



**OFFICE OF NAVAL RESEARCH  
BROAD AGENCY ANNOUNCEMENT (BAA)  
ADVANCED HELICOPTER ROTOR BLADE EROSION  
PROTECTION**

**INTRODUCTION:**

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) Subpart 6.102(d) (2) (i). A formal Request for Proposal (RFP), solicitation, and/or additional information regarding this announcement will not be issued.

The Office of Naval Research (ONR) will not issue paper copies of this announcement. The ONR reserves the right to select for award all, some or none of the proposals in response to this announcement. The ONR reserves the right to fund all, some or none of the proposals received under this BAA. ONR provides no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of ONR to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

**I. GENERAL INFORMATION 1.**

**Agency Name -**

Office of Naval Research 875 N.  
Randolph Street, Arlington, VA  
22203-1995

**2. Research Opportunity Title –**

Advanced Helicopter Rotor Blade Erosion Protection

### **3. Program Name –**

Future Naval Capabilities EPE-FY09-03

### **4. Research Opportunity Number – ONR**

BAA 08-011

### **5. Response Date –**

See Page 13, Paragraph 3, entitled Significant Dates and Times for anticipated schedule of events. White Papers are due no later than 2:00 p.m. (Eastern Daylight Time) on 22 April 2008. Notification for submission of full proposals is anticipated for 9 May 2008, following White Paper review. Full proposals are due no later than 2:00 p.m. (Eastern Daylight Time) on 20 June 2008.

### **6. Research Opportunity Description –**

6.1 Under the Office of Naval Research (ONR) Future Naval Capabilities (FNC) Program, ONR is investing in technologies that have the potential to improve the erosion resistance of the leading edge of main rotor blades of Naval/Marine Corps helicopters. It is the intent of this BAA to leverage these investments to investigate and demonstrate new technologies capable of improving erosion resistance and the resultant life of the rotor blades, thereby increasing on-wing time/reliability, reducing maintenance man-hours, fuel consumption, and improving power conversion efficiency of Navy and Marine Corps helicopters. Proposals submitted in response to this BAA should include, but are not limited to, the analysis, development, risk reduction and demonstration of technologies capable of developing materials that: (1) increase the on-wing time of the rotor blades to 12,000 flight hours from the effects of sand and/or rain erosion, and are (2) conducive to cost-effective reparability of blades, and to a lesser extent, reduce corrosion, improve power generation conversion efficiency, and reduce fuel consumption, though the latter need not be a requirement. The components and systems of interest potentially include but are not limited to:

- Material qualification
- Material thermal and mechanical properties; fatigue; hardness; extreme temperature and shock testing; sand/FOD (foreign object damage) erosion rate resistance; impact/ballistic damage resistance; rain erosion resistance; compatibility with solvents, oils, fuels, anti-icing fluids, and other maintenance fluids; thickness measurements; UV light damage resistance; fungus resistance; reparability (removal and reapplication); corrosion resistance; adhesion
- Quality control, Batch or formulation consistency of materials properties
- Integration with rotor blades in existing / future rotary aircraft
- Mass balancing (e.g., mass moments of inertia, static balance and dynamic balance)
- Aerodynamics (surface finish, thickness, substrate shape conformance)
- Blade section properties (flap / twist stiffness)
- Strain compatibility with blade
- Foreign Object Damage (FOD) resistance
- Thermal conductivity for Deicing
- Resistance to lightning strike

- Flammability resistance
- Field service impact of application and removal
- Interchangeability with current blade configuration
- Segment of candidate materials leading edge in whirling arm rig for sand / rain erosion and impact resistance tests.
- Production size scale-up of process and equipment to apply protection material to full size components.
- Full Scale Ground and Flight tests –Rotor blades fitted with candidate materials.
- Development of Specifications for repair and for future rotorcraft.
- Reparability manual.
- Technical data package
- Training plan.

## **6.2 Background:**

The erosion degradation of helicopter rotor blades and subsequent repair/replacement has become one of the largest logistics and maintenance burdens for the US Armed Forces when deployed in a desert environment. In the desert environment, helicopter rotor blades experience severe sand erosion. Typically, the rotor blade is protected from erosion using a leading edge metallic erosion strip consisting of nickel (Ni) on the outboard portion of the blade and titanium (Ti) on the inboard portion of the blade. Although both Ni and Ti are hard metals, their hardness values are significantly lower than that of sand, which is primarily made up of quartz. This hardness differential results in the excessive erosion/degradation of rotor blades in desert environments. An equally important problem with Ti protection is that a visible corona or halo is generated around the rotor blades at night from the sand impacting the Ti leading edge and causing Ti to spark and oxidize.

In addition to sand erosion, the rotor blade is also subject to rain erosion. The impact pressure from rain drops creates both high tensile and shear stresses at the rain drop impact sites. These stresses initiate and grow cracks in the leading edge under repeated rain drop impacts. Prior sand erosion exacerbates rain erosion damage by generating cracks that become the weak points under rain erosion. Metal (Ti and Ni) erosion protection has better erosion resistance to rain than sand.

Hard and strong bulk materials such as monolithic ceramics showed sharply reduced erosion rates compared to metals in both sand and rain erosion tests. In order for a high hardness protection system scheme to be effective, the substrate must have reasonable stiffness relative to the protection system scheme, otherwise it cracks under foreign object impact. It is also difficult to achieve compatibility between the large strain from a flexible substrate and the small strain from a stiff system.

The current solution for rotor blade erosion protection in a desert environment consists of applying polymeric tape or a polymeric coating onto the Ni/Ti leading edge strips. These techniques provide an improved service life but the tape requires a substantial amount of repair/replacement type of maintenance. Additionally, polymeric coatings generally exhibit poor erosion performance in a rain erosion environment due to the high dynamic stress generated by impacting raindrops. However, a more permanent solution is still desired by the Department of Defense as early field experience indicates that coating touch-up is required after approximately 40 hrs flight time.

As the erosion mechanisms and strain conditions for helicopter blades and engine blades are not identical, the erosion resistance of these systems should be tested under conditions representative of helicopter blades. Additional challenges include subsystem integration issues such as de-icing, foreign object impact damage, blade section property balancing, and operational compatibility.

### **6.3 Deliverables/Metrics**

- Test and Integration Plan for materials system(s)
- Procedure for applying, installing, removing, and replacing an improved protection materials system capable of 12,000 flight hours operation.
- Production plan for implementation in new rotor blades.
- Implementation plan for transition from TRL 6 to TRL 9 including production equipment requirements and associated costs.
- Failure Modes and Effect Analysis
- Technical Data Package (production and engineering)
- In house test results

### **7. Points of Contact –**

#### Science and Technology Point of Contact:

Dr. David A. Shifler  
Office of Naval Research, ONR 332, Room 631  
875 N. Randolph Street  
Arlington, VA 22203-1995  
Telephone Number: (703) 696-0285  
Email Address: [david.shifler@navy.mil](mailto:david.shifler@navy.mil)

#### Business Point of Contact:

Ms. Karen Golden  
Contract Specialist (CACI)  
Contract and Grant Awards Management Division  
875 N. Randolph Street  
ONR Code 254  
Arlington, VA 22203-1995  
Telephone Number: (703) 696-2602  
Email Address: [karen.golden1.ctr@navy.mil](mailto:karen.golden1.ctr@navy.mil)

### **8. Instrument Types**

It is anticipated that awards will take the form of contracts.

### **9. Catalog of Federal Domestic Assistance (CFDA) Numbers – N/A.**

### **10. Catalog of Federal Domestic Assistance (CFDA) Titles – N/A.**

## **II. AWARD INFORMATION**

The Office of Naval Research (ONR) plans to make awards that represent the best value to the Government in accordance with the evaluation criteria. ONR is seeking participants for this program who are capable of investigating and applying advances in S&T by designing, developing, and demonstrating the concepts required to achieve the goals described in this announcement. Offerors have the opportunity to be creative in the selection of the technical and management processes, either commercial or DoD practices, that best suit their approach.

- Total Amount of Funding the Program Office expects to Award through the Announcement:

Awards are anticipated to be between \$0.2M and \$7M. The total estimated budget for this BAA program is seven (7) million dollars over five years.

- Anticipated Number of Awards:
- The Navy reserves the right to select for funding all, some or none of the responses received.
- Anticipated Award Types:

Awards will take the form of contracts. ONR will not issue grants, cooperative agreements, or other transaction agreements under this BAA.

## **III. ELIGIBILITY INFORMATION**

All responsible sources from academia and industry may submit proposals under this BAA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals. However, no portion of this BAA will be set aside for HBCU and MI participation. Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories are not eligible to receive awards under this BAA. However, teaming arrangements between FFRDCs and eligible principal bidders are allowed so long as they are permitted under the sponsoring agreement between the Government and the specific FFRDC.

Navy laboratories and warfare centers as well as other Department of Defense and civilian agency laboratories are also not eligible to receive awards under this BAA and should not directly submit either white papers or full proposals in response to this BAA. If any such organization is interested in one or more of the programs described herein, the organization should contact an appropriate ONR POC to discuss its area of interest. The various scientific divisions of ONR are identified at <http://www.onr.navy.mil/>. As with FFRDCs, these types of federal organizations may team with other responsible sources from academia and industry that are submitting proposals under this BAA.

Teams are encouraged to submit proposals in any and all areas. However, Offerors must be willing to cooperate and exchange software, data and other information in an integrated program with other contractors, as well as with system integrators, selected by ONR.

Some topics cover export controlled technologies. Research in these areas is limited to “U.S. persons” as defined in the International Traffic in Arms Regulations (ITAR) - 22 CFR § 1201.1 et seq.

#### **IV. APPLICATION AND SUBMISSION INFORMATION**

Application and Submission Process –

White Papers – The due date and time for receipt of White Papers is 2:00 p.m. Eastern Daylight Time on 15 April 2008. Upon evaluation of the submitted White Papers, offerors will be notified via email on or about Thursday, 8 May 2008 regarding ONR’s appraisal of the White Papers. Submission of Full Proposals will be encouraged from offerors of White Papers judged as of “particular value” to the Navy. However, any such encouragement does not assure a subsequent award. Offerors are encouraged to restrict their responses to this BAA to a maximum of two White Paper submissions from each corporate entity. Any offeror may submit a Full Proposal even if its White Paper was not identified as being of “particular value.”

Full Proposals – An offeror may not submit a Full Proposal without having submitted a White Paper before the due date/time. It is anticipated that the notification to submit Full Proposals will be on or around 8 May 2008. The due date for receipt of Full Proposals is 2:00 p.m. Eastern Daylight Time, on 20 June 2008. It is anticipated that any final selections will be made by 4 August 2008. As soon as the final proposal evaluation process is completed, the offeror will be notified via email or letter of its selection or non-selection for an award. Proposals exceeding the page limit may not be evaluated.

##### **1. Content and Format of White Papers/Full Proposals –**

White Papers and Full Proposals submitted under the BAA are expected to be unclassified; however, confidential/classified proposals are permitted. If a classified proposal is submitted, the resultant contract will be unclassified. Unclassified proposals shall be submitted directly to the Technical Point of Contract (TPOC). An ‘unclassified’ Statement of Work (SOW) must accompany any classified proposal. Classified proposals shall be submitted directly to the attention of ONR’s Document Control Unit at the following address:

Office of Naval Research  
Document Control Unit  
ONR Code 43  
875 N. Randolph Street  
Arlington, VA 22203-1995

The inner wrapper of the classified proposal should be addressed to the attention of the TPOC.

Proposal submissions will be protected from unauthorized disclosure in accordance with FAR Subpart 15.207, applicable law, and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information. The proposal shall include a severable, self-standing Statement of Work, which contains only unclassified information and does not include any proprietary restrictions.

The proposal format and content identified below are applicable to the submission of proposals for contracts, cooperative agreements and other transaction agreements. As noted in Paragraph 5 below, proposals seeking grant awards are to be formatted as required by Standard Form 424 (R&R), which is available via the internet at <http://www.grants.gov/>. Alternatives to the format and content identified below may be appropriate depending on the scope and nature of the proposed effort. Coordinate any alternative proposal formats and contents relating to white papers and technical proposals (Volume 1 of the full proposal) with the cognizant ONR Program Officer. Alternative formats and content may be directed by the ONR Program Officer or may result from Offerors' suggestions approved by the ONR Program Officer.

#### **a. White Papers**

##### **White Paper Format**

Paper Size – 8.5 x 11 inch paper

Margins – 1 inch

Spacing – single spaced

Font – Times New Roman, 12 point

Page Limit – No more than 10 single-sided pages (excluding cover page).

Any pages beyond the maximum may not be considered in the evaluation.

Copies - one (1) original, two (2) additional hard copies, and one electronic copy on a CD-ROM, (in Microsoft® Word, Excel 97 or 2003 compatible, or PDF format).

##### **White Paper Content:**

- Cover Page - The Cover Page shall be labeled "**PROPOSAL WHITE PAPER,**" and shall include the BAA number, proposed title, offeror's administrative and technical points of contact, with telephone numbers, facsimile numbers, and email addresses, and shall be signed by an authorized officer.
- Two page summary of the technical ideas for the proposed research. Within this section briefly address the offeror's understanding of the helicopter blade erosion protection issue by including the following:
  - Description of System Operation and characteristics of rotor blade sand/rain impact damage of current rotary wing platforms
  - Description of Risks and proposed Risk Mitigation of materials solutions (test procedures, number of test samples, repeatability, test types (materials, sub-element, full-scale, flight)
  - Anticipated interactions with Navy/Marine Corps repair facility and/or original equipment manufacturers (OEMs)
  - Anticipated test and integration schedule
  - Description of System Interfaces of materials solutions to the rotor blade (durability, flexibility, strain tolerances and adhesion of materials on surfaces, thermal coefficients for expansion/contraction, operational temperature ranges, corrosion/galvanic compatibility, fuel, solvent, and fluid compatibilities)  
(Summary Level)

- Expected Repair Procedure for applying/installing erosion resistant materials on rotor blade.
  - Expected industrial scale up for production of the erosion protection system once approved.
  - Quality Control
  - Explain technical basis for why projected product can achieve the expected life of the spar (12,000 flight hours)
- Three page technical rationale describing the S&T opportunity and approach. This should contain specific discussion of concept to the goals and objectives outlined in the summary of technical ideas
  - One page summary of the deliverables associated with the proposed research
  - One page summary of the schedule and milestones for the proposed research, including rough estimates of cost for each year of the effort, total cost, and identify any additional internal or external funding anticipated to support this effort
  - One page listing of key personnel along with the approximate percentage of time to be expended by each person during each contract year
  - Two page concise summary of the qualifications of key personnel – no resumes

## **b. Full Proposals**

### **Full Proposal Format (Volume 1 - Technical and Volume 2 - Cost Proposal)**

- Paper Size - 8.5 x 11 inch paper
- Margins - 1" inch
- Spacing - single spaced
- Font - Times New Roman, 12 point
- Number of Pages – Full proposals exceeding the page limit may not be evaluated:
  - Technical Proposal: The total number of pages in Volume 1, ‘Technical Proposal’ should not exceed 40, excluding cover page, table of contents and resumes.
  - Cost Proposal: The total number of pages in Volume 2, ‘Cost Proposal’ is unlimited.
- Copies - one (1) original, two (2) additional hard copies and one electronic copy on a CD-ROM, (in Microsoft Word, Excel 97 or 2003 compatible, or PDF format).

### **Full Proposal Content:**

#### **Volume 1: Technical Proposal**

Each section of the Technical Proposal should start on a new page. The offeror should allocate the allowed pages within the technical proposal.

- **Cover Page** (the Cover Page is not included in the Page Limitation) This should include the words “Technical Proposal” and the following:
  - 1) BAA number;
  - 2) Title of Proposal;
  - 3) Identity of Prime Offeror and complete list of Subcontractors, if applicable;
  - 4) Technical contact (name, address, phone/fax, electronic mail address)
  - 5) Administrative/business contact (name, address, phone/fax, electronic mail address)
  - 6) Duration of effort (differentiate basic effort and options)

- **Table of Contents** (the Table of Contents is not included in the Page Limitation)

- **Statement of Work**

A Statement of Work (SOW) shall clearly detail the scope and objectives of the effort and the technical approach. It is anticipated that the proposed SOW will be incorporated as an attachment to the resultant award instrument. To this end, such proposals must include a severable self-standing SOW **without** any proprietary restrictions, which can be attached to the contract award. Include a detailed listing of the technical tasks/subtasks organized by year.

- **Technical Concept**

The Technical Concept shall include thorough description of the proposed technology innovation and relevant technical risk areas. This section should detail the S&T challenges, the plan to address the challenges, and the resultant benefits of performing this effort, including the return on investment inherent in the proposed solution.

This section should also include a description of the potential Naval/Marine Corps relevance and contributions of the proposed effort to the goals of this BAA. This section should include a plan for demonstrating and evaluating the operational effectiveness of the offeror’s proposed products or processes and the ease of implementation. Future incorporation of the proposed work in the fleet should be addressed by including the following:

For each component of the system that will be independently mounted, describe the function(s) of the component in the system including:

**Salient Characteristics:**

- Fatigue; hardness; extreme temperature and shock testing; sand/FOD (foreign object damage) erosion rate resistance; impact/ballistic damage resistance; rain erosion resistance; compatibility with solvents, oils, fuels, anti-icing fluids, and other maintenance fluids; thickness measurements; UV light damage resistance; fungus resistance; Reparability (removal and reapplication); corrosion resistance; adhesion
- Materials (exotic materials, hazardous materials, or requirement for special storage or handling)

### Operational Parameters:

- Mean Time Between Failure
- Mean Time To Repair
- Man-hours to Repair/Operating Hour
- Mean Logistics Delay Time
- Repair Cost

### **Fleet Introduction Cost Estimation**

This section shall include cost estimations of technology transition to the rotary wing aircraft fleet, logistics, and life cycle costs. The specific estimates that should be addressed are as follows:

At the component level, each component of the system:

- Development Cost through TRL6;
- Estimated Development Cost to TRL9;
- Estimated Unit Procurement Cost – assuming 5000, 10,000, and 50,000 blades;
- Estimate of Maintenance and Replacement Cost over the Lifecycle (30 years);
- Estimate of Mean Flight Hours Before Removal
- Estimate of Cost of Overhaul
- Maintenance Plan
- Estimate Costs of Data Rights for Software;
- Estimated Costs of Logistics, i.e., Documentation, Spare Parts and Material Inventories, Etc.

At the System level:

- Development Cost through TRL6 (from current TRL);
- Estimated Cost to manufacture and test unit capable of full scale demonstration at government testing facility (TRL5 unit testing to TRL6);
- Estimated Development Cost to TRL9 (from TRL6);
- Estimated Unit Procurement Cost – assuming 5000, 10,000, and 50,000 blades;
- Estimated Installation Cost of System;
- Estimate of Maintenance and Replacement Cost over the Lifecycle (30 years);
- Estimate of Mean Flight Hours Before Removal;
- Estimate of Cost of Overhaul;
- Maintenance Plan
- Estimate Costs of Data Rights for materials products, application/installation equipment, software;
- Estimated Costs of Logistics, i.e., Documentation, Spare Parts, Technical Data Packages, Training, and Materials Inventories, etc.

- **Project Schedule and Milestones**

A summary of the schedule of events and milestones that includes all or part of the following: materials qualification, preliminary design testing, risk reduction testing, production readiness review, and Flight testing, and deliverable for transition.

Example:

Task	Description	2009				2010				2011				2012				2013			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Materials qualification	[Black bar]																			
	Abrasion resistance	[Black bar]																			
	Rain erosion resistance	[Black bar]																			
	Solvent/mechanical prop.	[Black bar]																			
	Repairability/cost	[Black bar]																			
	Materials downselect	[Black bar]																			
2	Preliminary Design	[Black bar]																			
	Whirling arm coupon tests	[Black bar]																			
	Process reliability and documentation	[Black bar]																			
	Integration with rotor blades	[Black bar]																			
3	Risk reduction Testing	[Black bar]																			
	Midspar fatigue test	[Black bar]																			
	De-icing test	[Black bar]																			
	Repair demo	[Black bar]																			
	Inspection demo	[Black bar]																			
4	Production Readiness Review	[Black bar]																			
	Blade tooling and process development	[Black bar]																			
	Detailed blade integration design	[Black bar]																			
	Ground flight safety test	[Black bar]																			
5	Flight Test	[Black bar]																			
	Document results	[Black bar]																			
	Document for repair insertion	[Black bar]																			
6	Transition	[Black bar]																			

- **Assertion of Data Rights and/or Rights for Products or Computer Software:**

For a contract award an offeror may provide with its proposal assertions to restrict use, release or disclosure of data and/or computer software and materials product that will be provided in the course of contract performance. The rules governing these assertions are prescribed in Defense Federal Acquisition Regulation Supplement (DFARS) clauses 252.227-7013, 7014 and 7017. These clauses may be accessed at the following web address:

<http://www.acq.osd.mil/dpap/dars/dfarspgi/current/index.html>

The Government may challenge assertions that are provided in improper format or that do not properly acknowledge earlier federal funding of related research by the offeror.

- **Deliverables**

The offeror must provide a detailed description of the results and products to be delivered inclusive of the timeframe in which they are to be delivered. The SOW should include a summary listing of these deliverables.

- **Personnel Qualifications**

A discussion of previous accomplishments and work by the proposed personnel in this, or closely related areas and the qualifications of the investigators. Key personnel resumes shall be attached to the proposal and will not count toward the page limitations.

- **Management Approach**

Include discussion of the overall approach to the management of this effort, including brief discussions of the total organization; use of personnel; project/function/subcontractor relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors (if any) will be involved.

- **Facilities**

Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment, Hardware, Software, or Information required, by version and/or configuration.

- **Past Performance**

Offeror shall provide all relevant past performance for similar or related work under contracts currently being performed or completed during the last three (3) years. The offeror may include Federal, State and Local Government and private sector contracts. Offerors that represent newly formed entities, without prior contract experience, should identify previous contract and subcontract experience for all key personnel identified in the proposal.

The contractor shall provide the following information for each such contract:

1. Contract Number
2. Customer/Agency
3. Contracting Officer and Technical Point of Contact (names and phone numbers)
4. Brief Description of Scope of Work
5. Contract Type
6. Award Price
7. Total Labor-Hours of Effort
8. Period of Performance
9. Contract Deliverables

## **Volume 2: Cost Proposal**

The Cost Proposal shall consist of a cover page and two parts. Part 1 will provide a detailed cost breakdown of all costs by cost category by calendar/fiscal year, and Part 2 will provide a Cost breakdown by task/sub-task using the same task numbers in the Statement of Work. Options must be separately priced.

Although not required but provided for informational purposes only, detailed instructions, entitled “Instructions for Preparing Cost Proposals for Contracts and Agreements”, including a sample template for preparing costs proposals for contracts may be found at ONR’s website listed under the ‘Acquisition Department – Contracts & Grants Submitting a Proposal’ link at:

[http://www.onr.navy.mil/02/how\\_to.asp](http://www.onr.navy.mil/02/how_to.asp)

## Cover Page

The submission of cost or pricing data in accordance with FAR 15.403.4 **is mandatory if the Offerer's proposed cost exceeds \$650,000.00**. The words "Cost Proposal" should appear on the cover page in addition to the following information:

- 1) BAA number;
- 2) Title of Proposal;
- 3) Identity of prime offeror and complete list of subcontractors/sub-recipients, if applicable;
- 4) Technical contact (name, address, phone/fax, electronic mail address);
- 5) Administrative/business contact (name, address, phone/fax, electronic mail address) and;
- 6) Duration of effort (differentiate base effort and options)
- 7) Summary statement of proposed costs
- 8) Cognizant DCAA and DCMA point of contact, address, phone/fax, electronic mail address (if available)

**Part 1:** Detailed breakdown of all costs by cost category by calendar/fiscal year. Cost categories include:

- Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates
- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. (Must show base amount and rate)
- Proposed contractor-acquired equipment such as computer hardware for proposed research projects should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Where possible, indicate purchasing method (competition, price comparison, market review, etc.)
- Travel – Number of trips, destinations, duration, etc
- Subcontract – A cost proposal as detailed as the offeror's cost proposal will be required to be submitted by the subcontractor. The subcontractor's or subrecipient's cost proposal can be provided in a sealed envelope with the offeror's cost proposal or will be obtained from the subcontractor prior to award;\*
- Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate
- Materials – Specifically itemized by cost element. An explanation of any estimating factors, including their derivation and application, shall be provided. Where possible, indicate purchasing method (competition, price comparison, market review, etc.)
- Other Directs Costs, particularly any proposed items of equipment or facilities. Equipment and facilities generally must be furnished by the contractor/recipient.

(Justifications must be provided when Government funding for such items is sought).  
 Include a brief description of the offeror's procurement method to be used  
 (Competition, engineering estimate, price comparison, market review, etc.)

- Fee/Profit including fee percentage.

\* Note: DoD Federal Acquisition Regulation provision 252.215-7003 (48 CFR § 252.215-7003) is incorporated into this solicitation by reference. The offeror is to exclude excessive pass-through charges from subcontractors. The offeror must identify in its proposal the percentage of effort it intends to perform and the percentage to be performed by each of its proposed subcontractors. If more than 70 percent of the total effort will be performed through subcontracts, the offeror must include the additional information required by the above-cited clause.

**Part 2:** Cost breakdown by task/sub-task corresponding to the same task numbers (or work breakdown structure) in the Statement of Work. When options are contemplated, options must be separately identified and priced by task/sub-task corresponding to the same task numbers in the Statement of Work.

### 3. Significant Dates and Times-

<b>Anticipated Schedule of Events</b>		
<b>Event</b>	<b>Date (MM/DD/YY)</b>	<b>Time (EDT)</b>
White Paper Due Date	04/15/08	2:00 p.m.
Notification for Full Proposal*	05/08/08	
Full Proposals Due Date	06/20/08	2:00 p.m.
Notification of Selection for Award*	08/04/08	
Contract Award*	10/03/08	

\* These dates are estimates as of the date of this announcement.

### 4. Submission of Late Proposals –

In accordance with FAR Subpart 15.208 any proposal, modification, or revision, that is received at the designated Government office after the exact time specified for receipt of proposals is “late” and will not be considered unless it is received before award is made, the contracting officer determines that accepting the late proposal would not unduly delay the acquisition and:

- (a) If it was transmitted through an electronic commerce method authorized by the announcement, it was received at the initial point of entry to the Government infrastructure not later than 2:00 p.m. one working day prior to the date specified for receipt of proposals; or
- (b) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of proposals and was under the Government’s control prior to the time set for receipt of proposals; or
- (c) It was the only proposal received.

However, a late modification of an otherwise timely and successful proposal, that makes its terms more favorable to the Government will be considered and may be accepted. Acceptable evidence to establish the time or receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the Government office designated for receipt of proposals by the exact time specified in the announcement, and urgent Government requirements preclude amendment of the announcement closing date, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the announcement on the first work day on which normal Government processes resume. NOTE: Due to changes in security procedures since September 11, 2001, the time required for hard-copy written materials to be received at the Office of Naval Research has increased. Thus it is recommended that any hard-copy proposal be mailed several days before the deadline established in the solicitation so that it will not be received late thus be ineligible for award consideration.

The contracting officer must promptly notify any offeror if its proposal, modifications, or revision was received late and must inform the offeror whether its proposal will be considered, unless contract award is imminent and the notice prescribed in FAR Subpart 15.503 (b) would suffice.

NOTE: Due to changes in security procedures since September 11, 2001, the time required for hard-copy written materials to be received at the Office of Naval Research has increased. Thus it is recommended that any hard-copy proposal be mailed several additional days before the deadline established in the solicitation so that it will not be received late and thus be ineligible for award consideration.

#### **5. Address for the Submission of White Papers and Full Proposals –**

Office of Naval Research  
Attn: Dr. David A. Shifler  
875 N. Randolph Street  
Code 332, Room 631  
Arlington, VA 22203-1995  
Telephone Number: (703) 696-0285

**NOTE: WHITE PAPERS AND PROPOSALS SENT BY FAX OR E-MAIL WILL NOT BE CONSIDERED.**

## **V. EVALUATION INFORMATION**

### **1. Evaluation Criteria –**

White Papers and Full Proposals will be evaluated using the following criteria. The Primary Tier technical factors are significantly more important than the Secondary Tier technical factors. All factors within a tier are of equal importance to each other. Although Cost is less important than either the Primary tier technical factor set or the Secondary tier technical factor set, its importance will increase with the degree of quality of the proposals in relation to the other factors on which selection is based or when the cost is so significantly high as to diminish the value of the proposal's technical superiority to the Government:

#### **Technical:**

##### Primary Tier

- Overall scientific and technical merits of the proposal
- Extent that proposed technology at a TRL of 5 or below at the time of submittal has the ability to achieve TRL 6 at the completion of this program targeted for 2013
- Return on Investment of proposed solution

##### Secondary Tier

- Ease of Implementation of Solution
- Past performance of offeror, or key personnel if the company is a new entity
- The offeror's capabilities, related experience, facilities, techniques or unique combinations of these which are integral factors for achieving the proposal objectives
- The qualifications, capabilities, and experience of the proposed Principal Investigator, team leader, or key personnel who are critical in achieving the proposal objectives

#### **Cost:**

- Cost of proposed work relative to technical value.
- Realism of the proposed budgetary costs and availability of funds.

For proposed awards to be made as contracts to large businesses, the socio-economic merits of each proposal will be evaluated based on the extent of the offeror's commitment in providing meaningful subcontracting opportunities for small business concerns, HUB Zone small business concerns, small disadvantaged business concerns, woman-owned small business concerns, veteran-owned small business concerns, service disabled veteran-owned small business concerns and historically black colleges or universities and minority institutions.

The Government will evaluate options for award purposes by adding the total cost for all options to the total cost for the base requirement. The evaluation of options will not obligate the Government to exercise the options at anytime during contract performance.

## **2. Evaluation Panel –**

Technical and cost proposals submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR Subparts 3.104-4 and 15.207. The cognizant Program Officer and other Government scientific experts will perform the evaluation of technical proposals. Restrictive notices notwithstanding, one or more support contractors may be utilized as project and subject-matter-expert technical consultants. Similarly, support contractors may be utilized to evaluate cost proposals. However, proposal selection and award decisions are solely the responsibility of Government personnel. Each support contractor's employee having access to technical and cost proposals submitted in response to this BAA will be required to sign a non-disclosure statement prior to receipt of any proposal submissions.

## **VI. AWARD ADMINISTRATION INFORMATION**

### **1. Administrative Requirements -**

- The North American Industry Classification System (NAICS) code - The North American Industry Classification System (NAICS) code for this announcement is 541712 with a small business size standard of 500 employees.
- CCR - Successful offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to award of any grant, contract, cooperative agreement, or other transaction agreement. Information on CCR registration is available at <http://www.onr.navy.mil/02/ccr.htm>.
- Certifications - Proposals should be accompanied by two separate certification packages: one certification package for Federal Acquisition Regulation (FAR) clauses in accordance with FAR Subpart 4.1201, and one certification package for Defense Federal Acquisition Regulation Supplement (DFARS) clauses. FAR certification packages should be completed online with ORCA at <https://orca.bpn.gov/login.aspx>. Supplemental DFARS and contract specific certification packages should be completed via the ONR website at [http://www.onr.navy.mil/02/rep\\_cert.asp](http://www.onr.navy.mil/02/rep_cert.asp). For contract proposals, the certification package is entitled, "Representations and Certifications for Contracts."
- Subcontracting Plans - Successful contract proposals that exceed \$550,000, submitted by all but small business concerns, must be supported by a Small Business Subcontracting Plan in accordance with FAR 52.2 19-9 (d) (9), prior to award.
- Models - Model contract documents may be found on the ONR website at [http://www.onr.navy.mil/02/model\\_awards.asp](http://www.onr.navy.mil/02/model_awards.asp).

## **2. Reporting -**

The following is a sample of deliverables that could be required under a typical research effort:

- Monthly Technical and Financial Progress Reports
- Presentation Material
- Computer model or Spreadsheet source code used for calculations
- Other Documents or Reports
- Earned Value Management Data
- Final Report

Specific software and hardware deliverables may be proposed by each offeror and finalized during negotiations.

## **VII. OTHER INFORMATION**

### **1. Government Property/Government Furnished Equipment (GFE) and Facilities**

Each offeror must provide a very specific description of any equipment/hardware that it needs to acquire to perform the work. This description should indicate whether or not each particular piece of equipment/hardware will be included as part of a deliverable item under the resulting award. Also, this description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. The purchase on a direct reimbursement basis of special test equipment or other equipment that is not included in a deliverable item will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror's proposals.

Government research facilities and operational military units are available and should be considered as potential government-furnished equipment/facilities. These facilities and resources are of high value and some are in constant demand by multiple programs. It is unlikely that all facilities would be used for any one specific program. The use of these facilities and resources will be negotiated as the program unfolds. Offerors should explain as part of their proposals which of these facilities are critical for the project's success.

### **2. Security Classification**

In order to facilitate intra-program collaboration and technology transfer, the Government will attempt to enable technology developers to work at the unclassified level to the maximum extent possible. If access to classified material will be required at any point during performance, the Offeror must clearly identify such need prominently in its proposal.

### **3. Department of Defense High Performance Computing Program**

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S & T and RDT & E communities with use-access to very powerful high performance computing systems. Awardees of ONR contracts, grants, and assistance instruments may be eligible to use HPCMP assets in support of their funded activities if ONR Program Officer approval is obtained and if security/screening

requirements are favorably completed. Additional information and an application may be found at <http://www.hpcmo.hpc.mil/>.

#### 4. Protection of Proprietary and Sensitive Information

The parties acknowledge that, during performance of the contract or grant agreement resulting from this BAA, the recipient may require access to certain proprietary and confidential information (whether in its original or derived form) submitted to or produced by the Government. Such information includes, but is not limited to, business practices, proposals, designs, mission or operation concepts, sketches, management policies, cost and operating expense, technical data and trade secrets, proposed Navy budgetary information, and acquisition planning or acquisition actions, obtained either directly or indirectly as a result of the effort performed on behalf of ONR. The recipient shall take appropriate steps not only to safeguard such information, but also to prevent disclosure of such information to any party other than the Government. The recipient agrees to indoctrinate company personnel who will have access to or custody of the information concerning the nature of the confidential terms under which the Government received such information and shall stress that the information shall not be disclosed to any other party or to recipient personnel who do not need to know the contents thereof for the performance of the contract/agreement. Recipient personnel shall also be informed that they shall not engage in any other action, venture, or employment wherein this information will be used for any purpose by any other party.

#### 5. Project Meetings and Reviews

Individual program reviews between the ONR sponsor and the performer may be held as necessary. Program status reviews may also be held to provide a forum for reviews of the latest results from experiments and any other incremental progress towards the major demonstrations. These meetings will be held at various sites throughout the country. For costing purposes, offerors should assume that 40% of these meetings will be at or near ONR, Arlington VA and 60% at other contractor or government facilities. Interim meetings are likely, but these will be accomplished via video telephone conferences, telephone conferences, or via web-based collaboration tools.

#### 6. Submission of Questions

Any questions regarding this solicitation must be provided to the Science and Technology Point of Contact and/or Business Point of Contact listed in this solicitation. All questions shall be submitted in writing by electronic mail.

Questions regarding white papers must be submitted by 2:00 P.M. Eastern Daylight Time on 1 April 2008. Questions after this date and time may not be answered, and the due date for submission of the white papers may not be extended.

Questions regarding full proposals must be submitted by 2:00 P.M. Eastern Daylight Time on 6 June 2008. Questions after this date and time may not be answered, and the due date for submission of the proposals will not be extended.