



Broad Agency Announcement (BAA) for the Office of Naval Research (ONR) Navy and Marine Corps FY2018 Basic Research Challenge (BRC) Program

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016, the Department of Defense Grants and Agreements regulations (DoDGARS) 22.315(a) and DoD's Other Transaction Guide for Prototypes Projects, USD(AT&L), OT Guide, Jan 2001. A formal Request for Proposals (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 and fund all, some, or none of the proposals in response to this announcement. 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 submitted under this BAA as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

This BAA is intended for proposals related to basic research projects. Proposals that do not meet the criteria specified by this document will not be reviewed. Awards will take the form of contracts, grants, and cooperative agreements, as appropriate.

For grant proposals submitted through Grants.gov, offerors should include responses to the Representations indicated in Section VII-A iv. and v. of this BAA and located at <http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal.aspx>.

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I. GENERAL INFORMATION

A. Agency Name

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

B. Research Opportunity Title

Broad Agency Announcement (BAA) for the Office of Naval Research's (ONR) Navy and Marine Corps FY2018 Basic Research Challenge (BRC) Program

C. Program Name

ONR Basic Research Challenge Program

D. Research Opportunity Number

N00014-17-S-BA13

E. Response Date

White Papers: Friday, 18 August 2017

Full Proposals: Friday, 17 November 2017

F. Research Opportunity Description

The Office of Naval Research (ONR) is interested in receiving proposals for basic research relating to the following topic areas:

[Topic 1](#) Randomized Numerical Linear Algebra for Large-Scale, Efficient Matrix Computations

[Topic 2](#) Levitated Optomechanics

[Topic 3](#) Exploring Compositional Space to Predict and Evolve Multi-Principal Element Alloys

[Topic 4](#) Guaranteed Performance of Multibody Control Systems

ONR Basic Research Challenge Topic 1

Randomized Numerical Linear Algebra for Large-Scale, Efficient Matrix Computations

Background: The development of matrix computation algorithms, which implement matrix multiplication, principal component analysis, low-rank subspace estimation, singular value decompositions and least-squares solvers, began over 60 years ago in conjunction with the development of von Neumann stored program computers. Today, scientists and engineers can draw upon these “classical” algorithms, such as those in the Matrix Laboratory and Linear Algebra Package toolboxes, to produce reliable results for small to mid-sized matrices which can fit into the cache memory of a central processing unit that implements the calculations. The search for faster, more efficient numerical algorithms continues. From the early days of digital computers to today, linear algebra and probability theory are the two pillars which underpin all applied and computational mathematics. Advances in these fields during the past three decades resulted in two breakthroughs worth noting: Fast Multipole Method which has revolutionized Computational Electromagnetics; and Compressed Sensing which has enabled new sensor and data sampling strategies requiring far less data compared to the classical Shannon-Nyquist sampling limit.

These algorithms have served science and technology well; however, they are beginning to reach their limits as the sizes of data sets, and the capabilities of modern sonar and electromagnetic sensors (for example) have grown orders of magnitude even compared to just a decade ago. In fact, modern sensor technology is outpacing our ability to rapidly process the enormous data sets produced by them.

Objective: The discovery of algorithms based on randomized projections that reduce the effective dimensionality of the problem has reinvigorated numerical linear algebra research. Randomized algorithms are a radical departure from standard methods, because they use techniques such as random sampling of large data matrices and “random projection matrices” as fundamental computational resources. It is very likely that new randomized algorithms will dramatically change how we perform linear algebraic computations. The main objective of this BRC is to improve our mathematical understanding of randomized projections and develop a new set of computational tools to attack important and ubiquitous problems in data and physical sciences.

Randomization is used as a computational tool to reduce the size of the problem and compute answers close to those obtained by using the full size matrix. This is a very different way of thinking about the problem: Conventional thinking has viewed randomization as strictly a useful means to model data. Randomized methods have been demonstrated to increase computational speed and enhance memory efficiency. In the last 10 years or so, we have seen the development of a whole suite of algorithms that dramatically improve the status quo. For example (1) Algorithms for factoring a matrix in a single pass over the data, the so-called “streaming algorithms”; (2) The asymptotic complexity for computing a rank- k approximation to a matrix of size $m \times n$ has been reduced from $O(m \cdot n \cdot k)$ for classical methods to $O(m \cdot n \cdot \log k)$ for randomized methods; (3) Randomized algorithms can be organized to vastly reduce communication requirements for data stored “out-of-core” or on distributed memory, leading to huge improvements in speed; and (4) New algorithms for computing full factorizations that have

the same asymptotic complexity as classical methods, but are in practice five times faster than state-of-the-practice codes.

Research Concentration Areas: Research areas that will achieve this objective include (1) Rigorous mathematical framework that improve our mathematical understanding of randomized projections; (2) Combining randomized projections with additional structures to develop a geometric sketch of the dataset, allowing for high-accuracy classical methods to be brought in to operate directly on the original data obtaining high-accuracy results; and (3) New methods that exploit randomized algorithms applied in the context of forward and backward scattering for simulating fluid flows, fluids-structure interactions, acoustic propagation, and modeling advanced composite materials, to name a few.

Possible performers would most likely be small research groups with expertise in applied mathematics, computer science and signal processing.

Anticipated Resources: It is anticipated that 2-4 awards under this topic will be no more than an average of \$500K per year for four years for a program total of \$6M.

Research Topic Chiefs:

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ONR Basic Research Challenge Topic 2

Levitated Optomechanics

Background: The last decade has witnessed remarkable progress in the area of optomechanics – the controlled coupling of coherent optical fields and massive mechanical oscillators. The majority of optomechanical modalities isolate a single optical mode and couple it to a mechanical oscillator either by tying it to the mechanical motion of the entire cavity (e.g. waveguide) or through tethering it to a mechanical resonator/membrane (e.g. suspended mirror). The advent of cooling techniques applicable to these optomechanical systems allows for the realization of quantum mechanical behavior in mesoscopic mechanical oscillator systems; studies of nonlinear dynamics; enhancement of the measurement sensitivity to minute forces; and an avenue for studying foundational aspects of quantum mechanics.

More recently, levitation based nano- and microscale oscillators have garnered increased attention. The principle advantage of these systems is the freedom from mechanical dissipation that is normally introduced through clamps, tethers, or other physical connections to the environment. The removal of these physical connections allows for: 1) extremely long quantum coherence times (even at room temperature), 2) the ability to dynamically reconfigure the mechanical resonator through tuning of the optical trapping potential, and 3) the oscillator to simultaneously possess a number of fundamental modes, thus providing a natural platform to study rotational mechanics.

Objective: A major goal of this BRC is to achieve the quantum ground state of a mechanical oscillator, which is critical for fully exploring new frontiers opened by levitated optomechanics. Within the last few years, preliminary theoretical and experimental investigations have uncovered a new frontier in the optical control of matter with implications for the foundations of quantum mechanics, statistical mechanics and thermodynamics, high resolution sensing and metrology as well as quantum science. To date levitated nanoparticles have been actively cooled to temperatures as low as 450 μ K, which corresponds to ~ 63 phonons in the harmonic oscillator. Levitated optomechanical systems have also addressed some of the foundational questions associated with equilibrium and nonequilibrium nano- and microscale statistical mechanics and thermodynamics. This BRC is interested in new research along directions that provide insight into classical statistical mechanics and thermodynamics. The expectation is that once the quantum ground state is achieved, experiments exploring quantum statistical mechanics will be possible for the first time at mesoscopic length scales. Another feature of levitated optomechanical systems of interest to this BRC is their sensitivity to extremely feeble forces and large quality factors. The current state of the art in force sensitivity is $\sim zN/\sqrt{\text{Hz}}$ with optomechanical system achieving a quality factor of 1011. This is not only useful for fundamental science studies into forces mediated by the quantum vacuum (Casimir force, friction) and gravity, but also for technologies such as inertial sensors and timekeeping.

Potential fundamental science questions resolved by this BRC would be (1) is quantum wavefunction collapse an objective feature of quantum systems?, (2) are quantum models beyond the Schrodinger equation necessary?, (3) are quantum translational and rotational friction experimentally observable?, (4) are there short-range corrections to the gravitational constant G ?, and (5) how does the Casimir force scale from the nano- to microscale, and how/why does it change from attractive to repulsive? The technology developed to address these questions will have the added benefit of realizing a variety of novel sensors.

Research Concentration Area: (1) quantum foundations – experimentally explore quantum/classical boundary, test for quantum translational and rotational friction; (2) quantum information - approaches for leveraging spins and levitated particles for information processing; (3) precision measurement - interrogate gravity corrections and Casimir forces at short length scales; (4) thermodynamics/statistical mechanics - exquisite control to constrain dynamics and then follow microscopic trajectories to build up ensemble averages; and (5) material spectroscopy - levitating objects removes substrate induced effects in performing spectroscopy and microscopy on materials, which is especially crucial for nanomaterials.

Possible performers would most likely be small to mid-size research groups with expertise in some combination/subset of the following: optical physics knowledgeable in laser trapping and cooling, experimental quantum optics familiar with optical tests of quantum mechanics,

“conventional” optomechanics, theoretical optical physicists, material or condensed-matter scientists that can design and fabricate novel samples, and precision measurement and sensing.

Anticipated Resources: It is anticipated that 2-3 projects under this topic will be awarded for four years for a program total of \$6M.

References:

1. A. A. Geraci, S. B. Papp, and J. Kitching, “Short-range force detection using optically cooled levitated microspheres,” *Phys. Rev. Lett.* Vol. 105, 101101 (2010).
2. D. E. Chang, C. A. Regal, S. B. Papp, D. J. Wilson, J. Ye, O. Painter, H. J. Kimble and P. Zoller, “Cavity opto-mechanics using an optically levitated nanosphere,” *Proc. Natl. Acad. Sci.* vol. 107, 1005 (2010).
3. B. Rodenburg, L. P. Neukirch, A. N. Vamivakas, and M. Bhattacharya, “Quantum model of cooling and force sensing with an optically trapped nanoparticle,” *Optica* vol. 3, 318 (2016).

Research Topic Chief:

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ONR Basic Research Challenge Topic 3

Exploring Compositional Space to Predict and Evolve Multi-Principal Element Alloys

Background: Traditional metallurgy has been based on alloys comprised of one or two principal elements. The concept of multi-principal element (MPE) alloys, which are based generally on five or more principal elements in similar amounts, opens a vast new compositional space leading to millions of unexplored alloy possibilities. Only now can attention be directed to understanding the potential of MPE alloys which, at the atomic level, vary greatly from conventional alloys because bonding and elemental distribution are governed by different rules, resulting in unique and remarkable properties. Very little basic research has been directed at understanding how these differences will influence properties and behavior, and to identify the variables that can be controlled. Of primary importance are the underlying fundamentals of thermally activated defects, mass transport and kinetics, deformation and strengthening mechanisms, or surface passivation kinetics in this new class of materials.

There are more elements than crystal sublattices in MPE alloys and those sublattices can be occupied by any element, generating complex local atomic environments. The different atomic sizes and bond configurations produce severe lattice distortions and large elastic misfits, giving rise to novel properties that cannot be obtained in conventional materials. Moreover, these unique atomic arrangements raise several fundamental questions. In cases where any atom can occupy any lattice site, what is the nature of a dislocation? How do these distorted dislocations interact with alloy obstacles as they move through the lattice? This requires establishment of new theories since there are no physics-based models to explain and predict solid solution strengthening in concentrated, multi-element metallic materials. These atomic-level features of MPE alloys also

challenge conventional understanding of atomic diffusion and mass transport, phase transitions and transformations, and surface thermodynamics and kinetics.

Objective: The objective of this BRC program is to establish a foundational understanding of the multi-scale science of MPE structural alloys to include atomic ordering, local lattice distortions, dislocation structures and behaviors, and diffusion kinetics, phase transformations, and the mechanisms by which they influence the microstructures and properties of MPE alloys. This foundational knowledge, combined with new concepts of their use, will introduce a new pathway to rapidly predict and create advanced MPE alloys with unique properties which cannot be achieved by the conventional alloying approach. As stated before, discovering and characterizing the right MPE alloys out of millions of elemental compositions and site permutations will provide a serious scientific challenge. These challenges will be addressed using high-throughput computational and experimental tools, which will establish a fundamental understanding of atomic-scale structure of MPE alloys and mechanisms which influence the material's microstructures and properties, ultimately enabling researchers to predict, create, and optimize the compositions, processing, constituent microstructures, properties, and performance of novel MPE alloys.

Success will be measured in this BRC by the depth of foundational, science-based understanding that will lead to a knowledge base enabling novel design strategies for new materials with properties better than those achievable by conventional alloy design. A primary criterion will be that these materials will offer significantly improved performance capabilities in extreme environments and temperatures, as compared with current one or two principal element alloys. The scientific understanding and models shall be able to elicit and predict structural MPE alloy microstructures, their evolution (diffusion), and their deformation. The scientific principles derived from this research shall be pervasive across all MPE alloy families, forming the initial basis for exploring MPE alloys with unique functional properties.

Research Concentration Areas: This BRC program requires a multidisciplinary integrated computational, experimental, and multi-scale characterization effort including, but not limited to, (1) high-throughput CALPHAD computations of phase equilibria/non-equilibrium solidification; (2) high-throughput experiments using materials libraries with microstructural gradients; (3) deformation, strengthening modeling and validation; (4) multi-scale microstructural characterization; (5) phase stability/phase transformation kinetics; (6) lattice distortions and dislocations; (7) materials synthesis/characterization; and (8) multi-scale mechanics.

Possible performers would most likely be a small research group with interdisciplinary expertise in quantum chemistry, materials science, materials informatics, interfacial and surface science, mechanics, 2D, 3D, and 4D atomistic computational simulations and modeling, statistical mechanics, molecular dynamics, phase-field modeling, non-equilibrium processing, CALPHAD and multi-scale thermodynamic and kinetic computational tools. These multi-scale modelling efforts would be validated and verified using state-of-the-art atomic-scale analytical tools.

Anticipated Resources: Priority will be given to an interdisciplinary multi-university research team capable of achieving the foundational scientific principles of how and why MPE alloys have

properties not seen in traditional one or two main element alloys via an integrated computational, experimental, and multi-scale characterization effort. It is anticipated that there will be a single award under this topic for no more than an average of \$1350K per year for four years for a program total of \$5.4M.

References:

1. D.B. Miracle, B. Majumdar, K. Wertz, S. Gorsse, “New strategies and tests to accelerate discovery and development of multi-principal element structural alloys,” *Scripta Materialia*, vol. 127, pp.195-200 (2017).
2. D.B. Miracle, “Critical Assessment 14: High entropy alloys and their development as structural materials,” *Materials Science and Technology*, vol. 31, pp.1142-1147 (2015).
3. M.C. TRoparevsky, J.R. Morris, M.Daene, Y.Wang, A.E. Lupini, G.M. Stocks, “Beyond atomic sizes and hume-rothery rules: understanding and predicting high entropy alloys,” *Journal of Metals*, vol. 67 issue 10 pp.2350-2363 (2015).

Research Topic Chiefs:

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ONR Basic Research Challenge Topic 4

Guaranteed Performance of Multibody Control Systems

Background: State of the art methods for achieving guaranteed stability for both deterministic and uncertain control systems are based on well-developed mathematical tools such as gain margin analysis, μ analysis, etc. The quantities produced by these methods are commonly accepted as evidence that a system will perform as desired. For example, 6 dB of gain margin and 45° of phase margin are typical requirements for rigid body control loops such as aircraft pitch rate. On the other hand, μ analysis is a more recently developed method, and guidelines on either μ values or the applied uncertainty levels have not been widely established. However, both of these methodologies ultimately answer the same question: will an individual system be stable? The question of whether an individual system will properly coordinate with other systems and achieve a mission objective must be answered by other means. The state of the art method for answering this question is to obtain an empirical estimate of performance through extensive system testing with random parameter variations. This approach is known as Monte Carlo analysis. An advantage of this method is that it can account for nonlinearities, initial conditions, etc. Disadvantages of this method are that it can require an impractically large number of full mission simulations to cover a sufficient number of parameter combinations, and the level of confidence in the final result is only as good as the refinement of the parameter grid.

As multibody control systems play increasingly critical roles in the Navy’s ability to project force, the need for improved analysis and design methods becomes more pressing. Multibody control systems are increasingly prevalent in military and civilian applications ranging from autonomous automobiles to defensive systems. When these systems fail to perform, the consequences range from a car accident to the failure to stop a nuclear strike. Failure to perform can occur even when all of the subsystem components function exactly as designed. These problems occur because a mathematical framework for proving performance does not exist. Consequently, scientists and

engineers must conduct thousands or even millions of system tests using random parameter combinations to empirically estimate performance.

Objective: The proposed research seeks to develop methods with computational cost similar to stability analysis but with the power to provide a mathematically guaranteed assessment of mission performance for multibody control systems. The complexity of such systems poses significant challenges to developing a design guaranteed to achieve performance objectives. Some of the key challenges are due to time varying system parameters, uncertainty in component parameters, sensitivity to initial conditions, and nonlinearities. For example, consider the case of multiple vehicles operating cooperatively to eliminate an incoming threat that can execute evasive maneuvers. Only one vehicle needs to intercept the threat for the engagement to be successful. Gain margin or μ analysis can be used to demonstrate guaranteed stability for any single vehicle within the system. However, with current capabilities, the best that can be done for ensuring that the system of vehicles will successfully counter the threat is to run time domain simulations of the full engagement. All of the simulations are based on unique combinations of system parameters such as initial conditions, gains, bandwidths, etc. The probability of success for the system is then estimated by analyzing the terminal states from each simulation. The typical design approach is to use a rule of thumb for setting interceptor maneuverability requirements and then assess system performance with a Monte Carlo analysis. Design iterations consequently become expensive due to the computational cost. Alternatively, if this research is successful, the mathematical framework will be in place to efficiently guarantee system performance based on the bounded threat dynamics and uncertainties. As with gain margin analysis, the framework can be also used to design control gains and system parameters that guarantee a successful engagement.

The success of this proposed research will be measured by how far the gap between current capabilities for a single body system and the ability to mathematically guarantee performance of a multibody system can be bridged. In practical terms, a successful research program will also produce validation data for the mathematical framework. Since this program will be limited to basic research, the validation data will be obtained numerically via simulations. The main validation points are (1) correct performance prediction for a multibody control system, and (2) algorithm efficiency relative to the Monte Carlo method.

Research Concentration Areas: The expected outcomes of this research are (1) A mathematical framework to efficiently assess performance of a multibody control system; (2) A metric for guaranteed performance in terms of system stability and the terminal states of the bodies; and (3) A design methodology to derive system parameters that will provide guaranteed performance. A set of benchmark problems based on threat engagements of varying complexity will be provided to exercise any proposed solutions. These problems will serve as a means to quantify how the research succeeded in developing an efficient mathematical framework to guarantee performance of a multibody system.

Possible performers include small research groups with expertise in mathematics, physics, and controls for multibody dynamics. Expertise in air vehicle dynamics, guidance algorithms, modeling, and simulation would be helpful in demonstrating the capability to solve a practical problem.

Anticipated Resources: It is anticipated that 6 awards under this topic will be no more than an average of \$250K per year for four years for a program total of \$6M.

References:

1. H.W. Bode, Network Analysis and Feedback Amplifier Design, New York, D. Van Nostrand Company, 1945
2. A. Packard, J. Doyle, "The complex structured singular value," Automatica 29.1 (1993), 71-109.

Research Topic Chief:

Dr. Brian Holm-Hansen, ONR Code 351, (703) 588-1047, brian.holm-hansen@navy.mil

G. Point(s) of Contact (POC)

Questions of a Technical nature shall be submitted to:

The ONR Research Topic Chief whose topic best matches the Offeror's field of interest.

Questions related to BRC Policy shall be submitted to:

Dr. Reginald Williams
Basic Research Challenge (BRC) Program Manager
Code 03R
Office of Naval Research
875 North Randolph Street
Arlington VA 22203-1995
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Questions of a Business nature, and suggestions for improvement shall be submitted to:

Eugene Todd
Contract Specialist
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Questions of a Security nature should be submitted to:

Torri Woodfolk
Industrial Security Specialist
Office of Naval Research
Security Department, Code 43
One Liberty Center
875 North Randolph St.

Arlington, VA 22203-1995
Email Address: torri.powell@navy.mil

Note: All UNCLASSIFIED communications shall be submitted via e-mail to the Technical Point of Contract (POC) with a copy to the designated Business POC.

CLASSIFIED questions shall be handled through the ONR Security POC. Specifically, any entity wanting to ask a CLASSIFIED question shall send an UNCLASSIFIED email to the ONR Security POC with a 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.

Questions submitted within 2 weeks prior to a deadline may not be answered, and the due date for submission of the white paper and/or full proposal will not be extended.

Comments or questions shall be submitted via email and shall not be classified.

Amendments to this BAA will be posted to one or more of the following web pages:

- Federal Business Opportunities (FedBizOpps) Webpage – <https://www.fbo.gov/>
- Grants.gov Webpage – <http://www.grants.gov/>
- ONR Broad Agency Announcement (BAA) - <http://www.onr.navy.mil/en/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx>

H. Instrument Type

Awards may take the form of contracts, grants, cooperative agreements, and other transactions, as appropriate.

For information on the substantial involvement ONR expects to have in cooperative agreements, prospective Offerors shall contact the Technical Point of Contact identified in Part I, Section G, of this BAA.

Any contract award resulting from this BAA will incorporate the most current FAR, DFARS, NMCARS, and ONR clauses.

Any assistance instrument awarded under this announcement will be governed by the award terms and conditions that conform to DoD's implementation of OMB circulars applicable to financial assistance. Terms and conditions of new awards made after December 26, 2014, may include revisions to reflect DoD implementation of new OMB guidance in 2 CFR Part 200, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards." The DoD Terms and Conditions is located at <http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal/grants-terms-conditions.aspx>.

Examples of model contracts can be found on the ONR website at the following link: <http://www.onr.navy.mil/Contracts-Grants/submit-proposal/contracts-proposal/contract-model-awards.aspx>. ONR Contract specific representations and certifications can be accessed on the following page of the ONR website: <http://www.onr.navy.mil/en/Contracts-Grants/submit-proposal/contracts-proposal.aspx>.

Examples of model grants can be found on the ONR website at the following link: <http://www.onr.navy.mil/en/Contracts-Grants/submit-proposal/grants-proposal/model-grant.aspx>.

The model contracts and grants at the links above are only provided as examples. In the event of any conflict between these examples and current FAR, DFARS, NMCARS, or ONR clauses, current FAR, DFARS, NMCARS, or ONR clauses will govern.

I. Catalog of Federal Domestic Assistance (CFDA) Numbers

12.300 Office of Naval Research (ONR)

J. Catalog of Federal Domestic Assistance (CFDA) Titles

Basic and Applied Scientific Research (ONR)

K. Other Information

This BAA is intended for proposals related to basic research, applied research, or advanced technology development and that part of development not related to the development of a specific system or hardware procurement. 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 24 May 2010.

As defined therein the definition of “contracted fundamental research,” in a DoD contractual context, includes 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. The research

shall not be considered fundamental in those rare and exceptional circumstances where the applied research effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant.

Pursuant to DoD policy, research performed under grants and contracts that are a) funded by Budget Activity 2 (Applied Research) and NOT performed on-campus at a university or b)

funded by Budget Activity 3 (Advanced Technology Development) does not meet the definition of “contracted fundamental research.” 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 “contracted fundamental research,” except as otherwise required by statute, regulation or executive order. For certain research projects, it may be possible that although the research being performed by the prime contractor is restricted research, a subcontractor may be conducting “contracted fundamental research.” In those cases, it is the *prime contractor’s responsibility* in the proposal to identify and describe the subcontracted unclassified research and include a statement confirming that the work has been scoped, negotiated, and determined to be fundamental research according to the prime contractor and research performer.

Normally, fundamental research is awarded under grants with universities and under contracts with industry. Non-fundamental research is normally awarded under contracts and may require restrictions during the conduct of the research and DoD pre-publication review of such research results due to subject matter sensitivity. Potential offerors should consult with the appropriate ONR Technical POCs to determine whether the proposed effort would constitute basic research, applied research or advanced research.

FAR Part 35 restricts the use of Broad Agency Announcements (BAAs), such as this, to the acquisition of basic and applied research and that portion of advanced technology development not related to the development of a specific system or hardware procurement. Contracts and grants and other assistance agreements made under BAAs are for scientific study and experimentation directed towards advancing the state of the art and increasing knowledge or understanding.

Awards made under this BAA will be funding by Research, Development, Test and Evaluation Budget Activity 1 (Basic Research).

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

II. AWARD INFORMATION

A. Funding Amount and Period of Performance

ONR intends to award approximately \$23.4 million under this BAA competition over the life of this Basic Research Challenge. The funded amount and period of performance of each proposal selected for award may vary depending on the research topic area and the technical approach to be pursued by the Offeror selected.

B. Peer Reviews

In the case of proposals funded as basic research, ONR may utilize peer reviewers from academia, industry, and Government agencies to assist in the periodic appraisal of

performance under the awards, as outlined in ONR Instruction 3966.1A. Such periodic program reviews monitor the cost, schedule and technical performance of funded basic research efforts. The reviews are used in part to determine which basic research projects will receive continued ONR funding. Peer reviewers who are not U.S. Government employees must sign nondisclosure agreements before receiving full or partial copies of proposals and reports submitted by the basic research performers. Offerors may include travel costs for the Principal Investigator (PI) to attend the peer review.

III. ELIGIBILITY INFORMATION

- A.** All responsible sources from academia, industry and the research community 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 Small Business or other socio-economic participation. All businesses both small and large are encouraged to submit proposals and compete for funding consideration.
- B.** 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 Offerors are allowed so long as such arrangements are permitted under the sponsoring agreement between the Government and the specific FFRDC.
- C.** Navy laboratories, military universities 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 Technical 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 eligible sources from academia and industry that are submitting proposals under this BAA.
- D.** University Affiliated Research Centers (UARCs) are eligible to submit proposals under this BAA unless precluded from doing so by their Department of Defense UARC contract.
- E.** Teams are also encouraged and may 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.
- F.** Offerors should be aware of recent changes in export control laws. Offerors are responsible for ensuring compliance with all U.S. export control laws and regulations, including the International Traffic in Arms Regulation (ITAR)(22 CFR Parts 120 - 130) and Export Administration Regulation (EAR) (15 CFR Parts 730 – 774), as applicable. In some cases, developmental items funded by the Department of Defense are now included on the United States Munition List (USML) (22 CFR Part 121) and are therefore subject to ITAR jurisdiction. In other cases, items that were previously included on the USML have been

moved to the EAR Commerce Control List (CCL). Offerors should address in their proposals whether ITAR or EAR restrictions apply to the work they are proposing to perform for ONR. The ITAR and EAR are available online at <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>. Additional information regarding the President's Export Control Reform Initiative can be found at <http://export.gov/ecr/index.asp>.

Offerors must comply with all U.S. export control laws and regulations, including the ITAR and EAR, in the performance of any award or agreement resulting from this BAA. Offerors shall be responsible for obtaining any required licenses or other approvals, or license exemptions or exceptions if applicable, for exports of hardware, technical data, and software (including deemed exports), or for the provision of technical assistance.

- G. Cost sharing is not expected and will not be used as a factor during the merit review of any proposal hereunder. However, the Government may consider voluntary cost sharing if proposed.

IV. APPLICATION AND SUBMISSION INFORMATION

A. Application and Submission Process

White Papers: The due date for white papers is no later than 11:59 PM Eastern Daylight Time (EDT) on Friday, 11 August 2017. White papers are mandatory and shall be submitted by email to the attention of the Research Topic Chief(s) relating to the topic area of interest. If an Offeror does not submit a white paper before the specified due date and time, it is not eligible to participate in the remaining full proposal submission process and is not eligible for funding. Each white paper shall state that it is submitted in response to this BAA (BAA N00014-17-S-BA13) and cite the particular sub-section of the Research Opportunity Description (see Section I.F.) that the white paper is primarily addressing.

White Paper Evaluation/Notification: Navy evaluations of the white papers will be issued via email notification on or about Friday, 22 September 2017. An expanded oral presentation will be subsequently requested, if needed, from those Offerors whose proposed technologies have been identified as being of “particular value” to the Navy. However, any such request does not assure a subsequent award. Any Offeror whose white paper was not identified as being of “particular value” to the Navy is ineligible to make an oral presentation or to submit a full proposal under this BAA.

Full Proposals: The due date for receipt of Full Proposals is 11:59 PM (EST) on Friday, 17 November 2017. It is anticipated that final selections will be made by Friday, 12 January 2018. As soon as the final full proposal evaluation process is completed, PIs will be notified via email of their project’s selection or non-selection. Full proposals received after the published due date and time will not be considered.

B. Content and Format of White Papers/Full Proposals

White Papers and Full Proposals submitted under this BAA are expected to be unclassified; however, classified proposals are permitted. If a classified proposal is submitted and selected for award, the resultant contract will be unclassified. An ‘unclassified’ Statement of Work (SOW) must accompany any classified proposal.

For both classified and unclassified proposals, a non-proprietary version of the Statement of Work must also be submitted. Do not put proprietary data or markings in or on the Statement of Work. For proposals containing data that the offeror does not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, the contractor shall mark the title page with the following legend:

“This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed--in whole or in part--for any purpose other than to evaluate the proposal. If, however, a contract is awarded to this offeror as a result of--or in connection with-- the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government’s right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in (insert numbers or other identification of sheets).”

Also, mark each sheet of data that the offeror wishes to restrict with the following legend:

“Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.”

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

1. Unclassified Proposal Instructions:
Unclassified proposals shall be submitted in accordance with this Section.
2. Special Instructions for Classified White Papers and Proposal:
Classified proposals shall be submitted directly to the attention of ONR’s Document Control Unit at the following address and marked in the following manner:

**OUTSIDE ENVELOPE
(no classification marking):**

“Office of Naval Research
Attn: Document Control Unit
ONR Code 43
875 North Randolph Street
Arlington, VA 22203-1995”

The inner wrapper of the classified White Paper and/or Full Proposal should be addressed to the attention of the cognizant TPOC, ONR Code XX and marked in the following manner:

INNER ENVELOPE

(stamped with the overall classification of the material)

“Program Name:

Office of Naval Research

ATTN: ONR Program Officer Name

ONR Code: ONR Program Officer Code

875 North Randolph Street

Arlington, VA 22203-1995”

All 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.

STATEMENT OF WORK (SOW)

An ‘unclassified’ SOW must accompany any classified proposal.

For both classified and unclassified proposals, a non-proprietary version of the SOW must also be submitted.

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.

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 – five (5) pages single-sided not including the cover page, references, or Curriculum Vitae. Consult Technical POC with any questions.

White Paper Submission

Electronic (email) submission should be sent to the attention of the applicable Research Topic Chief. The Research Topic Chief for Topics 1-4 can be found under Section F (Research Opportunity Description). The subject line of the email shall read “N00014-17-S-BA13 White Paper Submission”. The white paper must be a Microsoft Word 2010 compatible, or PDF format attachment to the email. There is an email size limit of 5MB per email.

NOTE: Do not send:

- 1) Hardcopies of White Papers (including Facsimiles). Only electronic submissions will be accepted and reviewed;**
- 2) ZIP files; and**
- 3) Password protected files.**

White Paper Content

- Cover Page: The Cover Page shall be labeled “WHITE PAPER” and shall include the BAA Number N00014-17-S-BA13, proposed title, Research Topic Chief(s), telephone number, facsimile number, and e-mail address.
- Summary: A one paragraph Summary of the proposed effort.
- Technical Concept: A description of the technology innovation and technical risk areas. The project idea, technical rationale, and approach shall identify a problem(s), make arguments to substantiate the claims made, and describe the proposed approach to address the issue. The Offeror’s capacities shall be discussed as they relate to achieving success in the project. The project shall address the research topic objectives stated in Section I.F. above.
- Future Naval Relevance: A description of potential Naval relevance and contributions of the effort to the agency’s specific mission.
- Rough Order of Magnitude (ROM) Cost: White Paper submissions shall include a rough order of magnitude cost showing requested funding per year, total cost, and suggest spending priorities to satisfy Section I.F. Break requested cost down into categories of salaries and benefits, equipment, materials and supplies, travel, cost associated with student participation (tuition and fees) and indirect costs.
- Curriculum Vitae: One curriculum vitae of the Principal Investigator and a brief description of the qualifications of the co-investigator(s).

b. Full Proposals

i. INSTRUCTIONS FOR CONTRACT, COOPERATIVE AGREEMENTS, AND OTHER TRANSACTION AGREEMENTS (Does not include Grants)

The following five documents with attachments comprise a complete proposal package:

- (1) Proposal Checklist (.pdf)
- (2) Technical Proposal Template (.pdf)
- (3) Cost Proposal Spreadsheet (Excel)

- (4) Adequacy Checklist for Pre Award Audit (SF 1408) (as applicable)
- (5) Stand-alone non-proprietary Statement of Work (SOW) in Word Format

NOTE: The electronic file name for all documents submitted under this BAA must not exceed 68 characters in length, including the file name extension.

Items 1- 5 above are located at: <http://www.onr.navy.mil/Contracts-Grants/submit-proposal/contracts-proposal/>. All have instructions imbedded into them that will assist in completing the documents. Also, both the Proposal Checklist and the Cost Proposal Spreadsheet require completion of cost-related information. Please note that attachments can be incorporated into the Proposal Checklist.

The format requirements for attachments are as follows:

- Paper Size - 8.5 x 11 inch paper
- Margins - 1 inch
- Spacing - single or double spaced
- Font - Times New Roman, 12 point

Offerors responding to this BAA must submit a separate list of all technical data or computer software that will be furnished to the Government with other than unlimited rights. The Government will assume unlimited rights if Offerors fail to identify any intellectual property restrictions in their proposals. Include in this section all proprietary claims to results, prototypes, and/or deliverables. If no restrictions are intended, then the Offeror shall state “NONE.”

For proposals below the simplified acquisition threshold (less than or equal to \$150K), the Technical Proposal Template and Proposal Checklist documents, and the Cost Proposal Spreadsheet are required. Purchase orders can also contain options, as long as the total amount of the base and all options does not exceed \$150K.

For proposed subcontracts or interorganizational transfers over \$150,000, Offerors must provide a separate fully completed Cost Proposal Spreadsheet in support of the proposed costs. This spreadsheet, along with supporting documentation, must be provided either in a sealed envelope with the prime’s proposal or via e-mail directly to both the Program Officer and the Business Point of Contact at the same time the prime proposal is submitted. The e-mail should identify the proposal title, the prime Offeror and that the attached proposal is a subcontract, and should include a description of the effort to be performed by the subcontractor.

Offerors should submit an appropriate number of hard copies as discussed with the cognizant Program Officer of their proposal package.

The electronic copy must be submitted in a secure, pdf-compatible format, except for the electronic file of the Cost Proposal Spreadsheet which must be submitted in a Microsoft Excel 2010 compatible format and the Statement of Work Template which must be submitted in Microsoft Word format. All attachments to any required proposal documents must be submitted in a secure, pdf-compatible format.

The secure pdf-compatible format is intended to prevent unauthorized editing of the proposal prior to any award. A password should not be required for opening the proposal document, but the Government must have the ability to print and copy text, images, and other content. Should an Offeror amend its proposal, the amended proposal should be submitted following the same hard and electronic copy guidance applicable to the original proposal.

Any proposed options that are identified in the Technical Proposal Template or Proposal Checklist documents, but are not fully priced out in the Cost Proposal Spreadsheet, will not be included in any resulting contract, cooperative agreement, or other transaction. If proposing options, they **must** be separately priced and separate spreadsheets should be provided for the base period and each option. In addition to providing summary by period of performance (base and any options), the Contractor is also responsible for providing a breakdown of cost for each task identified in the Statement of Work. The sum of all costs by task worksheets **MUST** equal the total cost summary.

The electronic submission of the Excel spreadsheet should be in a “useable condition” to aid the Government with its evaluation. The term “useable condition” indicates that the spreadsheet should visibly include and separately identify within each appropriate cell any and all inputs, formulas, calculations, etc. The Offeror should not provide “value only spreadsheets” similar to a hard copy.

Fixed Fees on ONR Contracts: The Government Objective is set in accordance with the DFARS 215.404-71. See the below table for range and normal values:

Contract Risk Factor	Contract Type	Assigned Value (Normal range)	Normal Value
Technical (1)		3% - 7% (2)	5%
Management/Cost Control (1)		3% - 7% (2)	5%
Contract Type Risk	Firm Fixed Price	2% - 6% (3)	3% - 5% (4)
Contract Type Risk	Cost Plus Fixed Fee	0% - 1% (2)	0.5%

- (1) Assign a weight (percentage) to each element according to its input to the total performance risk. The total of the two weights equal 100%
- (2) Assign a weighting score relative to the Risk Factor.
- (3) Depends on the specific Contract Type (With/without financing, performance-based payments, and/or progress payments).
- (4) Depends on the specific Contract Type.

Technology Incentive (TI) is rarely utilized at ONR, because the contracts issued by ONR typically are not eligible for TI (See DFARS 215.404-71-2(c) (2)). Any consideration of TI requires strong and convincing justification in the proposal, which are then subject to

negotiation and determination of a fair and reasonable fee, within the context of the specific award.

Typically the range of fee is 5% to 7.5% on an ONR awarded contract.

For submission instructions, see Part IV, Section F. [Submission of White Papers and Full Proposals for Contracts, Cooperative Agreements, and Other Transaction Agreements.](#)

ii. INSTRUCTIONS FOR GRANTS (Does not include contracts, cooperative agreements and other transaction agreements)

Content and Form of Application:

Prospective offerors must complete the mandatory forms in accordance with the instructions provided on the forms and the additional instructions below. Files that are attached to the forms must be in Adobe Portable Document Format (.PDF) unless otherwise specified in this announcement.

Form: SF 424 (RESEARCH & RELATED)

Complete all the required fields in accordance with the pop-up instructions on the form. To activate the instructions, turn on the “Help Mode” (icon with the pointer and question mark at the top of the form). The following information must be completed in the SF 424 located on Grants.gov to ensure that the application is directed to the correct individual for review and to be considered for award, Offerors must fill out Block 4 of the SF 424 R&R as follows:

- Block 4a, Federal Identifier - If the application is not a renewal or expansion of an existing award, enter the previous ONR award number, or N00014.
- Block 4b, Agency Routing Number - Enter the three (3) digit Program Office Code and the Program Officer’s name, last name first, in brackets (e.g., 331 [Smith, John]).
 - Where the Program Office Code only has two digits, add a “0” directly after the Code (e.g., Code 30 would be entered as 300)
 - Use Code 600 for ONRG).

Applicants who fail to provide a Program Officer Code identifier may receive a notice that their proposal is rejected.

- Block 4c, Previous Grants.gov Tracking ID – If this submission is for a Changed/Corrected Application, enter the Grants.gov tracking number of the previous proposal submission; otherwise, leave blank.

Form: Project Abstract

Abstracts of all funded research projects will be posted on a DTIC website, <https://dodgrantawards.dtic.mil/grants/index.html#/home>. Do not include proprietary or confidential information. Use only characters available on a standard QWERTY keyboard. Spell out all Greek letters, other non-English letters and symbols. Graphics are not allowed and there is a 4,000 character limit.

Form: RESEARCH & RELATED Other Project Information

Attach the Technical Proposal as follows:

- Download the application package;
- Click on "Research and Related Other Project Information";
- Click on "Move form to Submission List";
- Click on "Open Form";
- A new PDF entitled "Research & Related Other Project Information" will appear;
- Locate Field 8 entitled, "Project Narrative;"
- Click on "Add Attachment;" and
- Attach the technical proposal.

Field 7 of the SF-424 Other Project Information entitled, "Project Summary/Abstract" may be left blank if the Project Abstract is already attached.

NOTE: Ensure the attachment is a single PDF file with File name: "Technical Proposal."

Full Proposal Format - Volume 1: Technical Proposal, and Volume 2: Cost Proposal

Full Proposal Format

- Paper size when printed - 8.5 x 11 inch paper
- Margins - 1 inch
- Spacing – single spaced
- Font - Times New Roman, 12 point
- Number of pages – Volume I should be no more than twenty-five (25) single-sided pages. The cover, table of contents, list of references, letters of support, curriculum vitae and current and pending projects and proposal submissions are excluded from the page limitations. **The pages of full proposals exceeding the page limit may not be included in the evaluation.**
- There are no page limitations to the Cost Proposal, Volume 2.
- The full proposal should be submitted electronically at <http://www.grants.gov/> as delineated in paragraph E below.

NOTE: The electronic file name for all documents submitted under this BAA must not exceed 68 characters in length, including the file name extension.

Volume 1: Technical Proposal

- **Cover Page**: This shall include the words “Technical Proposal” and the following:
 - 1) BAA Number: N00014-17-S-BA13;
 - 2) Title of Proposal;
 - 3) Identity of prime Offeror and complete list of subawards, 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) Proposed period of performance (identify both the base period and any options, if included).

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

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

- **Future Naval Relevance (where applicable)**: A description of potential Naval relevance and contributions of the effort to the agency’s specific mission.

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

- **Reports**: The following are sample reports and meetings that are typically required under a research effort:
 - Technical and Financial Progress Reports
 - Annual Program Review and Technical Report
 - Final Report

Grants do not include the delivery of software, prototypes, and other hardware deliverables.

- **Management Approach**: Identify which personnel and subcontractors/subrecipients (if any) will be involved. Include a description of the facilities that are required for the proposed effort, along 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 current and pending support for ongoing projects and proposals, including subsequent funding in the case of continuing contracts, grants, and other assistance agreements. 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).

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 subwards, if applicable;
- 5) Technical contact (name, address, phone/fax, electronic mail address)
- 6) Administrative/business contact (name, address, phone/fax, electronic mail address);
- 7) Period of performance (differentiate basic effort);
- 8) The proposed project and all other projects or activities requiring a portion of time of the Principal Investigator 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 or labor hours 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 or curricula vitae for the Principal Investigator, other key personnel and consultants. The resumes/curricula vitae shall be attached to the proposal.

Offerors must provide the following information to ONR in order to assist in ONR's evaluation of the offeror's responsibility:

- a. Describe how you have adequate resources or the ability to obtain such research as required to complete the activities proposed.
- b. Describe how you have the ability to comply with the grant conditions, taking into account all existing and currently prospective commitments of the applicant, nongovernmental and governmental.
- c. Describe your performance history, specifically your record in managing Federal awards and the extent to which any previously awarded amounts will be expended prior to future awards.
- d. Describe your record of integrity and business ethics.
- e. Describe qualifications and eligibility to receive an award under applicable laws and regulations.
- f. Describe your organization, experience, accounting, and operational controls and technical

skills, or the ability to obtain them (including as appropriate such elements as property control systems, quality assurance measures, and safety programs applicable to the services to be performed)

Volume 2: Cost Proposal

The Offeror must use the Grants.gov forms (including the Standard Form (SF) Research and Related (R&R) Budget Form) from the application package template associated with the BAA on the Grants.gov web site located at <http://www.grants.gov/>. If options are proposed, the cost proposal must provide the pricing information for the option periods; failure to include the proposed costs for the option periods will result in the options not being included in the award.

Assume that performance will start will start no earlier than 01 June 2018.

A separate Adobe .pdf document shall be included in the application that provides appropriate justification and/or supporting documentation for each element of cost proposed. **This document shall be attached under Section K. “Budget Justification” of the Research and Related Budget form. Click “Add Attachment” to attach.**

Part 1: The itemized budget should include the following

- **Direct Labor** – Individual labor categories or persons, with associated labor hours and unburdened direct labor rates. Provide escalation rates for out years.
- **Administrative and Clerical Labor** – Salaries of administrative and clerical staff are normally indirect costs (and included in an indirect cost rate). Direct charging of these costs may be appropriate when a major project requires an extensive amount of administrative or clerical support significantly greater than normal and routine levels of support. Budgets proposing direct charging of administrative or clerical salaries must be supported with a budget justification which adequately describes the major project and the administrative and/or clerical work to be performed.
- **Fringe Benefits and Indirect Costs (F&A, Overhead, G&A, etc.)** – The proposal should show the rates and calculation of the costs for each rate category. If the rates have been approved/negotiated by a Government agency, provide a copy of the memorandum/agreement. If the rates have not been approved/negotiated, provide sufficient detail to enable a determination of allowability, allocability and reasonableness of the allocation bases, and how the rates are calculated. Additional information may be requested, if needed. If composite rates are used, provide the calculations used in deriving the composite rates.
- **Travel** – The proposed travel cost must 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. Offerors may include travel costs for the Principal Investigator to attend the peer reviews described in Section II of this BAA.

- Subawards/Subcontracts – Provide a description of the work to be performed by the subrecipient/subcontractor. For each subaward, a detailed cost proposal is required to be submitted by the subrecipient(s). A proposal and any supporting documentation must be received and reviewed before the Government can complete its cost analysis of the proposal and enter negotiations. ONR's preferred method of receiving subcontract information is for this information to be included with the Prime's proposal. However, a subcontractor's cost proposal can be provided in a sealed envelope with the recipient's cost proposal or via e-mail directly to the Program Officer at the same time the prime proposal is submitted. The e-mail should identify the proposal title, the prime Offeror and that the attached proposal is a subcontract.
- 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 rate/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, and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Recipient Acquired Equipment or Facilities – Equipment and/or facilities are normally furnished by the Recipient. 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). Allowable items normally are limited to research equipment not already available for the project. General purpose equipment (i.e., equipment not used exclusively for research, scientific or other technical activities, such as personal computers, laptops, office equipment) should not be requested unless they will be used primarily or exclusively for the project. For computer/laptop purchases and other general purpose equipment, if proposed, include a statement indicating how each item of equipment will be integrated into the program or used as an integral part of the research effort.
- Other Direct Costs – Provide an itemized list of all other proposed other direct costs such as Graduate Assistant tuition, laboratory fees, report and publication costs, and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).

NOTE: *If the grant proposal requests funds for a conference, workshop or symposium:*

1. *ONR (including ONRG) will not sponsor an ONR, Navy, or DoD event. Provide a list of other sponsors and the requested amounts to be funded by all sponsors.*
2. *The funds provided by ONR (including ONRG) may be used to pay for food or*

beverages as a direct cost only in exceptional circumstances. The funds shall not be used for food or beverages unless

- a. the grant proposal contains a request for such funding that is fully supported factually in accordance with the cost principles of the relevant OMB Circular, and*
 - b. the Grants Officer determines that the funding is a reasonable, allocable, allowable expense under the relevant cost principles.*
- 3. Specify in your proposal how the event and related outcomes will directly and programmatically relate to the US Naval or Marine Corps Science & Technology Plan and identify specific focus areas that will be addressed. The proposal must provide the technical and scientific objectives of the program or event and clearly state the desired outcomes (e.g. conference proceedings, journal articles, algorithms, tools, additional research, etc.).*

- Fee/Profit – Fee/profit is unallowable under assistance agreements at either the prime or subaward level but may be permitted on subcontracts issued by the prime awardee.

For submission instructions, see Part IV, Section E. [Submission of Grant Proposals through Grants.gov](#).

C. Significant Dates and Times

Schedule of Events		
Event	Date	Time
White Papers Due	Friday, 18 August 2017	11:59 PM Eastern Daylight Time (EDT)
Evaluation of White Papers and Notification to Submit Full Proposals	Friday, 22 September 2017	
Questions for the Topic Chiefs and the BRC Program Manager	Friday, 27 October 2017*	11:59 PM EDT
Questions for the Contract Specialist	Tuesday, 14 November 2017*	11:59 PM Eastern Standard Time (EST)
Full Proposals Due	Friday, 17 November 2017	11:59 PM (EST)
Notification of Selection for Award	Friday, 12 January 2018	
Start Date of Grant	Friday, 01 June 2018**	

Start Date of Contract	Friday, 01 June 2018**	
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The due date for submission of the white paper and/or full proposal will not be extended.

* Questions submitted after the Q&A deadline may not be answered.

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

D. Submission of Late Proposals (Applicable to White Papers and Full Proposals)

Any white paper, 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 5:00 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 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 extend 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.

E. Submission of Grant Proposals through Grants.gov

(NOT APPLICABLE TO PROPOSALS FOR CONTRACTS, COOPERATIVE AGREEMENTS, AND OTHER TRANSACTION AGREEMENTS)

Detailed instructions entitled “Grants.Gov Electronic Application and Submission Information” on how to submit a Grant proposal through Grants.gov are under the Contracts and Grants — Submitting Proposals section of the ONR website at [http://www.onr.navy.mil/Contracts- Grants/submit-proposal/grants-proposal/grants-gov.aspx](http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal/grants-gov.aspx).

White Papers must not be submitted through the Grants.gov application process. White paper submissions must be e-mailed directly to the appropriate ONR Program Officer/Program Manager. White paper format requirements are found in Part IV, Section B (a) above.

For electronic submission of full proposals for grants, there are several one-time actions that 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 System for Award Management (SAM), registering with the credential provider, and registering with Grants.gov. See <http://www.grants.gov>.

Use the Grants.gov Organization Registration Checklist at <http://www.grants.gov/web/grants/applicants/organization-registration.html> which will provide guidance through the process. Designating an E-Business Point of Contact (E-Biz POC) and obtaining a special password called ‘MPIN’ are important steps in the SAM registration process. Applicants who are not registered with SAM.gov 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 (1-606-545-5035 for foreign applicants) 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.

Proposal Receipt Notices:

After a full proposal is submitted through Grants.gov, the Authorized Organization Representative (AOR) will receive a series of three e-mails. It is extremely important that the AOR watch for and save each of the e-mails. You will know that your proposal has reached ONR when the AOR receives e-mail Number 3. You will need the Submission Receipt Number (e-mail Number 1) to track a submission.

The three e-mails are:

Number 1 – The applicant will receive a confirmation page upon completing the submission to Grants.gov. This confirmation page is a record of the time and date stamp that is used to determine whether the proposal was submitted.

Number 2 – The applicant will receive an e-mail indicating that the proposal has been validated by Grants.gov within two days of submission (This means that all of the required fields have been completed). After an institution submits an application, Grants.gov generates a submission receipt via email and also sets the application status to “Received.” This receipt verifies the Application has been successfully delivered to the Grants.gov system. Next, Grants.gov verifies the submission is valid by ensuring it does not contain viruses, the opportunity is still open, and the applicant login and applicant DUNS number match. If the submission is valid, Grants.gov generates a submission validation receipt via email and sets the application status to “Validated.” If the application is not validated, the application status is set to "Rejected." The system sends a rejection email notification to the institution, and the institution must resubmit the application package. Applicants can track the status of their application by logging in to Grants.gov.

Number 3 – The third notice is an acknowledgment of receipt in e-mail form from ONR within ten days from the proposal due date, if applicable. The e-mail is sent to the authorized representative for the institution. The e-mail for proposals notes that the proposal has been received and provides the assigned tracking number.

F. Submission of Full Proposals for Contracts, Cooperative Agreements, and Other Transaction Agreements.

Full Proposals should be addressed to the applicable Research Topic Chief (see Section I.F.) and submitted to the following address:

Office of Naval Research
Attn*: _____
ONR Department Code**: _____
875 North Randolph Street
Arlington, VA 22203-1995

**Cognizant ONR Research Topic Chief(s)*
***Cognizant ONR Research Topic Chief's Code*

V. EVALUATION INFORMATION

A. Evaluation Criteria

Awards under this BAA will be made in accordance with FAR 35.016(e). The primary basis for selecting proposals for acceptance will be technical, importance to agency programs, and fund availability. Cost realism and reasonableness will also be considered when selecting proposals. ONR reserves the right to request and require any additional information and documentation after it makes the award instrument determination. ONR reserves the right to remove Offerors from award

consideration when the parties fail to reach agreement on award terms, conditions, and cost/price within a reasonable time, or when the Offeror fails to timely provide requested or required additional information.

Offerors' proposals will be evaluated against the following criteria:

- 1) Overall scientific and technical merits of the proposal and responsiveness to the topic (i.e., the degree of innovation, soundness of technical concept, Offeror's awareness of the state of the art and understanding of the scope of the problem, significance and originality of the technical approach and effort needed to address/solve the problem, and anticipated scientific impact within the field.
- 2) Potential Naval relevance and contribution to the ONR and Department of Navy mission.
- 3) The Offeror's capabilities, related experience, facilities, techniques or unique combinations of these which are integral factors for achieving the proposal objectives.
- 4) The qualifications, capabilities and experience of the proposed Principal Investigator (PI), team leader and key personnel who are critical in achieving the proposal objectives.
- 5) The availability of funds.

Criteria 1, 2, 3, 4, and 5 are equally important.

In addition, ONR highly encourages partnering among industry and academia and industry and Government with a view toward speeding the incorporation of new science and technology into fielded systems. Proposals that utilize industry-academic or industry-Government partnering which enhances the development of novel S&T advances, although not mandatory, are desired and will receive favorable consideration.

Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. ONR's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons.

The ultimate recommendation for award of proposals is made by ONR's scientific/technical community. Recommended proposals will then be forwarded to the ONR Contracts and Grant Awards Management office. Any notification received from ONR that indicates that the Offeror's full proposal has been recommended does not ultimately guarantee an award will be made. This notice indicates that the proposal has been selected in accordance with the evaluation criteria stated above and has been sent to the Contracting Department to conduct cost analysis, determine the offeror's responsibility, to confirm whether funds are available, and to take other relevant steps necessary prior to commencing negotiations with the offeror.

B. Commitment to Small Business (For Contract Not Applicable to Assistance Awards)

The Office of Naval Research is strongly committed to providing meaningful prime and subcontracting opportunities for small businesses, small disadvantaged businesses (SDBs), woman-owned small businesses (WOSBs), historically underutilized business zone (HUBZone) small businesses, veteran-owned small business (VOSBs), service disabled veteran-owned small businesses (SDVOSBs), historically black colleges and universities, and minority institutions, and other concerns subject to socioeconomic considerations through its awards.

Businesses unfamiliar with doing business with the government and that require assistance may contact the state-specific Department of Defense (DoD) Procurement Technical Assistance Center (PTAC). DoD PTACs serve as a resource for businesses pursuing and performing under contracts with DoD, other federal agencies, state and local governments and with government prime contractors. Assistance provided by the PTACs is usually free of charge. PTAC support includes registration in systems such as SAM, identification of contract opportunities, understanding requirements and preparing and submitting proposals. The PTACs have a presence in each state, Puerto Rico and Guam. To locate a local PTAC visit: <http://www.dla.mil/SmallBusiness/Pages/ProcurementTechnicalAssistanceCenters.aspx> or <http://www.ptac-us.org/new/>.

1) Subcontracting Plan - For proposed contract awards exceeding \$700,000, large businesses and non-profits (including educational institutions) shall provide a Subcontracting Plan (hereafter known as ‘the Plan’) that contains all elements required by FAR Subpart 19.704, FAR 52.219-9 and as supplemented by DFARS 252.219-7003.

NOTE: Small businesses are exempt from this requirement to submit a subcontracting plan.

The Plan must be submitted as an attachment to the “Proposal Checklist” and will not be included in the page count. If a company has a Master Subcontracting Plan, as described in FAR 19.701 or a Comprehensive Subcontracting Plan, as described in DFARS 219.702, a copy of the Plan shall also be submitted as an attachment to the “Proposal Checklist”.

Plans will be reviewed for adequacy, ensuring that the required information, goals, and assurances are included. FAR 19.702 requires the apparent successful offeror to submit an acceptable Plan. If the apparent successful offeror fails to negotiate a Plan acceptable to the contracting officer within the time limit prescribed by the contracting officer, the offeror will be ineligible for award.

Offerors shall propose a plan that ensures small businesses (inclusive of SDBs, WOSBs, HUBZone, VOSBs and SDVOSBs) will have the maximum practicable opportunity to participate in contract performance consistent with efficient performance.

As a baseline, Offerors shall, to the best extent possible, propose realistic goals to ensure small business participation in accordance with the current or most recent fiscal year subcontracting goals found on the DoD Office of Small Business Program website at:

<http://www.acq.osd.mil/osbp/>. If proposed goals are below the statutory requirements, then the offeror shall include in the Plan a viable written explanation as to why small businesses are unable to be utilized and what attempts were taken to ensure that small business were given the

opportunity to participate in the effort to the maximum extent practicable.

2) Small Business Participation Statement –

If subcontracting opportunities exist, all prime Offerors shall submit a Small Business Participation Statement regardless of size in accordance with DFARS 215.304 when receiving a contract for more than the simplified acquisition threshold (i.e., \$150,000). All offerors shall provide a statement of the extent of the offeror’s commitment in providing meaningful subcontracting opportunities for small businesses and other concerns subject to socioeconomic considerations through its awards and must agree that small businesses, VOSBs, SDVOSBs, HUBZones, SDBs, and WOSBs concerns will have the maximum practicable opportunity to participate in contract performance consistent with efficient performance.

This assertion will be reviewed to ensure that it supports this policy by providing meaningful subcontracting opportunities. The statement should be submitted as an attachment to the “Proposal Checklist” and will not be included in the page count.

3) Subcontracting Resources -

Subcontracting to a prime contractor can be a good way to participate in the contracting process. The following is a list of potential resources that may assist in locating potential subcontracting partners/opportunities/resources:

- *Companies Participating in DoD Subcontracting Program Report
- *DAU Small Business Community of Practice (SB COP)
- *DefenseLink ≥ \$7.0 M Award Notices
- *DoD OSBP Prime Contractors and Subcontractors with Subcontracting Plans
- *Dynamic Small Business Search
- *Electronic Subcontracting Reporting System (eSRS)
- *Federal Business Opportunities (FEDBIZOPPS)
- *Navy SBIR/STTR Search – Website or Brochure
- *DoD Procurement Technical Assistance Centers (PTAC)
- *Small Business Administration (SBA) Subcontracting Opportunities Directory
- *SBA Subnet

For a description and associated websites visit the ONR Office of Small Business webpage at: <http://www.onr.navy.mil/Contracts-Grants/small-business.aspx>.

In accordance with FAR Subpart 5.206, the following entities may transmit a notice to a Government Point of Entry (GPE) to seek competition for subcontracts, to increase participation by qualified small businesses, VOSBs, SDVOSBs, HUBZones, SDBs, and WOSBs, and to meet established subcontracting plan goal as follows:

- (a) A contractor awarded a contract exceeding \$150,000 that is likely to result in the award of any subcontracts;
- (b) A subcontractor or supplier, at any tier, under a contract exceeding \$150,000, that has a

subcontracting opportunity exceeding \$15,000.

The notices must describe—

- (a) The business opportunity;
- (b) Any prequalification requirements; and
- (c) Where to obtain technical data needed to respond to the requirement.

An example of a GPE is the SBA SUB-Net which is a place in which prime contractors may post solicitations or sources sought notices for small business. The SUB-Net database provides a listing of subcontracting solicitations and opportunities posted by large prime contractors and other non-federal agencies.

C. Options

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.

D. 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. 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.

E. General Information Regarding the Review and Selection Process for Grants –

- i) Prior to making an award with total amount of Federal share greater than the simplified acquisition threshold, ONR shall review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS).
- ii) The applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a Federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM.
- iii) ONR will consider any comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by the applicant as described in Title 2, Part 200, Subsection 200.205 Federal awarding agency review of risk posed by applicants.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements

- A. North American Industry Classification System (NAICS) code – The NAICS code for this announcement is 541712 with a small business size standard of 100 employees. (*Applies to contracts only.*)
- B. System for Award Management (SAM): All Offerors submitting proposals or applications must:
- 1) be registered in the SAM prior to submission;
 - 2) maintain an active SAM registration with current information at all times during which it has an active Federal award or an application under consideration by any agency; and
 - 3) provide its DUNS number in each application or proposal it submits to the agency.

SAM may be accessed at <https://www.sam.gov/portal/public/SAM/>

C. Access to your Grant, Cooperative Agreement, Other Transaction and Contract Award

Office of Naval Research (ONR) award/modification documents are only available via the Department of Defense (DoD) Electronic Document Access System (EDA) within the WideArea WorkFlow e-Business Suite (<https://wawf.eb.mil/>).

EDA is a Web-based system that provides secure online access, storage and retrieval of awards and modifications to DoD employees and vendors.

ONR creates an award notification profile for every award.

For grants, the notification profile will use the email addresses from the Application for Federal Assistance, SF424, to notify the recipient of an award. ONR is using the following three email addresses entered by the grantee on the SF424 application to create the EDA notification profile:

- a. Project Director / Principal Investigator (Block 14 - Email)
- b. Applicant Information (Block 5 - Email)
- c. Authorized Representative (Block 19 - Email)

For all other awards, the notification profile will use the email address from the Business Point of Contact to notify the recipient of an award.

IMPORTANT: In some cases, EDA notifications are appearing in recipients' Junk Email folder. If you are experiencing issues receiving EDA notifications, please check your junk email. If found, please mark EDA notifications as "not junk."

If you do not currently have access to EDA, you may complete a self-registration request as a "Vendor" via <https://wawf.eb.mil/> following the steps below:

1. Click "Accept"
2. Click "Register" (top right)

3. Click "Agree"
4. In the "What type of user are you?" drop down, select "Vendor"
5. Select the systems you would like to access (iRAPT at a minimum)
6. Complete the User Profile and follow the site instructions

Allow five business days for your registration to be processed. EDA will notify you by email when your account is approved.

To access awards after your registration has been approved, log into <https://wawf.eb.mil/>, select "EDA", select either EDA location, Select "Contracts", select your search preference, enter the Contract Number (or, if applicable, enter the Grant Number in the Contract Number field), and select "View".

Registration questions may be directed to the EDA help desk toll free at 866-618-5988, commercial at 801-605-7095, or via email at disa.ogden.esd.mbx.cscassig@mail.mil

VII. OTHER INFORMATION

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- A. [Applies to Grant, Cooperative Agreement, and Other Transaction Agreement Proposals Only](#)
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 - v. Codes of Conduct
 - vi. Reporting

* Click on the above hyperlinks to navigate directly to your desired section

A. Applies to Grant, Cooperative Agreement, and Other Transaction Agreement applications only:

- i. Federal Funding Accountability and Transparency Act of 2006:

The Federal Funding Accountability and Transparency Act of 2006 (Public Law 109-282), as amended by Section 6202 of Public Law 110-252, requires that all agencies establish requirements for recipients reporting information on subawards and executive total compensation as codified in 2 CFR Part 170. Any company, non-profit agency or university that applies for financial assistance (either grants, cooperative agreements or other transaction agreements) as either a prime or sub-recipient under this BAA must provide information in its proposal that describes the necessary processes and systems in place to comply with the reporting requirements identified in 2 CFR Part 170 Appendix A. Entities are required to meet reporting requirements unless an exception or exemption applies. Please refer to 2 CFR Part 170, including Appendix A, for a detailed explanation of the requirements, exceptions, and exemptions.

ii. Certification regarding Restrictions on Lobbying:
Grant and Cooperative Agreement awards greater than \$100,000, as well as OTAs not under Section 845, 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 Block 17). The following certification applies likewise to each Cooperative Agreement and normal OTA applicant seeking federal assistance funds exceeding \$100,000:

- (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.

iii. Representation Regarding an Unpaid Delinquent Tax Liability or a Felony Conviction Under any Federal Law - DOD Appropriations:

All grant applicants are required to complete the "Representation on Tax Delinquency and Felony Conviction" found at <http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal.aspx> by checking the "I agree" box in block 17 and attaching the representation to block 18. of the SF424 (R&R) as part of the electronic proposal

submitted via Grants.gov. The representation reads as follows:

(1) The applicant represents that it is ___ is not ___ a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in timely manner pursuant to an agreement with the authority responsible for collecting the tax liability

(2) The applicant represents that it is ___ is not ___ a corporation that was convicted of a felony criminal violation under any Federal law within the preceding 24 months.

NOTE: If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the agency suspension and debarment official (SDO) has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore should provide information about its tax liability or conviction to the agency's SDO as soon as it can do so, to facilitate completion of the required consideration before award decisions are made.

iv. Representation Regarding the Prohibition on Using Funds with Entities that Require Certain Internal Confidentiality Agreements

Agreement with the representation below will be affirmed by checking the "I agree" box in block 17 of the SF424 (R&R) as part of the electronic proposal submitted via Grants.gov. The representation reads as follows:

By submission of its proposal or application, the applicant represents that it does not require any of its employees, contractors, or subrecipients seeking to report fraud, waste, or abuse to sign or comply with internal confidentiality agreements or statements prohibiting or otherwise restricting those employees, contractors, subrecipients from lawfully reporting that waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

Note that, as applicable, the bases for this representation are the prohibition(s) as follow:

- a. Section 743 of the Financial Services and General Government Appropriation Act, 2015 (Division E of the Consolidated and Further Continuing Appropriations Act, 2015, Pub. L. 113-235)
- b. Section 101(a) of the Continuing Appropriation Act, 2016 (Pub. L. 114-53) and any subsequent FY2016 appropriations act that extends to FY2016 the same restrictions as are contained in section 743 of Division E, title VII of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub L. 113-235)
- c. Pub. L. 114-223, Continuing Appropriations Act, 2017, or any other Act that extends to fiscal year 2017 funds the same prohibitions as contained in section

743, Division E, title VII, of the Consolidated Appropriations Act, 2016 (Pub. L. 114-113).

- d. Any successor provision of law on making funds available through grants and cooperative agreements to entities with certain internal confidentiality agreements or statements

The prohibitions stated above do not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

v. Code of Conduct:

Applicants for grants, cooperative agreements, or other transaction agreements as applicable are required to comply with 2 CFR 200.318(c), Codes of Conduct, to prevent real or apparent conflicts of interest in the award and administration of any contracts supported by federal funds. This provision will be incorporated into all assistance instruments awarded under this BAA.

vi. Reporting:

If the Federal share of any Federal award may include more than \$500,000 over the period of performance, the post award reporting requirements, Award Term and Condition for Recipient Integrity and Performance Matters (2 U.S.C. 200 Appendix XII), is applicable as follows:

A. Reporting of Matters Related to Recipient Integrity and Performance

1. General Reporting Requirement

If the total value of your currently active grants, cooperative agreements, and procurement contracts from all Federal awarding agencies exceeds \$10,000,000 for any period of time during the period of performance of this Federal award, then you as the recipient during that period of time must maintain the currency of information reported to the System for Award Management (SAM) that is made available in the designated integrity and performance system (currently the Federal Awardee Performance and Integrity Information System (FAPIIS)) about civil, criminal, or administrative proceedings described in paragraph 2 of this award term and condition. This is a statutory requirement under section 872 of Public Law 110-417, as amended (41 U.S.C. 2313). As required by section 3010 of Public Law 111-212, all information posted in the designated integrity and performance system on or after April 15, 2011, except past performance reviews required for Federal procurement contracts, will be publicly available.

2. Proceedings About Which You Must Report

Submit the information required about each proceeding that:

- a. Is in connection with the award or performance of a grant, cooperative agreement, or procurement contract from the Federal Government;
- b. Reached its final disposition during the most recent five year period; and
- c. Is one of the following:
 - (1) A criminal proceeding that resulted in a conviction, as defined in paragraph 5 of this award term and condition;
 - (2) A civil proceeding that resulted in a finding of fault and liability and payment of a monetary fine, penalty, reimbursement, restitution, or damages of \$5,000 or more;
 - (3) An administrative proceeding, as defined in paragraph 5. of this award term and condition, that resulted in a finding of fault and liability and your payment of either a monetary fine or penalty of \$5,000 or more or reimbursement, restitution, or damages in excess of \$100,000; or
 - (4) Any other criminal, civil, or administrative proceeding if:
 - (i) It could have led to an outcome described in paragraph 2.c.(1), (2), or (3) of this award term and condition;
 - (ii) It had a different disposition arrived at by consent or compromise with an acknowledgment of fault on your part; and
 - (iii) The requirement in this award term and condition to disclose information about the proceeding does not conflict with applicable laws and regulations.

3. Reporting Procedures

Enter in the SAM Entity Management area the information that SAM requires about each proceeding described in paragraph 2 of this award term and condition. You do not need to submit the information a second time under assistance awards that you received if you already provided the information through SAM because you were required to do so under Federal procurement contracts that you were awarded.

4. Reporting Frequency

During any period of time when you are subject to the requirement in paragraph 1 of this award term and condition, you must report proceedings information through SAM for the most recent five year period, either to report new information about any proceeding(s) that you have not reported previously or affirm that there is no new information to report. Recipients that have Federal contract, grant, and cooperative agreement awards with a cumulative total value

greater than \$10,000,000 must disclose semiannually any information about the criminal, civil, and administrative proceedings.

5. Definitions

For purposes of this award term and condition:

a. Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative proceedings, Civilian Board of Contract Appeals proceedings, and Armed Services Board of Contract Appeals proceedings). This includes proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include audits, site visits, corrective plans, or inspection of deliverables.

b. Conviction, for purposes of this award term and condition, means a judgment or conviction of a criminal offense by any court of competent jurisdiction, whether entered upon a verdict or a plea, and includes a conviction entered upon a plea of nolo contendere.

c. Total value of currently active grants, cooperative agreements, and procurement contracts includes—

- (1) Only the Federal share of the funding under any Federal award with a recipient cost share or match; and
- (2) The value of all expected funding increments under a Federal award and options, even if not yet exercised.

B. Applies to Contracts only:

- i. Government Property/Government Furnished Equipment (GFE) and Facilities
- ii. Use of Arms, Ammunition and Explosives
- iii. System for Award Management (SAM)
- iv. Employment Eligibility Verification (E-verify)
- v. Conflicts of Interest
- vi. FAR / DFARS Clauses
- vii. Combating Trafficking in Person
- viii. Certification Regarding Trafficking in Persons Compliance Plan
- ix. Updates of Information regarding Responsibility Matters

* Click on the above hyperlinks to navigate directly to your desired section

- i. Government Property/Government Furnished Equipment (GFE) and Facilities: 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 indicate in the Proposal Checklist, Section II, Blocks 8 and 9, which of these facilities are critical for the project's success.

ii. Use of Arms, Ammunition and Explosives:

Safety

The Offeror is required to be in compliance with DoD manual 4145.26-M, *DoD Contractor's Safety Manual for Ammunition and Explosives* if ammunitions and/or explosives are to be utilized under the proposed research effort. (See DFARS 223.370-5 and DFARS 252.223-7002)

If ammunitions and/or explosives (A&E) are to be utilized under the proposed research effort, the Government requires a preaward safety survey in accordance with DFARS PGI 223.370-4(C)(iv) entitled *Preaward survey*. The Offeror is solely responsible for contacting the cognizant Defense Contract Management Agency (DCMA) office and obtaining a required preaward safety survey before proposal submission. The Offeror should include required preaward safety surveys with proposal submissions.

If the Offeror proposes that the Government provide Government-furnished A&E containing any nitrocellulose-based propellants and/or nitrate ester-based materials (such as nitroglycerin) or other similar A&E with a tendency to become chemically unstable over time, then NMCARS 5252.223-9000 will also apply to a resulting contract award. (See NMCARS 5223.370-5)

Security

If arms, ammunition or explosives (AA&E) are to be utilized under the proposed research effort, the Government requires a preaward security survey. The Offeror is solely responsible for contacting the cognizant DCMA office and obtaining a required preaward security survey before proposal submission. The Offeror should include a required preaward security survey with proposal submission. (See DoD manual 5100.76-M, *Physical Security of Sensitive Conventional Arms, Ammunition and Explosives*, paragraph C1.3.1.4)

If AA&E are to be utilized under the proposed research effort, the Government may require the Contractor to have perimeter fencing around the place of performance in accordance with DoD 5100.76-M, Appendix 2.

If AA&E are to be utilized under the proposed research effort, the Offeror is required to provide a written copy of the Offeror's AA&E accountability procedures in accordance with DoD 5100.76-M. If the Offeror is required to provide written AA&E

accountability procedures, the Offeror should provide the respective procedures with its proposal submission. See DoD 5100.76-M Appendix 2.12.

iii. System for Award Management (SAM):

FAR 52.204-7 System for Award Management and FAR 52.204-13 System for Award Management Maintenance are incorporated into this BAA, and FAR 52.204-13 will be incorporated in all awards.

iv. Employment Eligibility Verification (E-verify):

As per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as Federal Contractors in E-verify and use E-verify to verify employment eligibility of all employees assigned to the award. All resultant contracts from this solicitation will include FAR 52.222-54, "Employment Eligibility Verification."

v. Conflicts of Interest:

(1) Disclosure. An offeror shall state in its proposal whether it is aware of any information bearing on the existence of any actual or potential organizational conflict of interest (OCI) as defined in FAR 2.101 and as further discussed in FAR Subpart 9.5 as to itself and any proposed subcontractors, partners, consultants or other affiliates. Offerors performing systems engineering and technical assistance (SETA) for ONR are considered to have an OCI that may not be susceptible to mitigation. See ONR's Statement of Policy on OCIs, which can be found at the following address: <http://www.onr.navy.mil/en/About-ONR/compliance-protections/Organizational-Conflicts-Interest.aspx>

The nondisclosure or misrepresentation of an interest creating an OCI may result in the disqualification of an offeror for award, or if such nondisclosure or misrepresentation is discovered after award, the Government may terminate the contract for default, recommend that the contractor be disqualified from subsequent related contracts, or be subject to such other remedial actions as may be permitted or provided by law (see 18 U.S.C. § 1001 and 31 U.S.C. § 3802(a)(2)). Therefore, offerors should interpret the requirements of this section broadly.

An offeror who does not provide support services to ONR or concludes no actual or potential OCI exists shall include the following statement in its proposal: "I [NAME] as an authorized negotiator on behalf of [NAME OF OFFEROR] certify that **NO** actual or potential organizational conflict of interest (OCI) exists under [BAA NUMBER]. I understand that the failure to disclose the existence of actual or potential OCI shall result in the offeror not being considered for award."

An offeror who does provide support services to ONR or is aware circumstances exist that may result in the appearance that it may have an unfair competitive advantage shall submit the following with its proposal:

(a) The name of the entity the offeror, its subcontractors, partners, consultants or affiliates supports.

(b) The number of the contract, subcontract, or agreement that creates the actual or potential OCI. If ONR did not award the contract or agreement, provide a copy of the document. If ONR awarded the contract, provide the name of the technical point of contact.

(c) A description of the actual or potential OCI. The statement must describe in a concise manner all relevant facts concerning any past, present or currently planned interest (financial, contractual, organizational, or otherwise) relating to the work to be performed hereunder and bearing on whether the offeror has a possible organizational conflict of interest with respect to (1) impartial, technically sound, and unbiased assessments, recommendations, or evaluations, or (2) being given an unfair competitive advantage. If relevant, offerors shall address the personal conflicts of their employees.

(d) A Mitigation Plan. Offerors should refer to FAR Subpart 9.5 for policies and procedures for avoiding, neutralizing, or mitigating organizational conflicts of interest.

(e) A concluding statement as follows: "I [NAME] as an authorized negotiator on behalf of [NAME OF OFFEROR] certify that I have, to the best of my knowledge and belief, disclosed all actual or potential organizational conflicts of interest (OCI) under [BAA NUMBER]. I understand that the failure to disclose the existence of an actual or potential OCI shall result in the offeror not being considered for award."

(2) OCI Mitigation Plan Contents. At a minimum, a Mitigation Plan shall:

(a) Provide organizational charts showing the offeror's (and, as appropriate, those of its subcontractors, partners, consultants, and affiliates) structure as it relates to performance under the contract awarded under this BAA and all contracts and agreements relevant to the OCI, highlighting those elements that create the actual or apparent OCI.

(b) Demonstrate how the elements that create the actual or apparent OCI will be isolated from the resources that will perform work under the contract awarded under this BAA.

(c) Provide information showing whether the organizational elements that will perform work under the contract awarded under this BAA will be geographically or physically separated from the elements that create the actual or apparent OCI.

(d) For each contract or agreement relevant to the OCI, describe the process for reassigning personnel, including those belonging to subcontractors, partners, consultants, and affiliates, from one organization to another. Include restrictions that apply.

(e) For each contract or agreement relevant to the OCI, describe the any controls, including nondisclosure agreements, that are exercised over the future employment of departing employees as it relates to the OCI.

(f) For each contract or agreement relevant to the OCI, describe any OCI training the employees are offered or required to attend, along with the timing (before or after starting work on a government contract), frequency, length, and content of such training.

(g) Provide evidence of facts and circumstances that the offeror asserts mitigate or address the concerns related to the actual or potential OCI.

(3) Review. The Contracting Officer will review an offeror’s certifications, statements, and OCI Mitigation Plan (if applicable) submitted and may require additional relevant information from an offeror. All such information and any other relevant information will be used by the Contracting Officer to determine whether an award to the offeror may create an OCI. If found to exist, the Government may: (1) impose appropriate conditions which avoid such conflict, (2) disqualify the offeror, (3) determine that it is otherwise in the best interest of the Government to award a contract to the offeror and include appropriate conditions mitigating such conflict in the award, or (4) seek a waiver. If the Contracting Officer determines that an actual or significant potential conflict of interest exists that cannot reasonably be avoided, neutralized or mitigated, the offeror will be ineligible for award. If accepted, the Mitigation Plan shall become part of the contract.

An offeror who has refused to disclose the information or make the certification required by this BAA concerning an actual or potential OCI shall be disqualified from consideration for award.

vi. FAR / DFARS Provisions/Clauses:

For purposes of illustration and not of limitation, the following provisions may be applicable to ONR contracts:

#	Provision/Clause
52.204-7	System for Award Management
52.204-13	System for Award Management Maintenance
52.215-16	Facilities Capital Cost of Money
52.215-22	Limitations on Pass Through Charges - Identification of Subcontract Effort
52.216-1	Type of Contract
52.216-27	Single or Multiple Awards
52.217-4	Evaluation of Options Exercised at time of Contract Award
52.217-5	Evaluation of Options

52.222-24	Preaward On-Site Equal Opportunity Compliance Evaluation (Applies if exceeds \$10M)
52.226-2	Historically Black College or University and Minority Institution Representation
52.222-60	Paycheck Transparency
52.230-7	Proposal Disclosure - Cost Accounting Practice Changes
52.232-15	Progress Payments not included
52.233-2	Service of Protest
52.252-1	Solicitation Provisions Incorporated by Reference
52.252-3	Alterations in Solicitation
52.252-5	Authorized Deviations in Provisions
252.203-7005	Representation Relating to Compensation of Former DoD Officials
252.204-7004	Alternate A, System for Award Management
252.204-7008	Compliance with Safeguarding Covered Defense Information Controls (DEC 2015)
252.204-7012	Safeguarding Covered Defense Information and Cyber Incident Reporting (DEC 2015)
252.215-7003	Requirements for Submission of Data Other than Certified Cost or Pricing Data - Canadian Commercial Corporation
252.219-7000	Advancing Small Business Growth

vii. Combating Trafficking in Persons:

Appropriate language from FAR Clause 52.222-50 will be incorporated in all awards.

viii. Certification Regarding Trafficking in Persons Compliance Plan:

Prior to award of a contract, for the portion of the contract that is for supplies, other than commercially available off-the-shelf items, to be acquired outside the United States, or services to be performed outside the United States, and which has an estimated value that exceeds \$500,000, the contractor shall submit the certificate as specified in paragraph (c) of 52.222-56, Certification Regarding Trafficking in Persons Compliance Plan

ix. Updates of Information regarding Responsibility Matters:

FAR clause 52.209-9, Updates of Publicly Available Information Regarding Responsibility Matter, will be included in all contracts valued at \$500,000 where the contractor has current active Federal contracts and grants with total value greater than \$10,000,000.

C. Applies to Contracts, Grants, Cooperative Agreements, and Other Transaction Agreements:

- i. Security Classification
- ii. Requirements Concerning Live Organisms
- iii. Institutional Dual Use Research of Concern
- iv. Department of Defense High Performance Computing Program
- v. Project Meetings and Reviews

* Click on the above hyperlinks to navigate directly to your desired section

i. 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 in Section II, Block 11 of the Proposal Checklist.

If it is determined that access to classified information will be required during the performance of an award, a Department of Defense (DD) Form 254 will be attached to the contract, and FAR 52.204-2 - Security Requirements will be incorporated into the contract.

ONR does not provide access to classified material under grants.

ii. Requirements Concerning Live Organisms:

(1) Use of Animals:

If animals are to be utilized in the research effort proposed, the Offeror must submit a Full Appendix or Abbreviated Appendix with supporting documentation (copies of IACUC Approval, IACUC Approved Protocol, and most recent USDA Inspection Report) prior to award. For assistance with submission of animal research related documentation, contact the ONR Animal Use Administrator at (703) 696-4046. Guidance: <http://www.onr.navy.mil/en/About-ONR/compliance-protections/Research-Protections/Animal-Recombinant-DNA.aspx>

(2) Use of Human Subjects in Research:

(a) You must protect the rights and welfare of individuals who participate as human subjects in research under this award and comply with the requirements of the Common Rule at 32 CFR part 219 and applicable provisions of DoD Instruction 3216.02, Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research (2011), the DON implementation of the human research protection program contained in SECNAVINST 3900.39D (or its replacement), 10 USC 980 "Limitation on Use of Humans as Experimental Subjects," and when

applicable, Food and Drug Administration (FDA) and other federal and state law and regulations.

(b) For proposals containing activities that include or may include “research involving human subjects” as defined in DoDI 3216.02, prior to award, the Offeror must submit documentation of:

(i) Approval from an Institutional Review Board (IRB) (IRB-approved research protocol, IRB- approved informed consent document, and other material they considered); proof of completed human research training (e.g., training certificate or institutional verification of training for the principal investigator, co-investigators); and the Offeror’s Department of Health and Human Services (DHHS)-issued Federalwide Assurance (FWA#),

(ii) Any claimed exemption under 32 CFR 219 101(b), including the category of exemption, supporting documentation considered by your institution in making the determination (e.g., protocol, data collection tools, advertisements, etc.). The documentation shall include a short rationale supporting the exemption determination. This documentation should be signed by the IRB Chair or IRB vice Chair, designated IRB administrator or official of the human research protection program.

(iii) Any determinations that the proposal does not contain activities that constitute research involving human subjects, including supporting documentation considered by your institution in making the determination. This documentation should be issued by the IRB Chair or IRB vice Chair, designated IRB administrator or official of the human research protection program.

(c) Documentation must be submitted to the ONR Human Research Protection Official (HRPO), by way of the ONR Program Officer. If the research is determined by the IRB to be greater than minimal risk, you also must provide the name and contact information for the independent research monitor and a written summary of the monitors’ duties, authorities, and responsibilities as approved by the IRB. For assistance with submission of human subject research related documentation, contact the ONR Human Research Protection Official (HRPO) at (703) 696-4046.

(d) Contracts, orders, or grant awards and any subawards or modifications will include a statement indicating successful completion of the HRPO review. Research involving human subjects must not be commenced under any contract award or modification or any subcontract or grant subaward or modification until awardee receives notification from the Contracting or Grants Officer that the HRPO has approved the assurance as appropriate for the research under the award or modification and that the HRPO has reviewed the protocol and accepted the IRB approval or determination for compliance with Federal, DoD and DON research

protection requirements. See, DFARS 252.235-7004. Guidance:
<http://www.onr.navy.mil/About-ONR/compliance-protections/Research-Protections/Human-Subject-Research.aspx>

(3) Use of Recombinant DNA or Synthetic Nucleic Acid Molecules:

Proposals which call for experiments using recombinant or synthetic nucleic acid molecules must include documentation of compliance with NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines), approval of the Institutional Biosafety Committee (IBC), and copies of the DHHS Approval of the IBC letter. Guidance: <http://www.onr.navy.mil/About-ONR/compliance-protections/Research-Protections/Animal-Recombinant-DNA.aspx>

iii. Institutional Dual Use Research of Concern:

As of September 24, 2015, all institutions and United States Government (USG) funding agencies subject to the [United States Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern](#) must comply with all the requirements listed therein. If your research proposal directly involves certain biological agents or toxins, contact the cognizant Technical Point of Contact.. U.S. Government Science, Safety, Security (S3) guidance may be found at <http://www.phe.gov/s3/dualuse>.

iv. 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/>.

v. 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. (This statement does not apply to international offerors submitting proposals to ONRG. International offerors should contact the cognizant ONRG Administrative Director (AD) for guidance prior to submitting a proposal.) Interim meetings are likely, but these will be accomplished via video telephone conferences,

telephone conferences, or via web-based collaboration tools.