



Flight Deck Thermal Management

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2), the Department of Defense Grants and Agreements Regulations (DoDGARS) 22.315(a) and 35.016, and DoD's Other Transaction Guide for Prototypes Projects, USD(AT&L), OT Guide, Jan 2001. A formal Request for Proposals (RFP), other solicitation, 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 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

SPECIAL NOTICE: All Grant Applications submitted under this BAA shall be submitted via the Grants.gov "APPLY" function. No other form of paper or electronic submission will be accepted unless the prospective grantee organization applies for and receives a waiver in accordance with Section IV, Application and Submission Information Paragraph 5 entitled "Submission of Grant Proposals to Grants.gov" below.

All attachments to grant applications submitted through Grants.gov must be in Adobe Portable Document Format. Proposals with attachments submitted in word processing, spreadsheet, or any format other than Adobe Portable Document Format will not be considered for award.

Due to a large increase in the volume of grant proposals received by the federal government recently, the Grants.gov portal designated for receipt of all grants proposals is struggling to handle the number of proposals being submitted. Applicants who have registered with Grants.gov are urged to submit their proposals electronically **at least three days before the date and time proposals are due**. Such early submission will allow a proposer time to submit its proposal to ONR through an alternative electronic method in the event the proposal is not validated (i.e., accepted) by Grants.gov after two days. See the special notice on alternate submission under section IV.5 below in this BAA.

1. Agency Name -

Office of Naval Research

2. Research Opportunity Title – Flight Deck Thermal Management

3. Program Name – ONR Enterprise Enablers (EPE) Future Naval Capabilities (FNC) Program: EPE-FY11-01 – Flight Deck Thermal Management

4. Research Opportunity Number - ONR BAA 09-031

5. Response Date -

A) White Paper Due Date: 6 August 2009 by 2:00PM (Eastern Time)

B) Full Proposal Due Date: 23 October 2009 by 2:00PM (Eastern Time)

6. Research Opportunity Description -

The Office of Naval Research (ONR) is interested in receiving proposals for technologies that will meet the demands for Flight Deck Thermal Management for U.S. Navy Amphibious Ships. A jointly funded DARPA/ONR program is currently pursuing cooled heat pipe technologies for arresting the ship thermal issues. **Therefore this research opportunity is soliciting alternatives to heat pipes for arresting the thermal impact from the exhaust plumes of new and impending aircraft on amphibious ships. Both above deck (one-inch height maximum) and below deck thermal management systems are being solicited. Preference will be given to proposed systems that offer both above-deck and below deck options, are cost-effective to install or maintain, and last the service life of the ship.**

Thermal management technologies need to:

- Spread, conduct, and/or dissipate heat with minimal thickness and minimal weight impact
- Comply within deck-height/flight operations constraints and horizontal configuration
- Carry structural load and meet survivability requirements
- Integrate with ship structures
- Be installable in a shipyard environment
- Avoid generation of debris/products causing foreign object damage debris
- Be compatible with Navy non-skid coatings

Non-skid coatings are installed on the flight decks of U.S. ships. The effectiveness of proposed thermal management systems, whether placed above the current decks, or below the decks for forward fit situations, may be greatly affected by non-skid coatings. The materials evaluation will include adhesion of non-skids to potential thermal management systems (TMS) and measuring the thermal efficiency changes when non-skid coatings are applied to a proposed TMS. All evaluations of non-skid effects on thermal management systems will be conducted by an ONR contractor. ONR will be responsible for paying for and arranging the evaluations.

6.1 Background

Amphibious Assault Ships are designed to support Marine expeditionary forces for extended periods of time. These ships resemble smaller aircraft carriers and are capable of supporting Marine aircraft and landing craft. These large warships are designed to provide a rapid buildup of combat power ashore in the face of opposition. The LHA(R) amphibious assault ship is designed specifically to meet future Navy-Marine Corps requirements, able to support the expanded capability of 21st century expeditionary strike platforms such as the MV-22 Osprey helicopter and the F-35B Joint Strike Fighter airplanes.



Deployment of the MV-22 Osprey has caused ship flight deck buckling from the excessive heat impact from engine exhaust plumes. Navy studies have indicated that repeated deck buckling will cause deck failure at approximately 40 percent of planned ship life. With the upcoming deployment of the F-35B STOVL Joint Strike Fighter, it is anticipated that the engine exhaust plumes will have a severe thermo-mechanical impact on the non-skid surface and flight deck structure of ships. The MV-22 Osprey and the F-35 are capable of short take-off and vertical landing (STOVL). During STOVL operations of these aircraft, engine exhaust is angled or positioned downward, directing the hot exhaust onto the horizontal deck surface, thereby subjecting that surface to higher than normal temperatures. For the MV-22 the localized region of heating, surrounded by regions of cooler deck plate and mechanical constraints of the deck structure (longitudinal and transverse stiffening beams are located under the deck plate) has led to the observation of thermally induced buckling which appears after approximately 10 minutes of aircraft operation (while the aircraft is sitting on the deck turning rotors).

Currently there are no available solutions other than heavy structural modifications to mitigate deck buckling and thermo-mechanical deck failure. The goal of this effort is to exploit thermal management technologies that incorporate a thermally and functionally stable non-skid surface, (which meets Navy requirements for application, safety, and performance) to form an integrated deck thermal management system (DTMS) that mitigates the thermo-mechanical structural impact from the MV-22 and F-35B JSF engine exhaust plumes. It is anticipated that the integrated DTMS will be implemented on Navy LHD 1 and LHA 6 Class amphibious assault ships.

6.2 Key parameters

The components and systems of interest potentially include but are not limited to:

- Materials qualification
- Materials weight
- Thermal conductivity
- Thermal diffusivity

- Thermal capacity per sq. foot (uncoated)
- Thermal capacity per sq. foot (coated with Navy non-skid)
- Adhesion to non-skid coatings
- Thermal compatibility with Naval non-skid coatings
- Effectiveness with Naval non-skid coatings
- Aging from long-term thermal and/or mechanical effects
- Material mechanical properties
- Mechanical and thermal properties
- Effects of joining technologies
- Fatigue; extreme temperature and shock testing
- Non-ablative performance
- Resistance to UV radiation
- Impact damage resistance (estimated to be 200,000 kg) from aircraft landings
- Compatibility with solvents, oils, fuels, anti-icing fluids, and other maintenance fluids
- Quality control, batch or fabrication consistency of materials properties
- Resistance to wear and corrosion
- Foreign Object Damage (FOD) resistance
- Resistance to lightening strike
- Flammability
- Weight of thermal management system per square foot
- Impact to ship (e.g., center of gravity)
- Uninstalled cost of DTMS per square foot
- Estimated installed cost of DTMS per square foot – above deck
- Estimated installed cost of DTMS per square foot – below deck
- Estimated life of thermal management system
- Reliability and Maintainability
- Reparability (removal and reapplication)
- Integration of thermal management system with deck for back fit (likely above deck)
- Field service impact of application and removal (if needed)
- Interchangeability during ship deployment (if needed)
- Production size scale-up of thermal management system to full size components.
- Large Scale Ground and Flight tests –Thermal management system with candidate materials subject to scaled or actual heating rate and expected total heat loads
- Operations manual for DTMS
- Development of specifications for repair and removal
- Reparability manual
- Technical data package

6.3 Deliverables/Metrics

- Deck thermal management system capable of mitigating heat impact ranges:
 - **Heating rate of 16,000 to 24,000 BTU/minute (17 to 25 MJ/minute)**
 - **Total heat load capacity of 48,000 BTU to 2.2 MBTU over a time period.**
 (The above heating rates and loads are estimates and will vary according to specific flight operations and environmental conditions.)
- Maintain deck temperature below 300 degrees Fahrenheit for all operations
- Production plan for implementation in thermal management system
- Implementation plan for transition from TRL 6 to TRL 9, including production equipment requirements and associated costs
- Ability to work with ship systems integrator
- Failure Modes and Effect Analysis
- Technical Data Package (production and engineering)

6.4 Notional Schedule (based on contract/grant awards by October 1, 2010; accelerated schedule desired)

Task	Objectives	Technical Criteria	Completion Date
Task 1. Evaluate materials properties (physical, mechanical and thermal) of proposed DTMS technology	<p>Measure thermal properties to avoid corrosion/mechanical issues</p> <p>Measure degradation /aging effects of materials to thermal loads and mechanical effects</p> <p>Evaluate potential joining technologies for mechanical and thermal effects</p>	<p>Joining technologies will not degrade from magnitude of thermal nor from expected thermal/mechanical load cycles</p> <p>Materials are corrosion resistant</p> <p>Materials can withstand expected mechanical impacts from ship operations</p>	4QFY2011
Task 2. Compatibility of DTMS with non-skids (Parallel activity with Task I, conducted by a pre-existing ONR FNC, EPE FY08-09).	<p>Evaluate impact of TMS materials coated with Navy non-skids to overall thermal management efficiency</p> <p>Measure cooling rate and capacity of non-skid/DTMS combinations</p> <p>Evaluate long-term non-skid adhesion to TMS materials/DTMS system</p>	<p>Capable of maintaining deck temperature below 300 degrees Fahrenheit.</p> <p>Cooling rate and capacity of combined non-skid/DTMS are not reduced by more than 20 percent</p> <p>Combined system still meets cooling rate/capacity goals of program</p>	1QFY2012

<p>Task 3. Develop passively cooled DTMS. Construct and demonstrate thermal management system with a minimum 2 ft x 2 ft mat with a total panel thickness of 1 inch maximum.</p>	<ol style="list-style-type: none"> 1. Perform lab-based test to evaluate alternative thermal management technologies. Begin downselect of technologies based on performance and scalability of thermal management system design. 2. Best performing systems will be selected for continued development. 	<ol style="list-style-type: none"> 1. Minimum 2 ft x 2ft panel. Demonstrate that surface temperature remains <300°F when exposed to MV-22 exhaust plumes for 90 minutes (simulated pre-takeoff/takeoff conditions and JSF exhaust plumes at 120 seconds landing conditions). 	<p>1QFY12</p>
<p>Task 4. Construct large-scale Deck Thermal Management System</p>	<ol style="list-style-type: none"> 1. Assemble large-scale thermal management system (s) for land-based testing 	<ol style="list-style-type: none"> 1. Large scale (24 ft x 24 ft minimum) system(s) constructed 	<p>2QFY12</p>
<p>Task 5. Evaluate Large-Scale Thermal Management System with Land-Based testing.</p>	<ol style="list-style-type: none"> 1. Demonstrate the feasibility of ship integration with structure, deck fittings, lights, transitions, producibility, etc. 2. Demonstrate structure is water tight and corrosion resistant. TRL=4/5 	<ol style="list-style-type: none"> 1. Execute testing for effectiveness of non-skid coating with DTMS. Visual-surface defects of the coating should not greater than .045” in dia and .025” in height, but meet performance per MIL-PRF-24667C. 2. Demonstrate effectiveness and capacity of large scale (24 ft x 24 ft minimum) DTMS system; surface temperature < 300°F when exposed to MV-22-scale exhaust plumes for 90 minutes and JSF-scale exhaust plumes for 2 minutes. 3. Large scale DTMS systems meet mechanical loads and cycles expected during ship operations 	<p>1QFY13</p>
<p>Task 6. Perform Non Recurring Engineering (NRE) to Integrate Thermal Management System onto flight deck. Inspect, assess, and certify performance of thermal management system.</p>	<ol style="list-style-type: none"> 1. Issue Navy certification. TRL=6 	<ol style="list-style-type: none"> 1. Demonstrate at each inspection point, less than 1% coating loss or loss of adhesion using non-destructive testing methods. 2. Meet thermal management rates and total loads from aircraft operations and ship mechanical impacts 	<p>1QFY14</p>

Work funded under a BAA may include basic research, applied research and some advanced technology development (ATD). With regard to any restrictions on the conduct or outcome of work funded under this BAA, ONR will follow the guidance on and definition of “contracted fundamental research” as provided in the Under Secretary of Defense (Acquisition, Technology and Logistics) Memorandum of 26 June 2008. As defined therein, the definition of “contracted

fundamental research,” in a DoD contractual context, include [research performed under] grants and contracts that are (a) funded by Research, Development, Test, and Evaluation Budget Activity 1 (Basic Research), whether performed by universities or industry or (b) funded by Budget Activity 2 (Applied Research) and performed on campus at a university or by industry. ATD is funded through Budget Activity 3. In conformance with the USD(AT&L) guidance and National Security Decision Directive 189, ONR will place no restriction on the conduct or reporting of unclassified fundamental research, except as otherwise required by statute, regulation or Executive Order. Normally, fundamental research is awarded under grants with universities and under contracts with industry. ATD is normally awarded under contracts and may require restrictions during the conduct of the research and DoD pre-publication review of research results due to subject matter sensitivity. *As regards to the present BAA, the Research and Development efforts to be funded will consist of applied research and advanced technology development. The funds available to support awards are Budget Activity 2 and 3.*

7. Point(s) of Contact –

Questions of a technical nature should be submitted to:

Dr. David A. Shifler, Program Officer:
Office of Naval Research
Naval Materials Division, Code 332
875 N. Randolph Street
Arlington, VA 22203-1995
Email: david.shifler@navy.mil

Questions of a business nature should be submitted to:

Name: Lynnette Desorcie, Contract Specialist
Address: Office of Naval Research
Code: 0254
875 N. Randolph St.
Arlington, VA 22203-1995
Email: lynnette.desorcie@navy.mil

Questions of a security nature should be submitted to:

Derrick Shack
Information Security Specialist
Office of Naval Research
Security Department, Code 43
One Liberty Center
875 N. Randolph Street
Arlington, VA 22203-1995
Email Address: derrick.shack@navy.mil

Note: All UNCLASSIFIED communications shall be submitted via e-mail. All questions of an UNCLASSIFIED nature to the Technical Point of Contact (POC) shall be sent via e-mail with a copy

to the designated Business POC. Questions submitted within 2 weeks prior to a deadline may or may not receive a response.

Any CLASSIFIED questions shall be handled through the ONR Security POC. Specifically, any entity wanting to ask a CLASSIFIED question shall send an email to the ONR Security POC with copy to both the Technical POC and the Business POC stating that the entity would like to ask a CLASSIFIED question. DO NOT EMAIL ANY CLASSIFIED QUESTIONS. The Security POC will contact the entity and arrange for the CLASSIFIED question to be asked through a secure method of communication

8. Instrument Type(s) –

Awards shall the form of contracts or grants depending on the classification of the offeror. ONR reserves the right to award a different instrument type if deemed to be in the best interest of the Government. ONR expects that contract awards will be cost-type.

9. Catalog of Federal Domestic Assistance (CFDA) Number -

12.300

10. Catalog of Federal Domestic Assistance (CFDA) Title -

Basic and Applied Scientific Research (DoD)

11. Other Information -

This announcement is restricted to applied research and advanced technology development related to the development of a deck thermal management system compatible with the operations of amphibious assault ships. Contracts and grants made under this BAA are for scientific study and experimentation directed towards advancing the state of the art and implementing the DTMS for use.

THIS ANNOUNCEMENT IS NOT FOR THE ACQUISITION OF TECHNICAL, ENGINEERING AND OTHER TYPES OF SUPPORT SERVICES

II. AWARD INFORMATION

The amount and period of performance of each selected proposal will vary depending on the research area and the technical approach to be pursued by the selected offeror. The period of performance will vary depending on the progress in meeting the key performance parameters, but may be up to four years.

The estimated total amount of awards is \$12.5M anticipated to be made available over a four year period.

Estimated Total Amount of Funding Available (\$K):

FY11	FY12	FY13	FY14	Total
3000	4000	3500	2000	12.5 M

ONR anticipates that multiple awards will result from this BAA. The typical award will likely be in the range of \$200K to \$1,000K per year, but awards outside this range are also possible. For white papers that propose efforts that are considered of particular value to the Navy, but either exceed available budgets or contain certain tasks or applications that are not desired by the Navy, ONR may suggest a full proposal with reduced effort to fit within expected available budgets or an effort that refocuses the tasks and application of the technology to maximize the benefit of the Navy.

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 the ONR POC to discuss its area of interest. 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 the research performed in this research opportunity may lead to technologies that are export restricted. Only U.S. persons are permitted to work on such efforts due to export control restrictions on the technologies involved in this BAA. The term “U.S. persons” is defined in the International Traffic in Arms Regulations (ITAR) – 22 CFR § 120.1 et seq.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process -

White Paper Submission

Each White Paper should state that it is submitted in response to this announcement. White Papers shall be submitted directly to the Technical Point of Contact (TPOC) identified in Paragraph 7 above. Each White Paper will be evaluated by the government to determine whether the technology advancement proposed appears to be of particular value to the Department of the Navy. The submitters of White Papers judged to be of “particular value” to the Navy will be so identified in the initial response provided by ONR and encouraged to submit Full Proposals. The submitter of any White Paper not judged by the ONR reviewers as being of “particular value” to the Navy is ineligible to submit a Full Proposal under this solicitation. The due date for receipt of White Papers is stated in paragraph 3 below.

Full Proposal Submission

The due date for receipt of Full Proposals is stated in paragraph 3 below. It is anticipated that final selections for awards will be on or about 6 November 2009. As soon as the final proposal evaluation process is completed, each Offeror will be notified via email or letter of its selection or non-selection for an award.

2. Content and Format of White Papers/Full Proposals –

White Papers and Full Proposals submitted under the BAA are expected to be unclassified.

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.

IMPORTANT NOTE: Titles given to the White Papers/Full Proposals should be descriptive of the work they cover and not be merely a copy of the title of this solicitation.

The proposal format and content identified below are applicable to the submission of proposals for contracts. As noted in Paragraph 5 below, proposals seeking grants are to be formatted as required by Standard Form 424 (R&R), which is available via the internet at <http://www.grants.gov/>.

a. WHITE PAPERS

White Paper Format

- Paper Size – 8.5 x 11 inch paper
- Margins – 1 inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- No more than 10 pages
- Copies – Electronic (email) submissions provided on or before the date and time specified in the BAA are acceptable. Email submission attachments in either

Microsoft® Word or Excel compatible or .PDF format should be sent to the attention of Dr. David A. Shifler at: david.shifler@navy.mil.

White Paper Content

- **Cover Page:** The Cover Page shall be labeled “WHITE PAPER” and shall include the BAA number, proposed title, technical points of contact, telephone number, facsimile number, and e-mail address.
- **Technical Concept:** A description of the technology innovation and technical risk areas.
- **Operational Naval Concept:** A description of the project objectives, the concept of operation for the new capabilities to be delivered, and the expected operational performance improvements.
- **Operational Utility Assessment Plan:** A plan for demonstrating and evaluating the operational effectiveness of the Offeror’s proposed products or processes in field experiments and/or tests in a simulated environment.
- **Rough Order of Magnitude (ROM)** - Provide a ROM cost estimate segregated by task and a total cost of the proposed effort.

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 or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages –
 - **Volume I - Technical Proposal** shall not exceed 35 pages. (Cover page, Table of Contents, and personnel resumes shall not be included in the page limit).
 - **Volume II – Cost Proposal** - There are no page limitations
- Copies – one (1) original, an appropriate number of hard copies as discussed with the cognizant Program Officer, and one electronic copy on a DVD (in Microsoft® Word (preferred for Volume I) or Excel 97 compatible or .PDF format).
- If a grant is sought, the full proposal should be submitted electronically on Standard Form 424 (R&R) at <http://www.grants.gov/> as delineated below.

Full Proposal Content

VOLUME 1: Technical Proposal

- **Cover Page:** 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) and;
 - 6) Duration of effort (differentiate basic effort and any proposed options)

- **Table of Contents:** An alphabetical/numerical listing of the sections within the proposal, including corresponding page numbers.

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

Submission of the SOW without restrictive markings is the offeror’s affirmation that the SOW is non-proprietary and releasable in response to Freedom of Information Act (FOIA) requests.

- **Technical Approach and Justification:** The major portion of the proposal should consist of a clear description of the technical approach being proposed. This discussion should provide the technical foundation/justification for pursuing this particular approach/direction and why one could expect it to enable the objectives of the proposal to be met. Offerors should limit the number of pages for this section to 15 pages.

- **Operational Naval Concept:** A description of the project objectives, the concept of operation for the new capabilities to be delivered, and the expected operational performance improvements.

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

Salient Materials Characteristics:

- Materials weight
- Thermal conductivity
- Thermal diffusivity
- Thermal capacity per sq. foot
- Adhesion to non-skid coatings
- Thermal compatibility with Naval non-skid coatings
- Compatibility of candidate joining technologies to thermal and mechanical loads

and cycles

- Aging from long-term thermal and/or mechanical effects
- Material mechanical properties
- Mechanical and thermal properties
- Effects of joining technologies
- Resistance to ablation
- Fatigue; extreme temperature and shock testing
- Impact damage resistance (estimated to be 200,000 kg) from aircraft landing
- Compatibility with solvents, oils, fuels, anti-icing fluids, and other maintenance Fluids
- Reliability and maintainability
- Reparability (removal and reapplication)
- Quality control, batch or fabrication consistency of materials properties
- Resistance to wear and corrosion
- Resistance to Foreign Object Damage (FOD)
- Resistance to lightening strike
- Flammability
- Weight of thermal management system per square foot
- Impact to ship (e.g., center of gravity)
- Materials (exotic materials, hazardous materials, or requirement for special storage or handling)
- Installed cost of DTMS per square foot (above deck)
- Installed cost of DTMS per square foot (below deck)

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 of the DTMS to the amphibious ships. The specific estimates that should be addressed are as follows:

At the component level, each component of the system:

- Development Cost through TRL6 (from current level);
- Estimated Development Cost to TRL9 (from TRL 6);
- Estimated Unit Procurement Cost – assuming 1, 10, and 20 DTMS systems;
- Estimate of Maintenance and Replacement Cost over the Lifecycle (40 years);
- 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 1, 10, and 20 systems;
- Estimated Installation Cost of System (both below deck and above deck options);
- Estimate of Maintenance and Replacement Cost over the Lifecycle (40 years);
- 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.

- **Operational Utility Assessment Plan:** A plan for demonstrating and evaluating the operational effectiveness of the Offeror's proposed products or processes in field experiments and/or tests in a simulated environment.

- **Project Schedule and Milestones:** A summary of the schedule of events and milestones:

- **Assertion of Data Rights and/or Rights in 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 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://farsite.hill.af.mil/VFDFARA.HTM>

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.

If it is determined that data rights are not applicable, indicate no assertions are being made in the proposal submission.

- **Deliverables:** A detailed description of the results and products to be delivered inclusive of the timeframe in which they will be delivered.

- **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization; use of personnel;

project/function/ subcontractor/subrecipient relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors/subrecipients (if any) will be involved. Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment/Hardware/Software/ Information required, by version and/or configuration.

• **Current and Pending Project and Proposal Submissions:** Offerors are required to provide information on all related current and pending support for ongoing projects and proposals, including subsequent funding in the case of continuing contracts and grants. Offerors shall provide the following information of any related or complementary proposal submissions from whatever sources (e.g., ONR, Federal, State, local or foreign government agencies, public or private foundations, industrial or other commercial organizations).

The information must be provided for all proposals already submitted or submitted concurrently to other possible sponsors, including ONR. Concurrent submission of a proposal to other organizations will not prejudice its review by ONR:

- 1) Title of Proposal and Summary;
- 2) Source and amount of funding (annual direct costs; provide contract and/or grant numbers for current contracts/grants);
- 3) Percentage effort devoted to each project;
- 4) Identity of prime Offeror and complete list of subcontractors, if applicable;
- 5) Technical contact (name, address, phone/fax, electronic mail address)
- 6) Administrative/business contact (name, address, phone/fax, electronic mail address);
- 7) Duration of effort (differentiate basic effort);
- 8) The proposed project and all other projects or activities requiring a portion of time of the PI and other senior personnel must be included, even if they receive no salary support from the project(s);
- 9) The total award amount for the entire award period covered (including indirect costs) must be shown as well as the number of person-months per year to be devoted to the project, regardless of source of support; and
- 10) State how projects are related to the proposed effort and indicate degree of overlap.

• **Qualifications:** A discussion of the qualifications of the proposed Principal Investigator and any other key personnel. Include resumes for the Principal Investigator and other key personnel and full curricula vitae for Principal Investigators and consultants. The resumes and curricula vitae shall be attached to the proposal and will not count toward the page limitations.

VOLUME 2: Cost Proposal

INSTRUCTIONS FOR PROPOSALS FOR CONTRACTS

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 or contractor fiscal year and Part 2 will provide a cost breakdown by task/sub-task and government fiscal year corresponding to the task numbers in the proposed Statement of Work. Options must be separately priced.

The detailed cost breakdown required in Part 1 below must be provided in the format provided in the spreadsheet file found with this solicitation at FedBizOpps or at the link: <http://www.onr.navy.mil/02/baa/docs/09-031CostProposalFormat.xls> (Note this does not apply to grant proposals submitted through Grants.gov). This spreadsheet format is also required for subcontractors. This spreadsheet should be appropriately modified to include any of the Offeror's indirect rates not mentioned below and otherwise be consistent with the Offeror's accounting system. The electronic submission of this Excel spreadsheet shall be in a "useable condition" to aid the Government with its evaluation. The term "useable condition" indicates that the spreadsheet shall visibly include and separately identify, with notation or color, within each appropriate cell, any and all inputs, formulas, calculations, links, etc. The Offeror shall in no way provide "value only spreadsheets" liken to that of a hard copy. The Offeror shall submit with its cost proposal supporting information for each aforementioned cost element consistent with Offeror's cost accounting system. The Offeror shall provide exhibits as necessary to substantiate the cost elements.

Cover Page: The use of the SF 1411 is optional. The words "Cost Proposal" should appear on the cover page in addition to the following information:

- BAA number
- Title of Proposal
- Identity of prime Offeror and complete list of subcontractors, if applicable
- Technical contact (name, address, phone/fax, electronic mail address)
- Administrative/business contact (name, address, phone/fax, electronic mail address) and
- Duration of effort (separately identify basic effort and any proposed options)

Contracts, Part 1: (See weblink above to required format for Part 1) Detailed breakdown of all costs by cost category by calendar or Contractor fiscal year:

- Direct Labor – Individual labor categories or persons, with associated labor hours and unburdened direct labor rates. Provide escalation rates for out years.
- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. and their applicable allocation bases. If composite rates are used, provide the calculations used in deriving the composite rates.
- Travel –The proposed travel cost should include the following for each trip: the purpose of the trip, origin and destination if known, approximate duration, the number of travelers, and the estimated cost per trip must be justified based on the organizations historical average cost per trip or other reasonable basis for estimation. Such estimates and the resultant costs claimed must conform to the applicable Federal cost principals.

- Subcontracts – A cost proposal as detailed as the Offeror’s cost proposal will be required to be submitted by the subcontractor. The subcontractor’s cost proposal can be provided in a sealed envelope with the Offeror’s cost proposal or may be sent directly to the Government. Subcontractor proposals must be received and reviewed prior to contract award. The prime contractor should perform and provide a cost/price analysis of each subcontractor’s cost proposal.*
***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 formed through subcontractors, the offeror must include the additional information required by the above-cited clause.
- Consultants – Provide a breakdown of the consultant’s hours, the hourly rate proposed, any other proposed consultant costs, a copy of the signed Consulting Agreement or other documentation supporting the proposed consultant cost, and a copy of the consultant’s proposed statement of work if it is not already separately identified in the prime contractor’s proposal.
- Materials & Supplies – Provide an itemized list of all proposed materials and supplies including quantities, unit prices, proposed vendors (if known), and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Contractor Acquired Equipment or Facilities – Equipment and/or facilities are normally furnished by the Contractor. If acquisition of equipment and/or facilities is proposed, a justification for the purchase of the items must be provided. Provide an itemized list of all equipment and/or facilities costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Other Direct Costs – Provide an itemized list of all other proposed other direct costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Options – The Base Period of Performance and Option Periods must be priced at the submission of the proposal. Unpriced options will not be included in any resulting contract or agreement.
- Fee/Profit (Contract Proposals Only) – Profit or fee is not allowed on direct costs for plant equipment or real property or in cost-sharing contracts.

Note: Indicate if you have an approved Purchasing/Estimating System and/or describe the process used to determine the basis of reasonableness (e.g., competition, market research, best value analysis) for subcontractors, consultants, materials, supplies, equipment/facilities, and other direct costs.

Part 2 : Cost breakdown by task/sub-task by Government Fiscal Year corresponding to the same task breakdown in the proposed Statement of Work. When options are contemplated, options must be separately identified and priced by task/subtask.

3. Significant Dates and Times –

Anticipated Schedule of Events

<u>EVENT</u>	<u>DATE</u>	<u>TIME (EASTERN TIME)</u>
FY11 White Papers Due Date	August 6, 2009	2:00 pm
Notification of Initial Navy Evaluations of FY11 White Papers*	September 1, 2009	
Full FY11 Proposal Due Date	October 23, 2009	2:00 pm
Notification of Selection for tentative FY11 Award(s)*	November 6, 2009	
Issued FY11 Awards (Goal)*	June 1, 2010	

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

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. Materials submitted through the U.S. Postal Service, for example, may take seven days or more to be received, even when sent by Express Mail. Thus any hard-copy proposal should be submitted long enough before the deadline established in the solicitation so that it will not be received late and thus be ineligible for award consideration.

4. Submission of Late Proposals –

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:

- 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 5:00 P.M. one working day prior to the date specified for receipt of proposals; or
- 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
- 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 at any time it is received 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.

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.

5. Submission of Grant Proposals through Grants.gov

(NOT APPLICABLE TO PROPOSALS FOR CONTRACTS)

Detailed instructions entitled “Grants.Gov Electronic Application and Submission Information” on how to submit a Grant proposal through Grants.gov are under the Acquisition Department — Submitting a Proposal section of the website at http://www.onr.navy.mil/02/docs/FY09_GrantsGovApp_and_Submission_Information.pdf.

Grant proposals shall be submitted through [Grants.gov](http://www.grants.gov) using the mandatory Grants.gov form(s) from the application package template associated with the BAA on the Grants.gov website. The use of the optional forms from the application package template associated with the BAA is highly encouraged. To be considered for award, applicants must include the ONR Department Code in Block 4 entitled ‘Federal Identifier’ of the Standard Form (SF) 424 R&R. The proper Department Code is that of the Program Officer identified earlier in Paragraph I.7, which is ONR 332 – Dr. David Shifler.”

White Papers (pre-proposals) should not be submitted through the Grants.gov Apply process but rather should be sent directly to ONR. White paper submissions should be emailed directly to the appropriate ONR Program Officer.

By completing Blocks 18 and 19 the Grant Applicant is providing the certification on lobbying required by 32 CFR Part 28. Refer to Section VI, ‘Award Administration Information’ entitled “Certifications” for further information.

For electronic submission of grant and cooperative agreement full proposals, several one-time actions must be completed in order to submit an application through Grants.gov. These include obtaining a Dun and Bradstreet Data Universal Numbering System (DUNS) number, registering with the Central Contract Registration (CCR), registering with the credential provider, and registering with Grants.gov. See www.grants.gov, specifically www.grants.gov/GetStarted.

Use the Grants.gov Organization Registration Checklist at http://www.grants.gov/applicants/register_your_organization.jsp which will provide guidance through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called 'MPIN' are important steps in the CCR registration process. Applicants who are not registered with CCR and Grants.gov should allow at least 21 days to complete these requirements. The process should be started as soon as possible. Any questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

Special Notices Relative to Grant Applications to be submitted through Grants.Gov:

All attachments to grant applications submitted through Grants.Gov must be in Adobe Portable Document Format. Proposals with attachments submitted in word processing, spreadsheet, or any format other than Adobe Portable Document Format will not be considered for award.

Process to Obtain a Waiver from the Use of Grants.Gov for Submission of Full Grant Proposals: If a prospective grantee is unable to comply with the requirement to use Grants.Gov "APPLY" for submission of a grant or cooperative agreement application under this BAA or finds it would be an excessive burden to comply with this requirement, a waiver request may be submitted not less than 30 calendar days prior to the closing date for receipt of Full Proposals. Such request should be submitted by the Electronic Business Point of Contact listed in the CCR for the organization and should contain the Organization/Individual's name, address, telephone number, and email address. The request should state the reason for the request in sufficient detail so a decision can be made. The Waiver Request should be submitted to the ONR Acquisition Department point of contact or Grants Officer listed in the BAA. Such request can be sent by registered mail or email. The "postmark" stamp on the envelope or the time annotated on the email will be used to determine timeliness of the request. A decision and response will be issued within 14 calendar days of receipt of the request by ONR. Foreign Grantees who are not registered in CCR may request a waiver on that basis since CCR registration is integral to the Grants.Gov application process.

Special Notice on Alternate Submission

The following alternative to submitting proposals to the Grants.gov website is provided for use under this BAA. Proposals using the alternative submission process will be accepted only if Grants.gov is not accepting the proposal and the offeror has called the Grants.gov helpline and received a case ticket number. If Grants.gov has not within two days by return e-mail validated your proposal submission, call Grants.gov (1-800-518-4726) to obtain a case ticket number. An e-mail from Grants.gov indicating rejection of the grant proposal will not be accepted in place of a Grants.gov case ticket number.

a. Upload the proposal using the form on the following website:
<http://onroutside.onr.navy.mil/aspprocessor/BAAPE/>.

b. Use this form to upload your grant proposal directly to the Office of Naval Research. All fields in the form are required to be completed, including the assigned Grants.gov case ticket number. Your completed package should also include a signed, scanned proposal cover sheet with the

signature of your authorized organizational representative as part of the 'Attachments Form'. Submit one file per proposal in PDF format. **DO NOT submit any parts of the proposal separately. Technical proposals, endorsements, etc. should be on the Grants.gov ATTACHMENTS form.**

c. Use the naming convention below for all uploaded proposals.

*Convention: (ONRBAA09-XXX_Topic_LeadPI_University.pdf)

*Example: ONRBAA09-012_NOPP_MSMITH_UNIVRESEARCH.PDF

d. Once a document has been submitted, a "Thank You" page will appear and an e-mail will be sent to the address provided. If you do not receive an e-mail confirmation, your file has not been properly received. You should immediately contact the business point of contact listed in the BAA or the ONR Grants BAA Administrator.

6. Address for the Submission of Full Proposals for Contracts.

Hard copies of Full Proposals for Contracts should be sent to the Office of Naval Research at the following address:

Office of Naval Research
Attn: Dr. David A. Shifler
ONR Department Code: 332
875 North Randolph Street
Arlington, VA 22203-1995

V. EVALUATION INFORMATION

1. Evaluation Criteria –

Award decisions will be based on a competitive selection of proposals resulting from a scientific and cost review. Evaluations will be conducted using the following evaluation criteria:

- 1) Overall scientific and technical merits of the proposal;
- 2) The offeror's capabilities, related experience, facilities, techniques or unique combinations of these which are integral factors for achieving the proposal objectives;
- 3) The qualifications, capabilities and experience of the proposed Principal Investigator (PI), team leader and key personnel who are critical in achieving The proposal objects; and
- 4) The realism of the proposed costs and availability of funds.

The Technical factors are significantly more important than cost. The technical factors are of equal weight. The degree of importance of cost will increase with the degree of equality of the proposals in relation to the other factors on which selection is to be based, or when the cost is so

significantly high as to diminish the value of the proposal's technical superiority to the Government.

For proposed awards to be made as contracts to other than small 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 businesses, small disadvantaged businesses, woman-owned small businesses, HUBZone small businesses, veteran-owned small businesses, service disabled veteran-owned small businesses, historically black colleges and 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 basic requirement. Evaluation of options will not obligate the Government to exercise the options during contract performance.

2. Evaluation Panel –

Technical and cost proposals submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR 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 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”.
- Central Contractor Registry (CCR) - Successful Offerors not already registered in the CCR will be required to register in CCR prior to award of any grant, contract, or other transaction agreement. Information on CCR registration is available at <http://www.onr.navy.mil/02/ccr.htm>.
- Subcontracting Plans - Successful contract proposals that exceed \$550,000, submitted by all but small business concerns, will be required to submit prior to award a Small Business Subcontracting Plan in accordance with FAR 52.219-9.
- Certifications – Proposals for contracts and assistance agreements should be accompanied by a completed certification package.

Contracts and Other Transaction Agreement Proposals:

For contracts, in accordance with FAR 4.1201, prospective contractors shall complete and submit electronic annual representations and certifications at <http://orca.bpn.gov>. In addition to completing the Online Representations and Certifications Application (ORCA), proposals must be accompanied with a completed DFARS and contract specific representations and certifications. These "DFARS and Contract Specific Representations and Certifications", i.e., Section K, may be accessed under the Contracts and Grants Section of the ONR Home Page at http://www.onr.navy.mil/02/rep_cert.asp.

Grants:

Grant awards greater than \$100,000 require a certification of compliance with a national policy mandate concerning lobbying. Grant applicants shall provide this certification by electronic submission of SF424 (R&R) as a part of the electronic proposal submitted via Grants.gov (complete Blocks 18 and 19); The following certification applies to each applicant seeking federal assistance funds exceeding \$100,000:

CERTIFICATION REGARDING LOBBYING ACTIVITIES

- (1) No Federal appropriated funds have been paid or will be paid by or on behalf of the applicant, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the applicant shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The applicant shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Grants not through Grants.gov:

Proposers seeking grants who have received Grants.gov waiver approval for awards greater than \$100,000 shall complete and submit electronic representations and certifications at the Contracts and Grants Section of the ONR Home Page at http://www.onr.navy.mil/02/rep_cert.asp .

2. Reporting -

The following are samples of data deliverables that are typically required under a research effort:

- *Technical and Financial Progress Reports
- *Presentation Materials
- *Final Report

Additional data deliverables may be proposed and finalized during negotiations. Research performed under contracts may also include the delivery of software, prototypes, and other hardware deliverables.

VII. OTHER INFORMATION

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

Each proposer 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 other 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. 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.

5. Submission of Questions

Any questions regarding this solicitation must be provided to the Technical Point of Contact and 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 Time on **17 July 2009**. Questions after this date and time may not be answered, and the due date for submission of the white papers will not be extended.

Questions regarding **full proposals** must be submitted by 2:00 P.M. Eastern Time on **06 October 2009**. Questions after this date and time may not be answered, and the due date for submission of the proposals will not be extended.

Answers to questions submitted in response to this BAA will be addressed in the form of an Amendment and will be posted to one or more of the following webpages:

- Federal Business Opportunities (FEDBIZOPPS) Webpage – <https://www.fbo.gov/>
- Grants.gov Webpage – <http://www.grants.gov/>
- ONR Broad Agency Announcement (BAA) Webpage - <http://www.onr.navy.mil/02/baa/>

6. Roles of the Navy Warfare Centers

The Navy Warfare Centers will have a primary role for the integration and experimentation/demonstration process. They will also participate in the development of technologies where there are unique capabilities and facilities of interest to ONR. They will also assist ONR in the management, engineering, and administrative tasks and will provide government furnished equipment (GFE) and facilities that will be used for system level integration and portions of experiment execution.

