
TOTAL ESTIMATED COST PLUS FIXED FEE FOR CLINS 0003 AND 0004		\$	\$	\$

ITEM NUMBER	SUPPLIES OR SERVICES	ESTIMATED COST	FIXED FEE	TOTAL EST. COST PLUS FIXED FEE
0005	The contractor shall perform services involving advanced research in pulsed power and plasma physics as described in Section C.	\$	\$	\$
0006	Data in accordance with Exhibit A (DD 1423).	* NSP	* NSP	* NSP
TOTAL ESTIMATED COST PLUS FIXED FEE FOR CLINS 0005 AND 0006		\$	\$	\$
0007	The contractor shall perform services involving advanced research in pulsed power and plasma physics as described in Section C.	\$	\$	\$
0008	Data in accordance with Exhibit A (DD 1423).	* NSP	* NSP	* NSP
TOTAL ESTIMATED COST PLUS FIXED FEE FOR CLINS 0007 AND 0008		\$	\$	\$

ITEM NUMBER	SUPPLIES OR SERVICES	ESTIMATED COST	FIXED FEE	TOTAL EST. COST PLUS FIXED FEE
0009	The contractor shall perform services involving advanced research in pulsed power and plasma physics as described in Section C.	\$	\$	\$
0010	Data in accordance with Exhibit A (DD 1423).	* NSP	* NSP	* NSP
TOTAL ESTIMATED COST PLUS FIXED FEE FOR CLINS 0009 AND 0010		\$	\$	\$
TOTAL ESTIMATED COST PLUS FIXED FEE FOR ALL CLINS (0001-0010):		\$	\$	\$

NOT SEPARATELY PRICED

Upon exercise of options, existing and newly exercised performance and data CLINS shall be joined.

**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 8 December 2000 which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/home.htm>.

**C-3 SUBCONTRACTING PLAN**

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

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

**SECTION D**  
**PACKAGING AND MARKING**

**D-1 PACKAGING AND MARKING**

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

**SECTION E**  
**INSPECTION AND ACCEPTANCE**

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

**FAR CLAUSE TITLE**

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

**E-2 INSPECTION AND ACCEPTANCE**

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

**SECTION F  
DELIVERIES OR PERFORMANCE**

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

**FAR CLAUSE    TITLE**

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

**F-2 PERIOD AND PLACE OF PERFORMANCE**

- (a) The term of this contract is from **date of award** through **one year thereafter with four options to extend support for a period of one year each, if exercised.**
- (b) The principal place of performance of this contract shall be NRL, Washington, D.C.

**SECTION G  
CONTRACT ADMINISTRATION DATA**

**G-1 PROCURING OFFICE REPRESENTATIVE**

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

Contract Matters- \*

Security Matters- \*

Safety Matters- \*

Patent Matters- \*

Release of Data- \*

The ACO will forward invention disclosures and reports directly to the Associate Counsel for Patents, Code 1008.2, Naval Research Laboratory, Washington DC 20375-5320. The Associate Counsel for Patents will return the reports along with a recommendation to the Administrative Contracting Officer. The Associate Counsel for Patents will represent the Contracting Officer with regard to invention reporting matters arising under this contract.

( \* To be completed at time of award)

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

\* is hereby designated the cognizant COR who will represent the Contracting Officer in the administration of technical details within the scope of this contract and inspection and acceptance.

The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The COR does not have the authority to alter the Contractor's obligations or change the specifications in the contract. If, as a result of technical discussions, it is desirable to alter contract obligations or statements of work, a modification must be issued in writing and signed by the Contracting Officer. The COR is responsible for reviewing the bills and charges submitted by the Contractor and informing the ACO of areas where exceptions are to be taken.

( \* To be completed at time of award)

**G-3 ONR 5252.242-9718 - TECHNICAL DIRECTION (DEC 88)**

(a) Performance of the work hereunder is subject to the technical direction of the Scientific Officer/COR designated in this contract or his duly authorized representative. 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 serves to accomplish the objectives described in the statement of work;
- (2) Guidelines to the Contractor which assist in the interpretation of drawings, specifications or technical portions of work description.

(b) Technical direction must be within the general 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 only individual authorized to in any way amend or modify any of the terms of this contract shall be the Contracting Officer. When, in the opinion of the Contractor, any technical instruction 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 working days after its receipt. The Contractor shall not proceed with the work affected by the technical direction until the Contractor is notified by the Contracting Officer that the technical direction is within the scope of the contract.

(d) Nothing in the foregoing paragraphs may be construed to excuse the Contractor from performing that portion of work statement which is not affected by the disputed technical instruction.

**G-4 CONTRACTOR-ACQUIRED PROPERTY**

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

Items to be Acquired

Estimated Cost

\*

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

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

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

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

**G-5 SUBCONTRACTORS/CONSULTANTS**

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

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

Subcontractor/Consultant Name	Estimated Cost
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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-6 NAPS 5252.232-9001 - SUBMISSION OF INVOICES (COST-REIMBURSEMENT, TIME-AND-MATERIALS, LABOR-HOUR, OR FIXED PRICE INCENTIVE (JUL 1992))**

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

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

*(To be completed at time of award)*

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

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

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

- (1) Contract line item number (CLIN)
- (2) Subline item number (SLIN)

- (3) Accounting Classification Reference Number(ACRN)
  - (4) Payment terms
  - (5) Procuring activity
  - (6) Date supplies provided or services performed
  - (7) Costs incurred and allowable under the contract
  - (8) Vessel (e.g., ship, submarine or other craft) or system for which supply/service is provided
- (e) A DD Form 250, "Material Inspection and Receiving Report",
- is required with each invoice submittal.
  - is required only with the final invoice.
  - is not required.
- (f) A Certificate of Performance
- shall be provided with each invoice submittal.
  - is not required.
- (g) The Contractor's final invoice shall be identified as such, and shall list all other invoices (if any) previously tendered under this contract.
- (h) Cost of performance shall be segregated, accumulated and invoiced to the appropriate ACRN categories to the extent possible. When such segregation of costs by ACRN is not possible for invoices submitted with CLIN/SLINS with more than one ACRN, an allocation ratio shall be established in the same ratio as the obligations cited in the accounting data so that costs are allocated on a proportional basis.

#### **G-7 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-8 PAYMENT INSTRUCTIONS FOR MULTIPLE ACCOUNTING CLASSIFICATION CITATIONS (COST-REIMBURSEMENT)**

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

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

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

**H-1 TYPE OF CONTRACT**

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

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

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

The following are identified as key personnel: \*

Theoretical Physicist

Experimental Physicist

*(\*To be completed at time of award, listing the persons proposed to fill the foregoing anticipated key positions.)*

**H-3 ONR 5252.216-9706 - LEVEL OF EFFORT (DEC 88) (MODIFIED SEP 99) [APPROVAL PENDING]**

(a) The Contractor agrees to provide the total level of effort specified in the next sentences in performance of the work described in this contract. The total level of effort for performance of this

contract shall be 13,248 total hours of direct labor for the base year.

- If and when Option 1 is exercised, the performance of Items 0001-0004 of this contract shall require an additional 13,248\* hours for a total of 26,496\* total hours of direct labor.
- If and when Option 2 is exercised, the performance of Items 0001-0006 of this contract shall require an additional 13,248\* hours for a total of 39,744\* total hours of direct labor.
- If and when Option 3 is exercised, the performance of Items 0001-0008 of this contract shall require an additional 13,248\* hours for a total of 52,992\* total hours of direct labor.
- If and when Option 4 is exercised, the performance of Items 0001-0010 of this contract shall require an additional 13,248\* hours for a total of 66,240\* total hours of direct labor.

These hours include 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) 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 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. Notwithstanding any of the provisions in the above paragraphs, if the contractor has delivered at least 90% of the level of effort required in paragraph (a) above, adjustment in the fixed fee shall be as follows:

<u>Delivery of level of effort:</u>	<u>Fee Reduction</u>
At least 90% but less than 91%	90% of the reduction otherwise due per paragraph (f)(l).
At least 91% but less than 92%	80% of the reduction otherwise due per paragraph (f)(l).
At least 92% but less than 93%	60% of the reduction otherwise due per paragraph (f)(l).
At least 93% but less than 94%	40% of the reduction otherwise due per paragraph (f)(l).
At least 94% but less than 95%	20% of the reduction otherwise due per paragraph (f)(i).
At least 95%	No adjustment in the fixed fee shall be made.

- (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 level of effort for the base year and through each option period is as follows:

<u>Labor Category</u>	<u>Hours for Basic Period</u>	<u>Hours Through Option 1</u>	<u>Hours Through Option 2</u>	<u>Hours Through Option 3</u>	<u>Hours Through Option 4</u>
Contract Line Items (CLINS)	0001- 0002	0001- 0004	0001- 0006	0001- 0008	0001- 0010
Experimental Physicist	1,840	3,680	5,520	7,360	9,200
Theoretical Physicist	1,840	3,680	5,520	7,360	9,200
Scientists	1,840	3,680	5,520	7,360	9,200
Technicians	5,520	11,040	16,560	22,080	27,600
Part-time experts, consultants	2496	4,992	7,488	9,984	12,480
Support Labor*	*	*	*	*	*
TOTAL*	**	**	**	**	**

\*If it is the offeror's established practice to charge certain support labor (such as contracts, subcontract administration, administrative support) as a direct charge, a nominal amount of such support labor may be proposed; pricing detail should match that provided for other labor. The total will be increased accordingly at the time of award. This note will be removed after entry of any proposed support labor upon award of the contract.

\*\*The totals prior to addition of any support labor are:

Contract Line Items (CLINS)	0001- 0002	0001- 0004	0001- 0006	0001- 0008	0001- 0010
Hours	13,536	27,072	40,608	54,144	67,680

This footnote will be deleted at award after incorporation of the total in the main table.

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

Scientific or technical reports prepared by the Contractor and deliverable under the terms of this contract will be prepared in accordance with format requirements contained in ANSI/NISO Z39.18-1995, "Scientific and Technical Reports: Elements, Organization, and Design. "[NOTE: ANSI Z39.18 may be obtained from NISO Press Fulfillment Center, P. O. Box 338, Oxon Hill, MD. 20750-0338. Telephone 1-800-282-6476]

**H-5 OPTION TO EXTEND TERM**

This contract shall be renewable at the unilateral option of the Government by the Contracting Officer's notice of renewal to the Contractor within the existing term of the contract. The Government may elect to exercise its option by issuing a new contract for the optional period. Except as provided in the schedule, the new contract will have the same terms and conditions as this contract including any unexercised options.

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

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

**H-7 GOVERNMENT-FURNISHED PROPERTY**

The following Government property will be furnished to the contractor on a rent-free basis for use in performing the contract:

Government Furnished Property, Facilities and Equipment.

The Government shall provide the physical space for contractor personnel to perform all on-site work under this contract. The Government shall furnish the machine time on the Hawk, Gamble II, and other facilities as the Government deems necessary for the Contractor to carry out the research discussed in Section 3.1: Specific Tasks. The Government shall also provide other facilities for use including large-scale computer facilities and computer time. The Government shall make available desktop and laptop personal computers on a not-to-interfere basis only. The Government shall also provide the Contractor access to Pulsed Power Physics Branch equipment for use as required to perform the experimental and theoretical tasks.

Contractor Furnished Equipment, Materials, and Supplies

The Contractor shall be responsible for ensuring the availability of any other equipment, material, and supplies not furnished by the Government but required to perform the tasks assigned under the contract. As is necessary for performance under this contract, the Contractor shall be responsible for ensuring the availability of experimental apparatus (such as capacitor banks for driving transport channels and plasma sources, magnetic field coils, vacuum pumps, chambers, and gauges, etc.),

diagnostic equipment (such as an intensifier tube for streak photography of plasma light emission, etc.), and data acquisition and analysis equipment (such as desktop personal computers with peripherals and software, etc.). As is necessary for performance under this contract, the Contractor shall also ensure the availability of materials necessary for building experimental hardware. The Contractor shall also provide supplies for contractor personnel.

**H-8 YEAR 2000 COMPLIANT INFORMATION TECHNOLOGY**

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

**H-9 REPRESENTATIONS AND CERTIFICATIONS**

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

**H-10 SUBCONTRACTING PLAN**

The contractor's Comprehensive Small Business Subcontracting Plan is incorporated into this contract in accordance with DFARS SUBPART 219.7 *Test Program for Negotiation of Comprehensive Small Business Subcontracting Plans*.

(To be included at time of award, if applicable.)

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

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

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

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

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

**a. FEDERAL ACQUISITION REGULATION CLAUSES**

**FAR CLAUSE    TITLE**

- 52.202-1    -    Definitions (OCT 1995)
- 52.203-3    -    Gratuities (APR 1984)
- 52.203-5    -    Covenant Against Contingent Fees (APR 1984)
- 52.203-6    -    Restrictions On Subcontractor Sales To The Government (JUL 1995)
- 52.203-7    -    Anti-Kickback Procedures (JUL 1995)
- 52-203-8    -    Cancellation, Rescission, And Recovery Of Funds For Illegal Or Improper Activity (JAN 1997)
- 52.203-10    -    Price Or Fee Adjustment For Illegal Or Improper Activity (JAN 1997)
- 52.203-12    -    Limitation On Payments To Influence Certain Federal Transactions (JUN 1997)

- 52.204-2 - Security Requirements (AUG 1996)
- 52.204-4 - Printed Or Copied Double-Sided On Recycled Paper (AUG 2000)
- 52.209-6 - Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (JUL 1995)
- 52.211-15 - Defense Priority And Allocation Requirements (SEP 1990)
- 52.215-2 - Audit And Records-Negotiation (JUNE 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)
- 52.215-11 - Price Reduction For Defective Cost Or Pricing Data - Modifications (OCT 1997)
- 52.215-12 - Subcontractor Cost Or Pricing Data (OCT 1997)
- 52.215-13 - Subcontractor Cost Or Pricing Data Modifications (OCT 1997)
- 52.215-14 - Integrity Of Unit Prices (OCT 1997)
- 52.215-15 - Pension Adjustments And Asset Reversions (DEC 1998)
- 52.215-17 - Waiver Of Facilities Capital Cost Of Money (OCT 1997)  
( *will be included if the successful offeror does not propose facilities capital cost of money*)
- 52.215-18 - Reversion Or Adjustment Of Plans For Post-Retirement Benefits (PRB) Other Than Pensions (OCT 1997)
- 52.215-19 - Notification Of Ownership Changes (OCT 1997)
- 52.215-21 - Requirements For Cost Or Pricing Data Or Information Other Than Cost or Pricing Data -Modifications (OCT 1997)
- 52.216-7 - Allowable Cost And Payment (MAR 2000) (*If the contract is with an educational institution, modify the clause by deleting from paragraph (a) "Subpart 31.2" and substitute "Subpart 31.3". If the contract is with a state or local government, delete from paragraph (a) "Subpart 31.2" and substitute "Subpart 31.6". If the contract is with a nonprofit other than an educational institution, a state or local government, or a nonprofit organization exempted under OMB Circular A-122, modify the clause by deleting from paragraph (a) "Subpart 31.2" and substituting "Subpart 31.7".*)
- 52.216-8 - Fixed-Fee (MAR 1997)
- 52.219-4 - Notice Of Price Evaluation Preference For HUBZone Small Business Concerns (JAN 1999)  Offeror elects to waive the evaluation preference.
- 52.219-8 - Utilization Of Small Business Concerns (OCT 2000)
- 52.219-9 - Small Business Subcontracting Plan (OCT 2000) - Alternate II (JAN 1999)
- 52.219-16 - Liquidated Damages-Subcontracting Plan (JAN 1999)
- 52.219-25 - Small Disadvantaged Business Participation Program-Disadvantaged Status And Reporting (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"
- 52.222-20 - Walsh-Healey Public Contracts Act (DEC 1996)
- 52.222-21 - Prohibition of Segregated Facilities (FEB 1999)
- 52.222-26 - Equal Opportunity (FEB 1999)
- 52.222-29 - Notification Of Visa Denial (APR 1984) (DEVIATION)
- 52.222-35 - Affirmative Action For Disabled Veterans And Veterans Of The Vietnam Era (APR 1998)
- 52.222-36 - Affirmative Action For Workers With Disabilities (JUN 1998)
- 52.222-37 - Employment Reports On Disabled Veterans And Veterans Of The Vietnam Era (APR 1998)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)

- 52.223-5 - Pollution Prevention And Right-To-Know Information (APR 1998)
- 52.223-6 - Drug-Free Workplace (JAN 1997)
- 52.223-10 - Waste Reduction Program (AUG 2000)
- 52.223-14 - Toxic Chemical Release Reporting (OCT 2000)
- 52.225-13 - Restrictions On Certain Foreign Purchases (JUL 2000)
- 52.226-1 - Utilization Of Indian Organizations And Indian-Owned Economic Enterprises (JUN 2000)
  
- 52.227-1 - Authorization And Consent (JUL 1995)- Alternate I (APR 1984)
- 52.227-2 - Notice And Assistance Regarding Patent And Copyright Infringement (AUG 1996)
- 52.227-10 - Filing Of Patent Application- Classified Subject Matter (APR 1984)
- 52.227-11 - Patent Rights - Retention By The Contractor (Short Form) (JUN 1997)  
*(will be included if the successful offeror is a small business or a non-profit organization)*
- 52.227-12 - Patent Rights - Retention By The Contractor (Long Form) (JAN 1997)  
*(will be included if the successful offeror is not a small business or a non-profit organization)*
  
- 52.228-7 - Insurance - Liability To Third Persons (MAR 1996)
- 52.230-2 - Cost Accounting Standards (APR 1998)
- 52.230-3 - Disclosure And Consistency Of Cost Accounting Practices (APR 1998)
- 52.230-6 - Administration Of Cost Accounting Standards (NOV 1999)
- 52.232-9 - Limitation On Withholding Of Payments (APR 1984)
- 52.232-17 - Interest (JUN 1996)
- 52.232-20 - Limitation Of Cost (APR 1984) *(Applicable when the contract or task order is fully funded)*
- 52.232-22 - Limitation Of Funds (APR 1984) *(Applicable when the contract or task order is not fully funded)*
  
- 52.232-23 - Assignment Of Claims (JAN 1986) Alternate I (APR 1984)
- 52.232-25 - Prompt Payment (JUN 1997)
- 52.232-33 - Payment By Electronic Funds Transfer-Central Contractor Registration (MAY 1999)
- 52.233-1 - Disputes (DEC 1998)
- 52.233-3 - Protest After Award (AUG 1996) - Alternate I (JUN 1985)
- 52.237-2 - Protection Of Government Buildings, Equipment And Vegetation (APR 1984)
- 52.237-10 - Identification Of Uncompensated Overtime (OCT 1997)
- 52.242-1 - Notice Of Intent To Disallow Costs (APR 1984)
- 52.242-3 - Penalties For Unallowable Costs (OCT 1995)
- 52.242-4 - Certification of Final Indirect Costs (JAN 1997)
- 52.242-13 - Bankruptcy (JUL 1995)
- 52.243-2 - Changes - Cost-Reimbursement (AUG 1987) - Alternate II (APR 1984)
- 52.244-2 - Subcontracts (AUG 1998) - Alternate I (AUG 1998)
- 52.244-5 - Competition In Subcontracting (DEC 1996)
- 52.244-6 - Subcontracts For Commercial Items And Commercial Components (OCT 1998)
- 52.245-5 - Government Property (Cost-Reimbursement, Time-And-Material, Or Labor-Hour Contracts) (JAN 1986) (DEVIATION)
  
- 52.245-18 - Special Test Equipment (FEB 1993)
- 52.245-19 - Government Property Furnished "As-Is" (APR 1984)
- 52.246-23 - Limitation Of Liability (FEB 1997)
- 52.246-25 - Limitation Of Liability - Services (FEB 1997)
- 52.247-1 - Commercial Bill Of Lading Notations (APR 1984)

- 52.247-63 - Preference For U. S. Flag Carriers (JAN 1997)
- 52.249-6 - Termination (Cost-Reimbursement) (SEP 1996)
- 52.249-14 - Excusable Delays (APR 1984)
- 52.251-1 - Government Supply Sources (APR 1984)
- 52.252-6 - Authorized Deviations in Clauses (APR 1984)( fill in Defense Federal Acquisition Regulation Supplement (48 CFR Chapter 2))
- 52.253-1 - Computer Generated Forms (JAN 1991)

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

**DFARS CLAUSE    TITLE**

- 252.201-7000 - Contracting Officer's Representative (DEC 1991)
- 252.203-7001 - Prohibition On Persons Convicted Of Fraud Or Other Defense Contract Related Felonies (MAR 1999)
- 252.203-7002 - Display Of DoD Hotline Poster (DEC 1991)
- 252.204-7000 - Disclosure Of Information (DEC 1991)
- 252.204-7003 - Control Of Government Personnel Work Product (APR 1992)
- 252.204-7004 - Required Central Contractor Registration (MAR 2000)
- 252.204-7005 - Oral Attestation Of Security Responsibilities (AUG 1999)
- 252.205-7000 - Provision Of Information To Cooperative Agreement Holders (DEC 1991)
- 252.209-7000 - Acquisition From Subcontractors Subject To On-Site Inspection Under The Intermediate-Range Nuclear Forces (INF) Treaty (NOV 1995)
- 252.209-7004 - Subcontracting With Firms That Are Owned Or Controlled By The Government Of A Terrorist Country (MAR 1998)
- 252.215-7000 - Pricing Adjustments (DEC 1991)
- 252.215-7002 - Cost Estimating System Requirements (OCT 1998)
- 252.219-7003 - Small Business And Small Disadvantaged Business Subcontracting Plan (DoD Contracts) (APR 1996)
- 252.223-7001 - Hazard Warning Labels (DEC 1991)
- 252.223-7004 - Drug-Free Work Force (SEP 1988)
- 252.223-7006 - Prohibition On Storage And Disposal Of Toxic And Hazardous Materials (APR 1993)
- 252.225-7001 - Buy American Act And Balance Of Payments Program (MAR 1998)
- 252.225-7002 - Qualifying Country Sources As Subcontractors (DEC 1991)
- 252.225-7012 - Preference For Certain Domestic Commodities (AUG 2000)
- 252.225-7016 - Restriction On Acquisition Of Ball And Roller Bearings (DEC 2000)
- 252.225-7026 - Reporting Of Contract Performance Outside The United States (JUN 2000)
- 252.225-7031 - Secondary Arab Boycott Of Israel (JUN 1992)
- 252.225-7043 - Antiterrorism/Force Protection Policy For Defense Contractors Outside The United States (JUN 1998) (fill in : Naval Criminal Investigative Service (NCIS), Code 24, telephone, DSN 228-9113 or commercial (202)433-9113)
- 252.227-7000 - Non Estoppel (OCT 1966)
- 252.227-7001 - Release Of Past Infringement (AUG 1984)
- 252.227-7013 - Rights In Technical Data -- Noncommercial Items (NOV 1995)
- 252.227-7014 - Rights In Noncommercial Computer Software And Noncommercial Computer Software Documentation (JUN 1995)
- 252.227-7016 - Rights In Bid Or Proposal Information (JUN 1995)

- 252.227-7019 - Validation Of Asserted Restrictions--Computer Software (JUN 1995)
- 252.227-7025 - Limitations On The Use Or Disclosure Of Government-Furnished Information Marked With Restrictive Legends (JUN 1995)
- 252.227-7030 - Technical Data--Withholding Of Payment (MAR 2000)
- 252.227-7034 - Patents--Subcontracts (APR 1984)
- 252.227-7036 - Declaration Of Technical Data Conformity (JAN 1997)
- 252.227-7037 - Validation Of Restrictive Markings On Technical Data (SEP 1999)
- 252.227-7039 - Patents--Reporting Of Subject Inventions (APR 1990)
- 252.231-7000 - Supplemental Cost Principles (DEC 1991)
- 252.235-7010 - Acknowledgment Of Support And Disclaimer (MAY 1995)
- 252.235-7011 - Final Scientific Or Technical Report (SEP 1999)
- 252.242-7000 - Post Award Conference (DEC 1991)
- 252.242-7004 - Material Management And Accounting System (DEC 2000)
- 252.243-7002 - Requests For Equitable Adjustment (MAR 1998)
- 252.244-7000 - Subcontracts For Commercial Items And Commercial Components (DOD Contracts) (MAR 2000)
- 252.245-7001 - Reports Of Government Property (MAY 1994)
- 252.247-7023 - Transportation Of Supplies By Sea (MAR 2000)
- 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 (MAY 1995)

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

(a) Definitions.

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

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

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

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

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

- J-1** Attachment (1) - Statement Of Work - 4 Pages, With Exhibit A - DD Form 1423, Contract Data Requirements List, 3 Pages.
- J-2** Attachment (2) - DD Form 254, Contract Security Classification Specification, Ser 008-01 Dated 20010215 2 Pages.
- J-3** Attachment (3) – Personnel Qualifications, 2 Pages.
- J-4** Attachment ( ) – Accounting and Appropriation Data- 1 page. \*  
*(\* To be included at time of award)*

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

**K-1 Representations, Certifications, and Other Statements of Offerors or Respondents**

Each Offeror must submit a completed Representations, Certifications, and Other Statements Of Offerors or Respondents with its proposal which is available electronically in full text at <http://heron.nrl.navy.mil/contracts/reps&certs.htm>

**K-2 FILL IN FOR FAR 52.219-1 - SMALL BUSINESS PROGRAM REPRESENTATIONS (OCT 2000)**

The fill in information is as follows:

The NAICS code for this acquisition is 541710.

The small business size standard is 500 employees

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

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

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

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

**FAR CLAUSE    TITLE**

52.204-6	-	Data Universal Numbering System (DUNS) Number (JUNE 1999)
52.215-1	-	Instructions To Offerors- Competitive Acquisition (FEB 2000)
52.215-16	-	Facilities Capital Cost Of Money (OCT 1997)
52.219-24	-	Small Disadvantaged Business Participation Program - Targets (JAN 1999)
52.222-24	-	Preaward On-Site Equal Opportunity Compliance Evaluation (FEB 1999)
52.252-5	-	Authorized Deviations In Provisions (APR 1984)

**L-2 FAR 52.211-14 - NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE USE (SEP 1990)**

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

**L-3 FAR 52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 1997)ALTERNATE IV (OCT 1997)**

- (a) Submission of cost or pricing data is not required.
- (b) Provide information described below  
See L-15, VOLUME II - BUSINESS PROPOSAL

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

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

**L-5 FAR 52.233-2 - SERVICE OF PROTEST (AUG 1996)**

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

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

**L-6 DFARS 252.227-7017 - 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-7 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-8 GOVERNMENT-FURNISHED PROPERTY**

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

**L-9 PART TIME EXPERTS – CONSULTANTS/INDEPENDENT CONTRACTORS**

The estimate of 2,496 hours for this group in the Level of Effort Clause is based on two persons working three days per week for fifty-two weeks. This is a flexible approximation that in actuality might tend toward a pool of experts spending less time each, or toward one person working nearly full

time with others working small numbers of hours each year. The concept is to leverage a wealth of experience in a cost-effective manner. Offerors may tailor the composition of the 2,496 hours per year as they see fit.

**L-10 MATERIAL, SUPPLIES, AND EQUIPMENT ESTIMATE**

The estimate set forth below, plus any applicable indirect costs, must be included in each offeror’s cost proposal, for evaluation purposes only. (As usual under cost plus fixed fee contracts, the contractor will be reimbursed allocable, allowable and reasonable material costs incurred in contract performance.)

<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>	<u>Fourth Year</u>	<u>Fifth Year</u>
\$25,000	\$25,000	\$25,000	\$25,000	\$25,000

If the offeror has burdens or cost of money factors that apply to some of these costs but not all, the offeror should allocate the costs as seems reasonable and provide a rationale. The Contracting Officer will provide further guidance during discussions if the allocation chosen has the potential to affect the outcome of the competition.

**L-11 TRAVEL ESTIMATE**

The basis for the yearly trips estimate, set forth below, must be used as the basis for the travel estimate in each offeror’s cost proposal, for evaluation purposes only. Typically, travel involves trips to conferences and to sites identified by sponsors where technical exchanges occur that are required for performance of work under this contract. The travel is necessary in order for the contractor to present papers relevant to work being done under the contract. Typically, a year will include travel from NRL to the following locations:

<u>Destinations</u>	<u>Persons</u>	<u>No. Trips</u>	<u>Days</u>	<u>Advance Notice</u>
Sandia National Laboratories, Albuquerque, NM	1	2	4	< 3 weeks
Los Alamos National Laboratory, Los Alamos, NM	1	2	4	<3 weeks
Lawrence Livermore National Laboratory, Livermore, CA	1	2	4	>3 weeks
Maxwell/Physics International In., San Leandro, CA	1	1	4	>3 weeks
Pulsed Sciences, Inc., San Leandro, CA	1	1	4	>3 weeks
Maxwell Laboratories, Inc., San Diego, CA	1	1	4	>3 weeks

**L-12 INQUIRIES CONCERNING THE RFP**

Any questions concerning the RFP must be submitted to [waldenfels@contracts.nrl.navy.mil](mailto:waldenfels@contracts.nrl.navy.mil) no less than seven days before the closing date. After this date, the Government will weigh the interests of an efficient competition, fairness to other potential offerors, and the opportunity for timely submission against the criticality of the question in determining whether to address late questions. The Government is predisposed not to respond to questions received after this date. Offerors are cautioned against directing any questions concerning this RFP to technical personnel at the Naval Research Laboratory.

**L-13 INSTRUCTIONS FOR SUBMISSION AND INFORMATION REQUIRED TO EVALUATE PROPOSALS**

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

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

**Solicitation No. N00173-01-R-JW02**  
**Closing Date:**  
**(As specified in Block 9, RFP face page)**  
**Attn: Code 3230.JW**

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

**L-14 VOLUME I - TECHNICAL/MANAGEMENT PROPOSAL**

REQUIRED COPIES: 1 ORIGINAL AND 4 COPIES .

(1) Include a matrix indicating proposed labor hours by proposed skill category required to perform the statement of work. This matrix shall not contain labor rates or any other indication of price. Describe the equivalence of RFP labor categories to your labor categories. The offeror must propose using the level of effort breakdown identified in Section H of the RFP, treating each option period as a separate additional year.

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

1. PERSONNEL QUALIFICATIONS:

This factor covers the experience and other qualifications of proposed personnel. The work required under this contract is basic research, which relies upon specialized expertise and innovation for its successful completion. Contractor personnel in the experimental physicist, theoretical physicist, and

technician positions should be assigned full time to this work in order to concentrate their efforts toward the goals of the project. Because work is to be performed on pulsed power generators located at NRL, key personnel should be immediately available on-site at the start date of the contract in order to begin work on the required tasks in a timely fashion. The technical staff which shall assist in this work must also have specialized experience in order to complete the sponsor mandated work in a timely fashion with a minimum of training. The offeror shall provide convincing proof it has - or has the ability to obtain - personnel with relevant knowledge and experience for the efforts addressed in the Statement of Work. (Availability of personnel can be based on current staff expected to be on board at time of award, letters of commitment, employment contracts, or any other means that provides evidence of availability.) The proposal should indicate the specific personnel to be assigned to this project, their background, and approximate amount of time each shall be working on this project. This should include the education level and experience of all personnel who shall be assigned to the project.

The RFP establishes certain minimum qualifications, such as US citizenship and eligibility for SECRET clearance for key personnel. A proposal would be deficient and unacceptable (though possibly correctable) for failure to satisfy minimum qualification requirements. In other areas the RFP indicates desired qualifications with words such as "should" and "desirable." While shortfalls in these areas will impact evaluation, they are not deficiencies.

In addition to career experience and education, each resume should describe specific experience supporting the statement of work and personnel qualifications addressed in the attachment by that title, unless obvious from career experience. Ensure resume data for degrees includes the year the degree was granted and the field, and provide lower degree data even if a higher degree is required. Eligibility for SECRET clearance may be based on evidence such as possession of a current SECRET or higher clearance, the absence of knowledge that would indicate a person would not be eligible, and no prior refusal of a SECRET or higher clearance, unless there is a satisfactory explanation suggesting there is no current problem. Clearance status may be indicated in the resume, by a statement in the proposal, or in a summary table.

## 2. TECHNICAL UNDERSTANDING:

This factor will be based on the offeror's effective understanding of the Statement of Work, including its requirements as well as key aspects of its technical basis, its knowledge base, typical approaches, typical issues, handling unusual and critical problems, and other practical aspects such as feasibility, reasonableness and time constraints. Offerors should demonstrate a sound technical understanding of the objectives of the required work and the physics issues involved in carrying out this work. The proposal should make clear how this technical understanding will be transfused via proposed personnel or otherwise into this project. Evidence of effective innovation is welcome.

In support of all technical understanding, describe experience over the past five years. Include a table summarizing experience over the past five years. The table should include the name of the customer, contract number, the name and phone number of the Government's Contracting Officer's Representative or the commercial customer's program manager, Contracting Officer or commercial equivalent and phone number, a short description of the effort, dates of effort, the dollar value, the type of contract, and other pertinent information. Include proposals for all major subcontractors with the same type of information.

### 3. MANAGEMENT AND COMPANY EXPERIENCE:

The offeror shall state its degree of **corporate commitment** to accomplish the program, and the offeror shall provide a brief description of its **management philosophy**.

The offeror shall provide a brief narrative description and organization chart of the proposed **supporting organization**, which shall include: (a) a description of the program manager's authority to direct corporate resources toward accomplishment of tasks; (b) identification of the official to whom the program manager reports, as well as the level of that official; and (c) a description of how this program will fit into the organization structure of the company or the offeror's profit center;

Regarding **workforce management**, the offeror should describe its approach to retaining key personnel and to attracting/providing any needed additional trained personnel..

The offeror shall describe its key **management systems and internal procedures**, including any management approaches or techniques that make the company especially effective or that will foster program success.

Offerors should indicate the adequacy of **company experience** over the past five years on similar or related projects as evidenced by a narrative description of the experience. The description should relate to the table summarizing experience over the past five years under "technical understanding," above, and experience already described to demonstrate technical understanding should be simply referred to, with information added if needed to illustrate the corporate aspect of that experience. Offerors should clearly show the relationship of cited experience to the proposed effort. In addition, prospective contractors should justify their ability to perform the work with a minimum delay for learning the day to day operations.

Corporate experience should be linked to this procurement by describing how it will be **transfused into the project** through the personnel and organizations performing under the contract. Examples of the latter might include the following: evidence of continuity of key management personnel; in-house consultants; and computer network based resources to develop, record, and transfuse lessons learned and communicate expertise.

## L-15 VOLUME II - BUSINESS PROPOSAL

REQUIRED COPIES: 1 ORIGINAL AND 1 COPIES Note that only the original and 1 copy of the SF33 and required fill-in contractual information need be supplied.

### (1) COST PROPOSAL

(a) The offeror shall submit a business proposal that includes a cost proposal with supporting information for each cost element consistent with offeror's cost accounting system. The supporting breakdown should include such elements as materials, direct labor, indirect cost, and

other costs such as travel and consultants. The offeror shall provide exhibits as necessary to substantiate each cost element, other than those elements stipulated in the RFP such as labor hours (other than any undesignated support labor, material costs and trip estimates. 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.

The following paragraphs are intended to require data to facilitate an efficient Government review without placing an undue burden on offerors. The intent is to collect data sufficient to produce independent Government spreadsheets while minimizing the need to clarify cost data. Confusion and delay are often caused by uncertainty over the alignment of subcontractor costs with prime offeror rate periods, or the breakout of a subcontract proposal by cost element. For proposed subcontracts of \$500,000 and higher, if the subcontractor is not willing to provide required cost element detail directly, request their data be sent directly to the contract specialist, James P. Waldenfels, at the address on the RFP cover page, or by FAX (202 767-3003) or email ([waldenfels@contracts.nrl.navy.mil](mailto:waldenfels@contracts.nrl.navy.mil)). (Cost element detail on subcontracts below \$500,000 is not required unless specifically requested by the Government.)

(b) Base proposal costs on an anticipated start date of **June 4, 2001**. Award is anticipated in June 2001.

(c) Provide **detailed cost tables both for each CLIN and for each of your fiscal years, as well as the total program**. Request subcontractors proposed at \$500,000 and higher to provide the same data, matched to your fiscal periods. If matching your fiscal periods requires the subcontractor to calculate composite labor and burden rates, the subcontractor should detail the base rates and bases or percentages that constitute each composite rate. This will facilitate analysis by NRL.

(e) If your fiscal years (e.g., the first year, second year, etc.) **overlap** the points where any rate changes (including labor, burdens, any cost of money), submit a description of the timing of the change, the amount of the base for each rate period, and the rate applied to each base. Alternately, the formulas or methodology for calculating the base for each period may be stated (e.g., two thirds of the hours in the first period, one third in the second). This may be submitted as a summary table, separate from the cost tables for the total program by fiscal year, or submission may not be necessary if clear from the cost tables.

(f) State the **policy for the timing of adjustments in labor rates**, and state the adjustments and timing used in the proposal. If category rates are proposed, state whether costs are accumulated and billed using category rates, individual employee rates, or both. If both, describe your accounting practice. Provide contingency employment documents for potential new hires and describe the timing of potential adjustments in their salaries if not the same as for current employees. For subcontractors proposed at \$500,000 or higher that are providing labor for required personnel positions, including an example of the change in a labor rate from their current or base period to the first and second of your fiscal year periods.

(g) Provide a **table of rates** showing all burden rates for each fiscal rate period. Include labor categories too, or, alternately for labor, indicate the percentage and timing of adjustments in category rates. If your company proposes using individual labor rates, and rates for some positions are based on composites of individuals, clarify the contribution of each person to the composite rate. Describe the base for each burden and cost of money factor, if used. Identify your fiscal year.

(h) Should rates be used in the proposal which are **not DCAA approved**, provide support for the rate at the time of proposal submission. However, offerors are advised to use actual labor rates of proposed key personnel if practicable.

(i) If fringe benefit or overhead rates, G&A rates, or cost of money rates for the first period of performance are **changing significantly** (about 5% of the rate or more) from previously experienced or approved rates, an explanation should be provided.

(j) When you elect to claim **facilities capital cost of money** as an allowable cost, you must submit Form CASB-CMF and show the calculation of the proposed amount (see FAR 31.205-10). Have this form also submitted for subcontractors proposed at \$500,000 or higher.

(l) Indicate the cognizant **DCAA office**, including the name and phone number of the point of contact. Include the same information for subcontractors over \$500,000.

(m) Provide a **summary of labor hours by position**, showing the makeup of each position by offeror hours, each subcontractor's hours and each consultant's hours.

## (2) SMALL BUSINESS PARTICIPATION

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

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

## (3) TERMS AND CONDITIONS

The offeror shall provide a completed SF33 (with amendments indicated or attached), Section B and all other pages with entries to be provided by the offeror, a completed Representations, Certifications, And Other Statements Of Offerors Or Respondents, and any exceptions to RFP provisions. It is not necessary to include RFP pages that do not require offeror entries.

#### **(4) GOVERNMENT SUBCONTRACTING GOALS**

For large business offerors, the following are the Government goals relevant to subcontracting plans for prime contractors:

- 5% of the total value of all subcontract awards for each fiscal year for small business concerns owned and controlled by socially and economically disadvantaged individuals;
- 5% of the total value of subcontract awards for small business concerns owned and controlled by women;
- 1.5% of the total value of subcontract awards for firms located in qualified HUBZones;
- 3% for veteran owned small business concerns (addressed in the Federal Register of October 11, 2000)

Attainment of these goals may not be feasible for particular offerors for particular RFPs. If targets below the goals are proposed in the subcontracting plan, the offeror is encouraged to explain the circumstances making the goals infeasible and to describe the procedures used to maximize opportunities for the entities subject to goals under this procurement.

#### **L-16 BACKGROUND OF PROGRAM**

The contractor performing the preceding contract, N00173-96-C-2026, is JAYCOR of San Diego. JAYCOR has been performing similar services at least since the mid-eighties.

#### **L-17 OTHER BACKGROUND INFORMATION**

The Government will not make more than one award.

The evaluation of past performance will be accomplished as a part of the evaluations of other factors.

## SECTION M EVALUATION FACTORS FOR AWARD

### M-1 EVALUATION

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

### M-2 EVALUATION FACTORS FOR AWARD

Proposals will be evaluated in accordance with the following criteria. The technical factor is . Within the technical factor, the "Personnel Qualifications" and "Technical Understanding" criteria, or sub-factors, are the main criteria and are of equal weight. They are each considerably more important than "Company Experience and Management." There are no pre-established weights at the sub-factor level for any factor. The resulting score will be considered in the context of the realistic cost to the Government to determine the best value to the Government.

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

##### (1) PERSONNEL QUALIFICATIONS

The proposed personnel will be evaluated on their experience, qualifications and availability relevant to the proposed task, with special emphasis on the experience of the key personnel.

##### (2) TECHNICAL UNDERSTANDING

Assessment of this sub-factor will be based on the offeror's effective understanding of the technical basis and requirements of the Statement of Work, including the objectives and physics issues involved, as well as understanding of feasibility and reasonableness aspects including time constraints. Evidence of innovation will be considered. Clarity of communicating technical understanding will be considered.

##### (3) MANAGEMENT AND COMPANY EXPERIENCE

This factor will be assessed based on two considerations. The first is the soundness and potential of the offeror's project management approach to accomplish the task, including such elements as corporate commitment and management philosophy, supporting organization, workforce management approach, and management systems and internal procedures. The second consideration is the quantity and quality of the offeror's corporate experience relevant to the proposed task.

#### M-2-3 COST TO THE GOVERNMENT

Proposed estimated cost to the Government. The Government may adjust the proposed cost for purposes of evaluation based upon an evaluation of cost realism. Cost Realism means that the costs in an offeror's proposal are realistic for the work to be performed; reflect a clear understanding of the requirements; and are consistent with the various elements of the offeror's technical proposal. The cost realism evaluation includes an analysis of the adequacy of the

hours, labor mix, and other direct costs to perform the work as proposed in the technical proposal as well as the proposed labor and indirect rates. It also includes evaluation of the likelihood that the risks inherent in the offeror's technical approach will result in higher actual costs than anticipated.

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

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

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

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

**STATEMENT OF WORK****1. Introduction**

The Pulsed Power Physics Branch (Code 6770) of the Plasma Physics Division performs research in a number of areas. These include the following: (a) advanced nuclear weapons effects simulation (NWES), (b) development of X-ray radiographic sources, (c) development of ion beam systems for inertial confinement fusion (ICF), (d) design and testing of small projectile launcher technologies for Navy programs, and (e) development of advanced pulsed power systems in support of these areas.

Work in the area of advanced pulsed power development emphasizes research on various opening switches for inductive energy storage applications, upgrading the supporting conventional capacitive pulsed power systems, and developing new compact inductive pulsed power generator concepts. Advanced NWES includes X-ray bremsstrahlung production, production of radiation from imploding gas puff and exploding-wire loads, and the use of ion beams to simulate soft x-rays effects. The development of intense, high-energy X-ray radiographic sources has primarily emphasized the design of unique diodes, such as the rod pinch diode, which concentrate high current electron beams into small areas for the production of localized bremsstrahlung radiation (X-rays). The production, focusing, and transport of intense light and heavy ion beams is likewise investigated with direct application to NWES and ICF. Design and testing of compact pulsed power systems appropriate for launching armatures or projectiles (railguns or coilguns) is another area of research.

Work in these areas involves both experimental and theoretical efforts. Experiments are performed on existing pulsed power drivers within the Pulsed Power Physics Branch including Hawk, Gamble II, and several smaller systems and test-stands, as well as, any new pulsed power drivers built during the performance period of this contract. The basic research nature of the work requires the design, fabrication, and fielding of experimental apparatus, diagnostic hardware, and computer software for analyzing the experimental results. Theoretical work utilizes analytical and numerical techniques for researching the various problem areas and is closely tied to the experimental program.

**2. Scope**

In support of this research program, the Contractor shall perform on-site experimental and theoretical research in pulsed power physics and engineering, plasma physics, and intense particle beam physics with the specific tasks outlined below. Tasks performed under this contract will be undertaken within the Pulsed Power Physics Branch facilities, and the tasks will require the capability of designing, fielding, and operating experiments on such pulsed power generators. The Contractor's theoretical researchers shall work closely with experimental researchers and shall provide timely analysis and guidance for the experimental research under this contract.

### 3. Specific Tasks

3.1 - Using the expertise provided under this contract, the Contractor shall carry out experimental research in the following areas, as the emphasis of the NRL program dictates; the Contractor shall:

- (a) design, develop, and optimize pulsed-power nuclear weapons effects simulators (NWES) for the Services, DOD agencies, and other Government agencies. These systems simulate X-ray yields and spectrum typical of nuclear weapons detonation environments for the testing of military-readiness of field components. Techniques include the development of pulsed power systems to generate and impinge high-voltage electron beams onto high-atomic-number target materials (bremsstrahlung), to rapidly compress gas puffs or wire-arrays for subsequent production of atomic line radiation, or to generate and transport high-energy ion beams for the simulation of near-surface penetration of soft X-rays. Work on this task is required for investigation in the areas described in (b)-(e).
- (b) investigate and develop advanced pulsed power systems, including the enhancement of modern capacitive and inductive energy storage devices using unique flux compression and switching schemes. Devices under consideration now include the "Meatgrinder", linear transformer device (LTD), inductive voltage adder (IVA), "current-doubler", etc. which require special switching technologies. The key elements of an inductive generator are opening switches, including the plasma opening switch (POS). The Contractor shall emphasize optimization of POS operation in the 1  $\mu$ s conduction time regime for use as a final stage switch in a high power (TW-level) inductive generator. Understanding of the current conduction and opening mechanisms will be necessary in order to optimize and extend the performance of the POS and experiments, and the Contractor shall focus theoretical work on gaining this understanding.
- (c) address coupling of vacuum opening switches to electron beam diodes, ion diodes, and imploding-gas-puff plasma radiation source (PRS) loads. Vacuum opening switches for pulsed power generators generally involve plasmas and significant vacuum electron emission and flow due to large electric field stresses in the vacuum transmission line. Techniques for efficiently coupling the pulsed power to the load in this environment need to be developed. Typically, efficient operation requires magnetic insulation of the vacuum electron flow from the anode surface to prevent large ion current losses. This type of operational design for vacuum power flow is called a magnetically insulated transmission line (MITL). In a large modular system, a number of vacuum transmission lines can be combined into a common disk feed to a load. Because of the field geometry in this transition region, losses can occur. The Contractor shall study techniques and designs for minimizing losses and optimizing power coupling into a load region.
- (d) develop and study techniques for producing and transporting intense ion beams. For beam production, pinch-reflex ion diodes, plasma-filled diodes, and magnetically insulated ion diodes may be developed. Appropriate beam conditions need to be defined and demonstrated in actual diode experiments before any given transport experiment can be fielded. To improve transport schemes, it is important to study the effects of gas species and pressure on beam-induced breakdown in gas-filled

- regions in order to determine the degree of charge- and current-neutralization of the beam during transport. Ion beam transport is required for heavy-ion ICF (standoff for nuclear isolation and time-of-flight bunching) and NWE simulation of soft x-ray effects using ions. Ballistic transport, self-pinch transport, and various channel transport schemes are options.
- (e) develop models and field experiments to optimize the performance of plasma radiation sources, including the design of gas nozzles to efficiently couple to available pulsed power machines and the optimization of radiation yields by improving implosion quality (i.e., higher compression ratio, reduced zippering). Optimization techniques may include improving return current symmetry, use of pre-ionization, improved nozzle design, and use of H<sub>2</sub> gas admixture. The Contractor shall diagnose gas density profiles, ionization states, optical and X-ray outputs as required.
  - (f) investigate rod pinch diode and plasma-filled-diode (PFD) concepts for improved radiographic performance, generator-to-load coupling, and diode impedance control. The Contractor shall study various techniques for injecting or pre-forming plasmas in the diode prior to applying the power pulse. Conventional high-power pulsed diodes start at very high impedance until the electrode surfaces “turn-on” and plasma forms. By injecting plasma into the diode gap, the initial impedance is small and increases as the plasma is eroded from the gap. The Contractor shall investigate this technique for controlling diode impedance.
  - (g) investigate and develop compact, low-weight devices for accelerating projectiles based on railgun or coilgun technologies. Emphasis is placed on reliable and compact capacitor bank pulser technology and designs that suppress muzzle flash for higher overall efficiency.
  - (h) develop plasma sources and radiation diagnostics necessary for (a)-(f). The creation and control of the proper plasma conditions is crucial to the success of these experiments. The optimization of radiation spectrum and dose output is the mandated goal of most of these experiments. Thus plasma source and radiation diagnostics development will be an ongoing effort which spans most of the tasks in the statement of work.

3.2 - In carrying out the experiments discussed above in 3.1, the Contractor shall design, assemble, test, maintain, and, in the case of small hardware, fabricate any experimental apparatus needed to complete the research. Small hardware is defined to be pieces that can be fabricated by hand or machined and built on the standard machine shop equipment (lathe, milling machine, etc.) available in the Pulsed Power Physics Branch within a few days time. Examples include simple diode hardware, diagnostic cables and connectors, diagnostics such as charge collectors and B-dot loops, capacitor banks for driving plasma sources, etc. The Pulsed Power Physics Branch at NRL shall supply larger hardware. The Contractor shall deliver any drawings, schematics, and hardware fabricated to the Pulsed Power Physics Branch.

3.3 - The Contractor shall field the experiments and all required diagnostic equipment for the research discussed in 3.1. The Contractor shall operate the generators and collect the data for the experiments. The Contractor shall appropriately log in and document each

experiment and its data in data books and computer files, which the Contractor shall deliver to the Pulsed Power Physics Branch at the end of the performance period.

3.4 - The Contractor shall carry out theoretical research in parallel with and in support of the experimental research discussed in 3.1. The Contractor shall tie this work closely to the experimental program and, in particular, the Contractor shall aid in interpreting the experimental results. In particular the Contractor shall perform data manipulation, data analysis, analytic theory, numerical modeling and simulation, and circuit analysis as required to guide the experimental research. Simulation work will specifically involve the use, or development and use, by the Contractor of finite-element electromagnetic solvers, 2D and 3D electromagnetic particle-in-cell codes, Monte Carlo radiation transport codes, single particle orbit codes, and 2D and 3D MHD codes. The Government shall make available to the Contractor existing codes at NRL. The Contractor shall document and deliver any computer algorithms or codes that it develops . Likewise, the Contractor shall document and deliver simulation results (computer code output).

#### 4. Location of Performance

The Contractor shall perform all work on-site at NRL and at the Pulsed Power Physics Branch unless otherwise directed by the Government. The only exceptions to this are (1) the consultants/independent contractors who may work off-site when not carrying out an experiment, and (2) the Contractor's own administrative support staff which will not be hosted at the Government site.

#### 5. Government Furnished Property, Facilities and Equipment.

See the clause in Section H entitled Government Furnished Property.

#### 6. Contractor Furnished Equipment, Materials, and Supplies

See the clause in Section H entitled Government Furnished Property.

# CONTRACT DATA REQUIREMENTS LIST

Form Approved  
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (D701-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to the above address. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

<b>A. CONTRACT LINE ITEM NO.</b> 0002,0004,0006,0008,0010		<b>B. EXHIBIT</b> A		<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____													
<b>D. SYSTEM / ITEM</b> Advanced Research in Pulsed Power & Plasma Physics			<b>E. CONTRACT / PR NO.</b> 67-1263-01		<b>F. CONTRACTOR</b> TBD RFP N00173-01-R-JW02												
<b>1. DATA ITEM NO.</b> A001	<b>2. TITLE OF DATA ITEM</b> Monthly Progress Reports			<b>3. SUBTITLE</b> N/A													
<b>4. AUTHORITY (Data Acquisition Document No.)</b> N/A			<b>5. CONTRACT REFERENCE</b> SOW para. 2.0		<b>6. REQUIRING OFFICE</b> NRL Code 6770												
<b>7. DD 250 REQ</b> LT	<b>9. DIST STATEMENT REQUIRED</b>	<b>10. FREQUENCY</b> MTHLY	<b>12. DATE OF FIRST SUBMISSION</b> EOM + 5 working days		<b>14. DISTRIBUTION</b>												
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<b>16. REMARKS</b> Include all labor (including consultants/independent contractors) - person, hours, direct cost; materials (description, cost, and use on contract); travel (name, dates of trip, reason, cost); and associated burdens plus fixed fee. Contractor format.					<table border="1"> <tr> <td>NRL Code 6702</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>NRL Code 6770</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td><b>15. TOTAL</b></td> <td>0</td> <td>1</td> <td>1</td> </tr> </table>	NRL Code 6702	0	0	1	NRL Code 6770	0	1	0	<b>15. TOTAL</b>	0	1	1
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<b>16. REMARKS</b> These reports, submitted semi-annually for the purpose of reporting progress, may be in the form of a letter report or a technical report. Contractor format.					<table border="1"> <tr> <td>NRL Code 6702</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>NRL Code 6770</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td><b>15. TOTAL</b></td> <td>0</td> <td>1</td> <td>1</td> </tr> </table>	NRL Code 6702	0	0	1	NRL Code 6770	0	1	0	<b>15. TOTAL</b>	0	1	1
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<b>16. REMARKS</b> The Contractor shall submit any design drawings, documentation, plans, schematics and manuals developed in connection with modified hardware 30 days after completion of task. Contractor format.					<table border="1"> <tr> <td>NRL Code 6770</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td><b>15. TOTAL</b></td> <td>0</td> <td>1</td> <td>0</td> </tr> </table>	NRL Code 6770	0	1	0	<b>15. TOTAL</b>	0	1	0				
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<b>4. AUTHORITY (Data Acquisition Document No.)</b> N/A			<b>5. CONTRACT REFERENCE</b> SOW paras. 3.1, 3.3, and 4.0		<b>6. REQUIRING OFFICE</b> NRL Code 6770												
<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> Block 11 + 30 days		<b>14. DISTRIBUTION</b>												
<b>8. APP CODE</b> N/A	N/A	<b>11. AS OF DATE</b> End of Task	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> Block 11 + 30 days														
<b>16. REMARKS</b> The Contractor shall deliver informal and informal interim topical reports as individual experiments are completed. Contractor format.					<table border="1"> <tr> <td>NRL Code 6770</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td><b>15. TOTAL</b></td> <td>0</td> <td>1</td> <td>0</td> </tr> </table>	NRL Code 6770	0	1	0	<b>15. TOTAL</b>	0	1	0				
NRL Code 6770	0	1	0														
<b>15. TOTAL</b>	0	1	0														
<b>G. PREPARED BY</b> NRL Code 6770		<b>H. DATE</b> 4/20/2001		<b>I. APPROVED BY</b>													
				<b>J. DATE</b>													

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

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

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

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

# CONTRACT DATA REQUIREMENTS LIST

(2 Data Items)

Form Approved  
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0701-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to the above address. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

<b>A. CONTRACT LINE ITEM NO.</b> 0002,0004,0006,0008,0010	<b>B. EXHIBIT</b> A	<b>C. CATEGORY:</b> TDP _____ TM _____ OTHER _____
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<b>D. SYSTEM / ITEM</b> Advanced Research in Pulsed Power & Plasma Physics	<b>E. CONTRACT / PR NO.</b> 67-1263-01	<b>F. CONTRACTOR</b> TBD RFP N00173-01-R-JW02
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<b>1. DATA ITEM NO.</b> A005	<b>2. TITLE OF DATA ITEM</b> Computer algorithms and codes	<b>3. SUBTITLE</b> N/A
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<b>4. AUTHORITY (Data Acquisition Document No.)</b> N/A	<b>5. CONTRACT REFERENCE</b> SOW para. 3.4	<b>6. REQUIRING OFFICE</b> NRL Code 6770
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<b>7. DD 250 REQ</b> LT	<b>9. DIST STATEMENT REQUIRED</b> N/A	<b>10. FREQUENCY</b> ASREQ	<b>12. DATE OF FIRST SUBMISSION</b> Block 11 + 30 days	<b>14. DISTRIBUTION</b>		
<b>8. APP CODE</b> N/A		<b>11. AS OF DATE</b> End of Task	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> Block 11 + 30 days	<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
					<b>Draft</b>	<b>Final</b>

<b>16. REMARKS</b>					
	NRL Code 6770	0	1	0	
	<b>15. TOTAL</b>	0	1	0	

<b>1. DATA ITEM NO.</b> A006	<b>2. TITLE OF DATA ITEM</b> Final Report	<b>3. SUBTITLE</b> N/A
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<b>4. AUTHORITY (Data Acquisition Document No.)</b> N/A	<b>5. CONTRACT REFERENCE</b> SOW Para. 3.0	<b>6. REQUIRING OFFICE</b> NRL Code 6702
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<b>7. DD 250 REQ</b> N/A	<b>9. DIST STATEMENT REQUIRED</b> N/A	<b>10. FREQUENCY</b> 1TIME	<b>12. DATE OF FIRST SUBMISSION</b> EOC + 90 days	<b>14. DISTRIBUTION</b>		
<b>8. APP CODE</b> N/A		<b>11. AS OF DATE</b> EOC	<b>13. DATE OF SUBSEQUENT SUBMISSION</b> N/A	<b>a. ADDRESSEE</b>	<b>b. COPIES</b>	
					<b>Draft</b>	<b>Final</b>

<b>16. REMARKS</b>					
Contractor format.	NRL Code 6702	0	0	1	
	COR (Code 6770)	0	1	0	
	DTIC	0	0	4	
	NRL Code 5227	0	0	1	
	<b>15. TOTAL</b>	0	1	6	

<b>G. PREPARED BY</b> NRL Code 6770	<b>H. DATE</b>	<b>I. APPROVED BY</b>	<b>J. DATE</b>
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<b>17. PRICE GROUP</b>
<b>18. ESTIMATED TOTAL PRICE</b>

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



<b>DEPARTMENT OF DEFENSE CONTRACT SECURITY CLASSIFICATION SPECIFICATION</b> <i>(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)</i>				<b>1. CLEARANCE AND SAFEGUARDING SER: 008-01</b>	
				a. FACILITY CLEARANCE REQUIRED <p style="text-align: center;"><b>SECRET</b></p>	
				b. LEVEL OF SAFEGUARDING REQUIRED <p style="text-align: center;"><b>SECRET</b></p>	
<b>2. THIS SPECIFICATION IS FOR: (X and complete as applicable)</b>			<b>3. THIS SPECIFICATION IS: (X and complete as applicable)</b>		
a. PRIME CONTRACT NUMBER		<input checked="" type="checkbox"/>		a. ORIGINAL (Complete date in all cases)	
				DATE (YYYYMMDD) 20010215	
b. SUBCONTRACT NUMBER				b. REVISED (Supersedes all previous specs)	
				REVISION NO.	
				DATE (YYYYMMDD)	
<input checked="" type="checkbox"/>	c. SOLICITATION OR OTHER NUMBER	DUE DATE (YYYYMMDD)			c. FINAL (Complete Item 5 in all cases)
	67-1263-01				DATE (YYYYMMDD)
<b>4. IS THIS A FOLLOW-ON CONTRACT?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO. If Yes, complete the following: Classified material received or generated _____ (Preceding Contract Number) is transferred to this follow-on contract.					
<b>5. IS THIS A FINAL DD FORM 254?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO. If Yes, complete the following: In response to the contractor's request _____, retention of the classified material is authorized for the period of _____.					
<b>6. CONTRACTOR (Include Commercial and Government Entity (CAGE) Code)</b>					
a. NAME, ADDRESS, AND ZIP CODE		b. CAGE CODE	c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)		
FOR RFP PURPOSES ONLY, NOT VALID FOR ACTUAL CONTRACT AWARD			N/A		
<b>7. SUBCONTRACTOR</b>					
a. NAME, ADDRESS, AND ZIP CODE		b. CAGE CODE	c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)		
N/A			N/A		
<b>8. ACTUAL PERFORMANCE</b>					
a. LOCATION		b. CAGE CODE	c. COGNIZANT SECURITY OFFICE (Name, Address, and Zip Code)		
N/A			N/A		
<b>9. GENERAL IDENTIFICATION OF THIS PROCUREMENT</b>  <p style="text-align: center;">PULSED POWER AND PLASMA PHYSICS RESEARCH</p>					
<b>10. CONTRACTOR WILL REQUIRE ACCESS TO:</b>				<b>11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL:</b>	
				YES	
				NO	
a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY	
b. RESTRICTED DATA		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
d. FORMERLY RESTRICTED DATA		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
e. INTELLIGENCE INFORMATION		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
(1) Sensitive Compartmented Information (SCI)		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
(2) Non-SCI		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
f. SPECIAL ACCESS INFORMATION		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
g. NATO INFORMATION		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
h. FOREIGN GOVERNMENT INFORMATION		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
i. LIMITED DISSEMINATION INFORMATION		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
j. FOR OFFICIAL USE ONLY INFORMATION		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
k. OTHER (Specify)		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
				b. RECEIVE CLASSIFIED DOCUMENTS ONLY	
				c. RECEIVE AND GENERATE CLASSIFIED MATERIAL	
				d. FABRICATE, MODIFY, OR STORE CLASSIFIED HARDWARE	
				e. PERFORM SERVICES ONLY	
				f. HAVE ACCESS TO U.S. CLASSIFIED INFORMATION OUTSIDE THE U.S., PUERTO RICO, U.S. POSSESSIONS AND TRUST TERRITORIES	
				g. BE AUTHORIZED TO USE THE SERVICES OF DEFENSE TECHNICAL INFORMATION CENTER (DTIC) OR OTHER SECONDARY DISTRIBUTION CENTER	
				h. REQUIRE A COMSEC ACCOUNT	
				i. HAVE TEMPEST REQUIREMENTS	
				j. HAVE OPERATIONS SECURITY (OPSEC) REQUIREMENTS	
				k. BE AUTHORIZED TO USE THE DEFENSE COURIER SERVICE	
				l. OTHER (Specify)	

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

Direct  Through (*Specify*)

COMMANDING OFFICER, NAVAL RESEARCH LABORATORY, WASHINGTON, DC 20375-5320, CODE 6730.

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*

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, SECRET STORAGE CAPABILITIES, AND PERSONNEL AVAILABLE WITH DOD GRANTED PERSONNEL SECURITY CLEARANCES COMMENSURATE WITH LEVEL OF ACCESS REQUIRED FOR PERFORMANCE OF CONTRACT.

2001 FEB 20 P 12:30  
 INTL CONTRACTS  
 DIVISION

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

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

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

a. TYPED NAME OF CERTIFYING OFFICIAL TINA SMALLWOOD	b. TITLE CONTRACTING OFFICER, SECURITY	c. TELEPHONE ( <i>Include Area Code</i> ) (202)767-2240/2521
d. ADDRESS ( <i>Include Zip Code</i> ) NAVAL RESEARCH LABORATORY 4555 OVERLOOK AVE., SW WASHINGTON, DC 20375-5320	<b>17. REQUIRED DISTRIBUTION</b> <input checked="" type="checkbox"/> a. CONTRACTOR <input type="checkbox"/> b. SUBCONTRACTOR <input checked="" type="checkbox"/> c. COGNIZANT SECURITY OFFICE FOR PRIME AND SUBCONTRACTOR <input type="checkbox"/> d. U.S. ACTIVITY RESPONSIBLE FOR OVERSEAS SECURITY ADMINISTRATION <input type="checkbox"/> e. ADMINISTRATIVE CONTRACTING OFFICER <input checked="" type="checkbox"/> f. OTHERS AS NECESSARY 1221.1, 6730, 6702	
e. SIGNATURE 		

**PERSONNEL QUALIFICATIONS**

Note: “must,” “minimum,” and “required” connote requirements; “should,” and “desirable” indicate desired qualifications that are not requirements.

- a. **Experimental Physicist:** As a minimum for consideration, the experimental physicist must have a MS degree in a science-based field, and at least four years additional experience in the field of pulsed power plasma physics. It is desirable that he/she should be capable of independent research and should have experience in the fields of pulsed power and plasma physics related to areas such as plasma radiation sources, plasma opening switches, vacuum power flow, intense electron and ion beams, intense x-ray sources, and electromagnetic railguns. This experience should include fielding and carrying out experiments on pulsed power generators or capacitor banks, designing and fielding loads on pulsed power generators, designing and fielding diagnostics on pulsed power generators, and generator design and operation. Expertise in developing, diagnosing, and controlling plasma sources is specifically required. Experience in applying modern data collection and analysis techniques is also required. The experimental physicist must be a US citizen eligible for a SECRET clearance.
  
- b. **Theoretical Physicist:** As a minimum for consideration, the theoretical physicist must have a MS degree in a science-based field, and at least four years of additional experience in the field of pulsed power plasma physics. It is desirable that he/she should have proven capability of interacting with experimentalists working on the research program. He/she should have experience in the fields of pulsed power and plasma physics, relating to areas such as the generation and transport of intense electron and ion beams, generation of intense x-ray sources, plasma opening switches, plasma radiation sources, and vacuum power flow. Experience should include the use of numerical techniques for problem solving. In particular, some knowledge of 2D and 3D electromagnetic particle-in-cell codes, 2D and 3D MHD codes, and single particle orbit codes is required. In carrying out the theoretical research and data analysis for the project, programming experience should include writing, upgrading, debugging, and implementing software on a variety of computers, ranging from desktop personal computers to large-scale parallel processing architecture. Experience with interfacing and networking data collection devices with various computers is desirable. The theoretical physicist must be a US citizen eligible for a SECRET clearance.
  
- c. **Scientists:** A MS degree is desirable but not required for the scientists. As a minimum, the scientists must have experience in fielding and carrying out experiments on pulsed power generators and in carrying out analysis of the data. Experience should include some knowledge of diagnostic techniques, data collection techniques, and interfacing data collection devices with various computers. The scientists must be US citizens eligible for a SECRET clearance.

- d. Technicians and staff: As a minimum, technicians must have experience in maintaining and operating pulsed power generators as well as fabricating, assembling, and mounting experimental apparatus on such generators. Maintenance of large vacuum systems and a familiarity with high voltage capacitor systems is also required. Experience in drafting and machine tool operation is desired. Technicians should also be capable of determining supply requirements, ordering, and picking up materials required for efficient performance of work under the contract. The staff should be capable of preparing reports, and arranging schedules or travel itineraries, all of which are required for efficient performance of work under the contract. The technicians and staff must be US citizens eligible for SECRET clearance.
  
- e. Consultants/Independent Contractors: Consultants and independent contractors for part time labor should be recognized experts with many years of experience working in the fields of pulsed power physics, pulsed power engineering, or plasma physics. (Retired experts could be suitable.) The consultants/independent contractors must be US citizens eligible for SECRET clearance.