ONR BAA # 12-019

Research and Development/Technology Maturation of Solid State High Power Laser Weapon Systems, Subsystems, and/or Components for Surface Navy, USN

BROAD AGENCY ANNOUNCEMENT (BAA)

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The following information presents the basic organization of this document as well as the location of significant information:

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. A formal Request for Proposals (RFP), other solicitation, or additional information regarding this announcement will not be issued.

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

I. GENERAL INFORMATION:

1. Agency Name - Office of Naval Research

2. Research Opportunity Title - Research and Development/Technology Maturation of Solid State High Power Laser Weapon Systems, Subsystems, and/or Components for Surface Navy, USN

3. Program Name - Solid State Laser – Technology Maturation Program (SSL-TM)

4. Research Opportunity Number – ONR BAA 12-019

5. Response Date – Full Proposals: 10/16/2012

6. Research Opportunity Description -

6.1. Introduction. The Office of Naval Research, Naval Air and Weapons Department (ONR 35), in cooperation with the Naval Sea Systems Command (NAVSEA) Directed Energy and Electric Weapon Systems Program Office (PMS405), are considering a technology maturation (TM) program supporting the development and demonstration of an advanced, ship-based High Energy Solid State Laser (SSL) weapon system prototype to address Surface Navy capability gaps for area and close-in self-defense and Combat Identification/C4ISR.

The ONR funded Solid State Laser Technology Maturation (SSL-TM) Program is focused on the rapid development and prototyping of laser weapon systems suitable for testing at sea on a naval surface combatant.

The technology maturation program is currently classified as a science and technology "Leap Ahead" program, but in future may migrate into an Innovative Naval Prototype (INP), Future Naval Capability (FNC), or directly into an acquisition based program, as determined appropriate by Navy and Department of Defense Leadership.

The goal and threshold objective of the program includes demonstrating technical maturity of the solid state laser weapon system against relevant surface and air targets, in realistic encounters including representative ranges from the ship to target, while at sea and firing through a representative maritime environment. This specifically means the building and testing of a prototype laser weapon - off shore, at sea, on a moving ship representative of a naval surface combatant at combat speeds, in "combat like" conditions with representative targets engaged in "live fire" exercises. This also includes the goals of operating the prototypical laser weapon system from the ship's available power and cooling, and being connected to the ship's combat control and support systems.

At present, final transition platforms have not been officially identified by NAVSEA PMS405 for the anticipated future Program of Record. However, at present, two ship classes, the Arleigh Burke Destroyer, DDG-51, and the Littoral Combat Ship, LCS, are primary candidates for initial shipboard installation. Prior to combatant ship installation, prototypes may first need to be extensively tested at sea on other available naval test assets to ensure that technical maturity has been achieved prior to committing to altering operational assets.

As indicated, SSL-TM program shall include the maturation of not just laser weapon specific technologies, but also its related weapon subsystems and ship interfaces, which shall enable a cost effective prototypical laser weapon system to transition sooner into a Navy Program of Record (PoR). The desired approach is one that is based on modular open systems approach (MOSA) and architecture, where multiple vendors may supply subsystems, and connect through published interface control documents (ICDs) which utilize appropriate combinations of military and open industry standard (e.g., ANSI, IEEE, NEMA, etc.) hardware and software. Therefore,

subsystems may be developed in parallel, by multiple contractors, and be interchangeable between the prototypes as they are tested.

This BAA seeks, in parallel, submissions for:

- Fully Integrated, System Level proposals for development and testing of a prototypical laser weapon system,

- Subsystems Proposals for development and testing of a prototypical laser weapon system, that are able to be introduced through a MOSA approach, and

- Component Proposals for development and testing of a prototypical laser weapon system, that are able to be introduced through a MOSA approach either directly into the Prototype, or through a MOSA approach through a Subsystem and then into the Prototype.

The focus for initial proposal reviews shall be on the Fully Integrated, System Level proposals for the development and testing of a complete prototypical laser weapon system. After these initial proposal reviews are completed, subsystems and components proposals shall then be considered.

The typical level one for subsystems of a laser weapon for guidance in developing proposals is as follows:

- Laser Subsystem, including power conditioning and internal cooling
- Beam Director Subsystem, including KINETO Tracking Mount (KTM)
- Targeting & Tracking Subsystem, including illumination, ranging, and aim-point maintenance functions
- Fire Control Subsystem & Software, including interfaces to shipboard combat systems and the Predictive Avoidance (PA) subsystem,
- Power and Cooling Auxiliary Subsystems, including interfaces to ship hotel systems
- Other auxiliary and mission support equipment

The Beam Director Subsystem of the SSL-TM program is seen by the Navy as having a number of highly critical technical risk elements, including the need to function for long periods in the maritime domain. Therefore the SSL-TM program's main focus will be on the engineering and technologies necessary to support extensive testing of a maritime based beam director (which includes generic functions for kinetic tracking mount or K.T.M.) for a laser weapon system, in order to reduce these risks. As a goal, a maritime based beam director from the SSL-TM Prototype may be installed on a Navy surface combatant or other Navy test vessel for long periods of time. This installation may be for periods of at least six months and will preferably be left unattended. This will require careful thought and planning regarding the development of stored configurations, start up sequences with and without a laser subsystem, as well as unattended aperture maintenance. A stated goal is that during this six month "installed period" aboard ship - that there shall be little to no need for support personnel or extensive engineering

support while in a stored configuration. Further, it has been stated that there would be no requirement for ship's personnel to adjust, clean, or examine either interior or exterior optics in the entire laser weapon system. Therefore, health monitoring of the optical train for a high power laser beam bath shall be considered a critical review item, as well as having unattended operations for verification and cleaning of external apertures.

Additionally, the potential exists for the SSL-TM prototype beam director, optics and associated mount and other subsystems to be exercised or used in collaborative testing, where a high energy laser subsystem is not installed or enabled. The vendor will be included in discussions of such use before it occurs, and the design concepts shown shall require an approach that considers robust self diagnostic, automated maintenance, alignment & possible self cleaning of optics, related human-systems interface with combat control systems engineering and development. Other critical technical milestones, but potentially demonstrated to a lesser extent, shall be the high power laser's propagation in the marine environment to relevant target ranges in realistic at-sea weather conditions to collect scientific atmospheric propagation data, to perform predictive avoidance function verification, and to validate predictions of lethality/M&S against mission critical targets.

A second critical subsystem/element shall be the development and testing of associated external power distribution and cooling auxiliary systems, including designs of interfaces to the test platform's hotel systems. It is recognized that test platform power and cooling capabilities and quality may vary widely from land based test sites to sea based test sites. The government will be heavily involved in ship power and cooling interface developments. Where possible, the contractor shall clearly identify any power and cooling requirements expected to successfully field test the proposed prototype. Vendors should refer to references for ship power standards and possible fluctuations articulated in MIL STD 1399.

In early phases of the SSL-TM program, however, land based testing shall occur. Proposals received should supply technical information on any specifications necessary for sizing or acquiring external power generators and/or water chillers needed for land based testing. For land based testing, the cost of temporarily providing a support power and cooling system should be included, and for planning purposes, be over two separate testing periods of two weeks each. During concept development phase, the government shall reassess the ability to provide power and cooling as GFE/GFP for prototypes at any land based test sites.

Further discussion of any intermediate power and cooling distribution subsystems development shall be provided throughout the concept development and detailed design process, including sharing technical details on how the prototype shall be connected to available power and cooling for an at-sea test platform. The subsystem functions of source power and cooling shall be considered to be the responsibility of the contractor to provide if a "stand alone" configuration of the prototype is offered (See Section 6.3.3), but this shall be refined with the contractor during initial concept design phases. In order to reduce the future risks to future prototype integration on a naval surface combatant, a notional laser weapon - ship integration study has been funded by ONR and is being cooperatively being developed with NAVSEA. The detailed results of that study, when complete, shall be provided at time of Phase I award. Additional, focused ship integration studies are expected to be continued by the government, and results of those studies

shall be shared with the vendors in Phase I, as appropriate.

Achieving success in these critical technical elements simultaneously shall require a solid state laser subsystem, but it is accepted that the technology maturity or technology readiness level (TRL) of a high power laser subsystem may be lower than other subsystems, and can be mitigated through an modular open systems approach (MOSA) that leverages other funded science and technology development efforts - enabling future upgrades as the technology or subsystem is matured. For example, a laser subsystem at higher power levels may not have been fully shock tested, but might be considered as a permissible final test criteria, provided there was sufficient planning and documentation on the engineering processes needed to mature and test the laser subsystem to grade A shock hardness as specified in MIL STD 901C, and that no other significant technology risks remained. Documentation of the resulting engineering development path becomes part of the knowledge base that shall be shared by both industry and government product teams.

Those subsystems already in laser subsystems development, for example, those already funded by the OSD High Energy Laser Joint Technology Officer in Albuquerque, New Mexico in the robust electric laser initiative (RELI), are of particular interest. In order to develop a cost effective, prototypical laser weapon system, it is accepted that the laser subsystem could be less mature than the beam director or other supporting subsystems. The government recognizes that a laser subsystem could potentially be purchased separately and then offered as government furnished equipment (GFE) in order to reduce cost and minimize schedule risk. While recent success in high energy lasers at power levels up to 100 kilowatts have occurred and are expected to continue, and with higher power levels with solid state lasers seen as achievable within a decade, a modular open systems approach (MOSA) of multiple lasers built as line replaceable units (LRUs) is seen as having "best value" to show progressively increasing lethality. Similarly, testing to realistic power levels with non-rugged laser subsystems has also been shown to have value, result in a balancing of program cost for developing any new laser subsystems, and is expected to ultimately reduce the time required to achieve an initial operational capability (IOC) on a surface combatant. Therefore, the laser subsystem is still assessed by the Navy to potentially be a costly subsystem to develop and requires significant manufacturing lead times to produce quantities to conducting exhaustive testing for some projected mission scenarios at ranges relevant to their success and seeks innovative strategies to reduce that risk.

6.1.1 SSL-TM Program Prototype Maturation Phases.

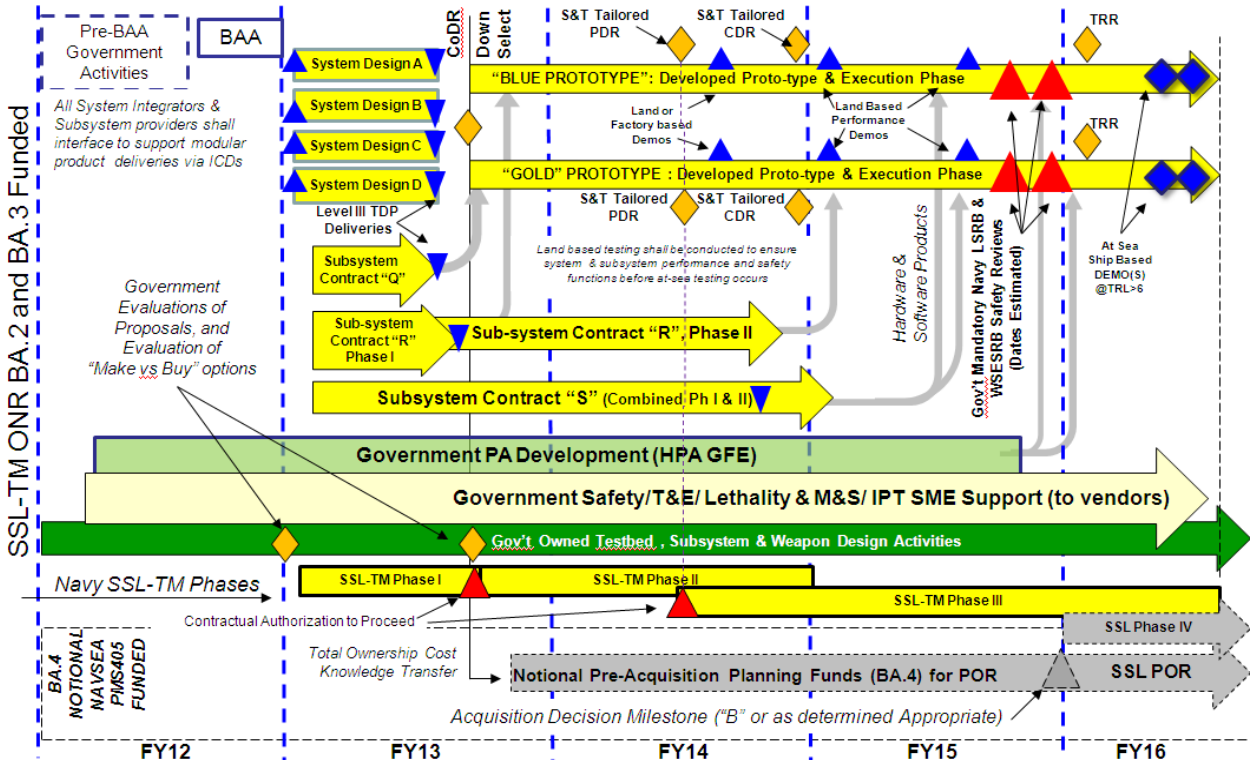

Figure 1: Notional SSL-TM Timeline

In order to follow technical development and maturation progress, the SSL-TM program has established four distinct phases of a laser weapon system prototype. These phases are shown in Figure 1 on the lower half of the diagram. The first three, highlighted in yellow, are anticipated to be funded by the ONR SSL-TM Program:

- A Conceptual Design Phase (Phase I),
- A Detailed Design Development Phase (Phase II),
- A Manufacture, Assembly and Testing Phase which will include land and at-sea demonstration based performance testing of a prototype (Phase III) and

The Development Phase for a prototype system in a future program of record (Phase IV, shown in grey) shall be funded by the NAVSEA transition Program Officer, PMS-405 as funding is made available to do so, and based on the performance shown in Phases I, II and III. It should be noted that funding for Phase IV cannot begin prior to a successful PDR, and is shown starting in the diagram after a Program of Record passes Milestone B. Phase IV may begin prior to a Milestone Decision Authority (MDA) making such a determination, but it is shown as a nominal program transition path.

Subsystem and component proposals need not adhere directly to this phased schedule, as shown in figure 1. And three alternative, notional subsystem development paths are shown in the center of figure 1 for consideration in developing subsystem or component proposals. However, since any subsystem or component shall ultimately need to be interfaced into the prototype to show

value or ability to reduce technical or programmatic risks, proposal developers should document in their proposals that they are aware that after design reviews (e.g., CoDR, PDR, and CDR) the ability to incorporate unique design elements will be severely limited. Proposals must clearly detail how technical and programmatic risks shall be managed, and how communication with planners, government program officers, and commercial integrators shall be documented in subsystem and component proposals. At regular intervals, Subsystem and component developers shall be expected to present their progress and have technical discussions with government and industry technical staff present. Further, the proposal shall identify how a "CDR-like" review will be held on the proposed subsystem or component prior to integration into the prototype for testing.

Notional full system prototype proposals, as shown at the top of Figure 1, shall be competitively selected through the BAA and awarded. Those selected shall then conduct a CoDR, after which detailed design, development, and manufacture shall occur. Milestones for tests and reviews are shown at notional dates and were based on available funding information and anticipating typical budgetary cycles. Correlation between activities in upper timelines and the phases shown at the bottom of Figure 1is shown both by coincident milestones and vertical dotted lines.

In Phase I, awardees will be given several months (per Table A in Section IV) to develop a conceptual design technical data package which meets the CoDR guidance outlined in "General Guidance for Technical Reviews including Concept Design Reviews (CoDR), Preliminary Design Reviews (PDR) and Critical Design Reviews (CDR) for first article Naval S&T Prototypes" dated JUN 2012. Initially, the Government shall work closely with the performers to conduct design and interface trade studies in order to ensure prototype concept designs meet performance and ship interface requirements at a reasonable level of technical, schedule and cost risk. The focus of Phase I efforts shall be to reduce technical and programmatic risks through examining concept design options, ensuring that a prototype manufactured and tested in Phase III meets projected mission performance requirements. Prototype concepts developed shall be expected to meet some rigid design requirements; for example, they must utilize the government furnished Hybrid Predictive Avoidance (HPA) GFE designs provided, as these shall be required for lasing above the horizon from any moving Navy platform. The details for the interface requirements are documented in the HPA ICD and shall be made available on request. Also available shall be a number of relevant military standards still used in the development for naval ship based weapon development programs.

Also in Phase I, connections to ship combat or other hotel systems, including aspects of ship integration shall be considered a part of the Phase I effort and will be a shared responsibility with the government. The vendor shall document design options and trade studies made in the concept design review (CoDR) and present full ship interface details and resulting technical risks for the concept and related subsystems at the CoDR. The vendor shall seek direction from the government in writing in order to clarify any design requirements for ship interfaces.

Further, in Phase I, it is expected that subsystems which utilize MOSA concepts shall be developed in parallel and according to new or emerging ICDs developed by the vendor or by the government. Therefore the potential exists for GFE or directed preferred partnering in the final development of a full system through ICD and MOSA concepts, and in some cases shall require

consideration in the final design development, integration and testing. Vendors shall identify and document at CoDR which subsystems or concepts have potential for improved performance and have been examined for accommodation. Such externally developed subsystems will be considered as GFE/GFP, and shall be separately supported by the government under separate contracts as required. The system level integration contracts shall only be responsible for conforming to required prototype ICDs and other ship interface requirements. However, the willingness to engage in the evaluation of alternate technologies through MOSA concepts shall be continuously evaluated in order to ensure best value to the government.

In order to complete those requirements for Phase I, the following documents shall be provided with the award of Phase I: (A) Hybrid Predictive Avoidance Interface Control Document (HPA ICD), (B) Detailed Weapon Specifications, and (C) Results of the NAVSEA 05D Ship Integration Study.

On nearing completion of Phase I, awardees shall be required to present the resulting conceptual design at a Concept Design Review (CoDR) to a panel of qualified experts, selected Fleet representatives, and resource sponsors (see Section IV, 2b. Concept Design Review (CoDR) Detailed Design Package). The evaluation criteria will be based on guidance detailed in Section V. Performance in Phase I shall conclude with completion of the conceptual design review (CoDR) held by the government.

In Phase II of the effort, detailed system designs shall be developed in which a tailored Preliminary Design Review (PDR) is held and conclude with a tailored Critical Design Review (CDR) in order to complete documentation of the design. Also, if selected for Phase II, awardees shall be expected to submit ICD changes based on either CoDR review or resulting from design and IPT recommendations. These changes shall also be considered and possibly directed by the government in Phase II. In Phase II, any design changes which may affect program cost or schedule shall be considered to require an Engineering Change Proposal (ECP, see also MIL-HDBK-61A, Section 6.2) However, the basic form, fit, design and system function of the prototype proposed in Phase I, at the Conceptual Design Review (CoDR), shall not be altered. For reasons of cost, performance or schedule, the government may in Phase II, direct changes in laser output power (higher to lower, or lower to higher,) or may direct system level test configurations (e.g., external power or cooling) based on test ship configuration or assets available (e.g.,Self Defense Test Ship, DDG-51 class ship, LCS, FSF-1, etc.). Therefore, in the Phase II and Phase III efforts, the Government shall establish the requirement for a Configuration Management Automated Information System (CM AIS.)

Safety is a critical program element for the SSL-TM program, and becomes more thoroughly reviewed in Phase II as part of the detailed design process. The completeness of design packages shall be considered necessary well prior to any Test Readiness Review (TRR) or for any safety reviews conducted by the Laser Safety Review Board (LSRB), or the Weapons Safety Explosive Safety Review Board (WSESRB) for at-sea testing or in planning at-sea demonstration in Phase III. (Costs for the LSRB and WSESRB reviews shall be scheduled in Phase III efforts.) Figure 1 shows probable time and order for these gated reviews. It should be noted that any resulting deficiencies identified by the LSRB or WSESRB, which are left uncorrected, shall result in possible work halt conditions, and the inability to test the prototype and reach the final program

test objectives. Further, any known safety violations to protocols outlined in the Navy Laser Safety Program, NAVY INSTRUCTION OPNAV 5100.27B, MARINE CORPS ORDER 5104.1C, shall be considered grounds for possible immediate contract halt and/or termination by the contracting officer, to wit "The provisions of this directive are mandatory for all Navy and Marine Corps activities. They apply to the design, use, and disposal of all equipment and systems capable of producing laser radiation, including laser fiber optics and system support equipment." In Phase II, program and "in process" design review meetings may be held with members of the LSRB or WSESRB present in order to facilitate approval processes for Phase III, and avoid any need for significant design changes or ECPs. Any personnel injuries resulting from laser operation in any component of the prototype shall be initially verbally reported to the ONR Program Officer, and then made in writing within 24 hours to the contracting officer. The contractor shall support any government investigation of personnel laser injury.

Details of the level of design documentation required are detailed in the checkout sections for PDR and CDR in "General Guidance for Technical Reviews including Concept Design Reviews (CoDR), Preliminary Design Reviews (PDR) and Critical Design Reviews (CDR) for first article Naval S&T Prototypes" dated JUN 2012. For purposes of Phase II planning, three full eight hour day reviews are expected to be required as a minimum for the each review, the PDR and the CDR, and will be held in Washington Metropolitan Area.

In Phase II, the SSL-TM program first begins to reach the level of maturity necessary to enable objectives for transitioning into an acquisition program, by methodically examining designs against multiple technical and programmatic risks. Technical risks need to be minimized early in the detailed design process, if not already addressed in Phase I. The two primary programmatic foci of this technology maturation program in Phase II shall be (A) the reduction of technical risk against mission performance requirements and (B) the management of demonstrating performance against the forecast developmental cost (BA.2 through BA.4) and also the projected total ownership costs of a laser weapon system. These will require rigorous design modeling system approaches in Phase II and detailed cost modeling approaches that leverage past directed energy and other weapons systems to enable Phase III. Past directed energy weapons development programs have suffered from ineffectual cost estimates and inflexible planning. Phase II efforts shall provide alternatives to cost overruns, through technical risk, schedule, performance, or cost management controls and reviews.

Phase II and Phase III shall be structured as a Cost Plus Fixed Fee contract (CPFF).

In Phase III, building and testing of a complete prototypical laser weapon system shall occur. For purposes of Phase III planning, contractual authorization to proceed for Phase III shall only occur after a successful completion of a government conducted Preliminary Design Review (PDR), and completion of government review of a revised Phase III proposal (Note, for planning purposes, this government review of a revised proposal may require up to 120 days to complete.) The Phase II technical data package and full specifications of products shall be considered deliverable items, and all system level subsystem interface and design based efforts shall conclude at CDR, and shall be the basis for the prototype built and tested. Any adjustment after the CDR to the design shall be handled only through engineering change proposals (ECPs.) In order to reduce the number of ECPs, some overlap may occur with Phase II and III. However, separate lines of

accounting shall be maintained in Phase II and III at all times, and these shall not be broached for any reason. Manufacture, assembly and field based (land or at sea) test and evaluation, and final demonstration shall occur in phase (III) and shall have a period of performance per Table A in Section IV.

Phase III will culminate in a series of performance tests to be outlined in a Master T&E Plan provided upon initial award in CLIN I. Testing is expected to occur both on land and at sea without the benefit of any external protected weather coverings or permanent buildings. Previously, laser systems contained within large transport containers (e.g. intermodal containers or CONEX Box) were found to be suitable for early land based and sea based testing. However, such containers shall not be considered as suitable for long-term ship installations. Land tests will be conducted at a shore based "open air" government test range, and conducted over water (e.g., NSWC Dahlgren, NSWC Port Hueneme, White Sands Missile Range, etc.) At sea tests will be conducted on government operated closed test ranges with approved "open air" laser testing capacity, on or adjacent to ocean waters (e.g. San Nicolas Island, Eglin AFB, Etc.) The test sites will be evaluated by government systems and models, and selection based on the ability to conduct tests of the prototype against mission objectives. Vendors shall be provided access to all test and evaluation planning meetings, on a need to know basis. Phase III tests can include but are not limited to Factory Tests, Land-based tests at government operated test facilities (full system end to end engagement and diagnostics), and Ship-based tests. The potential for down-select prior to ship testing at Navy and government operated test ranges exists after each system performance and milestone review. The Test Readiness Review may be held at a government facility on the west coast of the United States, likely in the vicinity of Los Angeles and require two days. Also included in Phase III are all efforts necessary to support reviews required by the Navy's Laser Safety Review Board (LSRB) and the Weapons Systems Explosive Safety Review Board (WSESRB.) For planning purposes, two- two week long series of land based tests are currently being anticipated, and two one week long series of at-sea based performance tests are currently being anticipated. Additional periods of "at sea" deployment will be considered based on the proposal concept designs, program progress, program funds available, and recommendations from the T&E IPT. A goal for every contractor should be to have the prototype laser weapon system spend at much time at sea, on a test platform, collecting targeting data and/or testing the HEL against targets, as possible. The Operational Availability (Ao, as defined in "Operational Availability Handbook" OPNAVINST 3000. 12A) of the prototype shall be considered a primary performance metric in Phase III.

Phase IV exists as a potential bridge to a Program of Record (POR), and includes the potential for the Navy to acquire an additional (or second, identical) prototype weapon system as a firm fixed price contract in order to continue test and evaluation, or conduct limited military utility assessments. The Government is the sole performance evaluator in Phases III and IV.
Any subsequent contracting for Phase IV shall only be considered after the successful completion of detailed design documentation in the Phase II PDR and will not be considered as part of the selection criteria for award in either subsystem or system/prototype level contracts. No express guarantee or promise exists in the awarding of any Phase IV options, as that requirement for funding of a notional Acquisition Program of Record (PoR) will reside solely in the transition program office, the Naval Sea Systems Command (NAVSEA) Directed Energy and Electric Weapon Systems Program Office (PMS-405). Should additional funding be made available,

Phase IV contract options may be considered as one method of obtaining either program planning, mission critical data or performance of system capabilities tests relating to a PoR.

Initially, the funding identified for prototype efforts in Phases I, II and III will be from the ONR in budget activities two and three (BA.2 and BA.3) on the order of $110 Million from FY13-FY16, and shall include government costs. ONR Program funding allocations are initially guided on a historical split with 30% of funding going to government activities, and the remaining 70% going to industry. No value of IRAD funding was considered in the determination of these values, as this is hard to correlate based on varied reporting methods used. This ratio of government-to-industry funding may ultimately change based on the quality of the proposals received, evolution of testing requirements, and ultimately on program execution timing and budgetary constraints. Some of the available funding for industry is expected to be set aside for subsystems development, and the remainder for "full system" integration contracts. No specific percentages for "full system" vice subsystem development contracts have been established. Award of a subsystem contract does not assure or exclude the ability to win a full system design and integration contract. Subsystem costs and contract execution times are expected to vary widely based on subsystem complexity, size and function - and multiple subsystems may be awarded.

It should be noted that the anticipated funds figure shown ($110M) includes costs that are the inherently governmental responsibilities for Test and Evaluation of the built prototype, both on land and at sea on a surface combatant with the relevant combat systems interfaces. That level of test and evaluation will ultimately require review and approval of the system safety of any prototypical laser weapon system prior to testing. This will include presentations and reviews conducted by the Navy's Laser Safety Review Board (LSRB) and the Navy's Weapons Safety Review Board (WSESRB). This includes potential review by their Software System Safety Technical Review Panel (SSSTRP.) As such, suitable manpower and meeting preparation allowances to support these reviews along with other critical reviews should be carefully considered in preparing any "full system" design and integration proposal and for any subsystem proposal which may require such reviews. Those unfamiliar with these requirements may wish to first review the Navy's NAVY LASER HAZARDS CONTROL PROGRAM instruction, OPNAVINST 5100.27B MCO 5104.1C CNO (N09F)/CMC(SD) dated 2 May 2008.

The SSL-TM effort is also expected to leverage multiple other technology development efforts and will seek out the best of those developed in order to incorporate them into a near term prototype for field demonstrations on land and at sea. The program may also act as a risk reduction activity to other follow-on S&T and acquisition-based activities for other Navy laser systems, be they aviation, ship or submarine based. Therefore, subsystem development and component proposals which enable improved full system prototype performance are also being sought and shall be considered under this BAA. Initially, four Phase I contracts are expected to be reduced into the development of two or fewer actual prototypes, based on the funding available. As shown in Figure 1, this reduction is expected to currently occur at the end of Phase I with the Concept Design Review (CoDR.)

While entry points for some technologies and subsystems will be relatively rated at high readiness (TRL 4 to 6), other critical technologies are acceptable to be rated as relatively low

technology readiness level (TRL 3-5). Where possible, higher rated technologies shall be rated higher priority for available funds than lower rated ones - unless there is a significant, identified value in multiple mission capabilities or reduction in life cycle costs that has governmental "best value" associated with it.

6.1.2 Solid State Laser Technology Maturation Program Approach

As stated in Section 6.1.1, the development of a prototype shall be conducted in phases. This combined BAA Phase I/II/III solicitation requests proposals for full or partial system designs that have a time period as specified in Table A of Section 6.4, for completing all three phases, from when the BAA is posted on FEDBIZOPPS with responses as described in this document. Up to four contracts are expected to be initially awarded (Phase I), anticipating up to two prototypes being built under options (Phase II & III). Initial system level proposals shall have the Phase I concept design awards set at $1.5M Firm Fixed Price (FFP) contracts each, under CLIN I. The Phase II detailed development phase, is a contract CLIN option that shall be cost plus fixed free. Phase I and II shall be shown down to a WBS sublevel detail of 4. And the option Phase III manufacture, assembly and testing phase shall be shown down to a WBS sublevel detail of 3 with a commensurate detail shown in costs. Therefore proposals are required to capture Phase II accurately, and Phase III Level of Effort (LOE). Proposals should have an objective capture table at the beginning that maps BAA requirements to response sections, page and paragraph.

Proposals for work to be conducted in Phase I and II shall be devolved through a level 4 work breakdown structure (WBS) and shall be provided with corresponding cost tracking of manpower to design task. Phase III tasks and cost models for the initial proposal submitted under this solicitation shall be level 3 WBS and shall be provided with corresponding cost tracking, and shall include projected cost to build, manufacture and test the prototype. Before the end of Phase I, a revised proposal for Phase III shall be expected, with WBS raised to level 4, and shall be provided with corresponding cost tracking, and shall include projected cost to build, manufacture and test the prototype. Should costs for the revised proposal of Phase III unexpectedly exceed the provided cost factors from those initially provided, the government may decide not to execute the contracting options for Phase III. Any anticipated cost increases or decreases in Phase III in excess of 10% of the cost value provided as a response to this solicitation, as identified by the vendor in Phase I or II, shall be communicated in writing to the Contracting Officer within five (5) working days.

As proposals arrive, system level proposals will be reviewed by a SSL-TM program panel of experts to include qualified and recognized Subject Matter Experts, Fleet Representation, and Resource Sponsors. This panel shall recommend system level proposals for initial prototype development awards based on merit and the evaluation criteria in Section V with potential award of up to 4 Phase I, full system designs. Subsystems and potential S&T components may also be separately selected and awarded for development (cost may vary for award) in parallel, and funded as a separate Cost Plus Fixed Fee contract at the discretion of the government. The government may also reconsider component development under existing contracted efforts or through proposals made to the ONR long range BAA (Long Range Broad Agency Announcement for Navy and Marine Corps Science and Technology, ONR BAA12-001, of 28

September 2011.)

The Phase I, II and III efforts shall be overseen by a government IPT for the design & development phases. A second IPT structure will provide the Test and Evaluation (T&E) system performance metrics and measuring and will include industry involvement as appropriate. Each proposal should similarly offer an IPT structure, and each proposer must be prepared to identify the members of its IPTs immediately after Phase I award Each proposer must discuss the evolution of the IPT through Phases II and III. The proposed design is subject to change based on IPT direction with concurrence from the Program Officer. Government and T&E IPT direction should be taken seriously since similar guidance and lessons learned will be made to design & development teams. Weekly IPT Design and Development meetings (Tele-cons/VTCs/in person), monthly reporting, in-person Quarterly reviews, Mission Readiness Reviews (MRRs), Test Readiness Reviews (TRRs), and Safety reviews will be expected during the development phase.

Throughout Phase I, and as the conceptual design evolves, it may become apparent that it is more practical for the Government to lead the Phase II design effort due to heavy use of GFE and associated Government expertise, or because of proprietary data rights issues among performers, or other such management issues. In this case, even though the Government will lead the activity, significant support will still be required from the performers. It is envisioned that Phase II or III proposals could be re-scoped to eliminate duplicative activities that would being performed by the Government. Should this case develop, the vendor may request/be requested to submit a revised cost proposal for Phase III, based on the direction received. Costs for developing Phase III proposal revisions shall be expected as included in any Phase I funding provided.

At completion of Phase I, each performer shall be given the opportunity to deliver a revised Phase III proposal based on the design delivered at CoDR. The CoDR design will form the basis for all Phase II design activities and is not expected to change the level of effort in Phase II.But insights obtained prior to CoDR may result in cost adjustments which are necessary for Phase III to be fully successful. This revised cost proposal shall be based on direction received in Phase I from the government on how Phase III must be revised in order to achieve test or mission objectives. Such revisions could also include directed partnering, use or testing of other subsystems, directed use of GFE, or changes in the proposed prototype for reasons of safety, testing requirements, or ship compatibility.

The solid state laser technology maturation development plan will include and demonstrate those critical technology efforts in a surface ship-mounted laser weapon system, to enable future acquisition program approvals at Milestone B by the Milestone Decision Authority (MDA). In order to achieve this goal, the ONR Program Officer will work with NAVSEA Program Officers, the government SMEs, HQEs, and Contractors to enable the related entry of technology by answering acquisition questions throughout the program. The following are examples of the questions that may arise:

--Was the technology demonstrated in the prototype affordable when considering the ability of the Department of Defense to accomplish the program's mission using alternative systems?

--Did the technology demonstrated in the prototype enable appropriate tradeoffs among cost,

schedule, and performance objectives to ensure that an acquisition program is affordable when considering the per unit cost and total acquisition cost in the context of the total resources available during the period covered by the future-years defense program submitted during the fiscal year in which the certification would be made?

--Did the technology demonstrated in the prototype include reasonable cost and schedule estimates, and were projected costs and schedule maintained?

--Can the technology demonstrated in the prototype be captured in the development of future year defense program submissions?

--Does the technology demonstrated in the prototype as well as the results of the prototype testing support an acquisition-based preliminary design review demonstrating a high likelihood of accomplishing its intended missions? Was it demonstrated in a relevant environment as determined by the ONR and NAVSEA Program Officers?

--Did the technology demonstrated in the program prototype comply with all relevant policies, regulations, and directives of the Department of the Navy and Department of Defense?

ONR is interested in both (1) full system proposals addressing the development and demonstration of an advanced development model (ADM) SSL weapon system prototype with an exiting technical readiness level (TRL) of at least 6; and (2) subsystem development proposals which enable improved full system prototype performance. A prototype and subsystems with performance levels of TRL 7 have been strongly desired by Navy Staff. ONR is considering two (2) development paths for the prototype technical maturation program:

(1) Industry Designs: Proposals from industry for competitive development/prototyping of a complete SSL weapon prototype with partnering from component/subsystem vendors only as required. The majority of efforts necessary to develop a prototype will be handled through the main contract vehicle and its proposed subcontracting efforts. On an Industry Design-led path, the awardee assumes much of the responsibility and risk for integrating a final functional prototype and for meeting critical test milestones. Subsystems and component development is encouraged in the submission, since directed preferred partnering opportunities may still exist later in the program. The government may decide to invest in or conduct parallel risk reduction efforts with government efforts or with industry, at no cost to the industry design proposal. Later the government may offer to provide those subsystems or components as government furnished equipment or government furnished property (GFE/GFP).

(2) Government-Directed Design: Design of the SSL weapon prototype would be conducted under the supervision of and at the direction of the identified Government technical design agent. The prototype would be developed from a combination of internal government and industry developmental efforts, including subsystems proposed under this BAA. Performers under a Government-Directed Design path shall conduct specified design system studies with respect to provided subsystems or components. They track the subsystem risk flow-down and risk relationships with respect to multiple interacting subsystems which may be competitively procured from multiple vendors. Integration of subsystems and related critical design elements

into a prototype suitable for at sea testing shall be the ultimate responsibility of the identified government technical design agent and government team. Under a Government-Directed Design, the government assumes much of the responsibility for and risk in integration into a final functional prototype.

The Government may either execute a "Make or Buy" decision based on the design trade space shown in the proposals or may decide to reassess the "Make or Buy" after the Concept Design Reviews (CoDRs) are complete. Multiple contracts for full system designs and/or subsystems will be awarded. The quality and costs of full system designs/proposals submitted shall be used in the determination made by the government for "Make or Buy", and shall be after full evaluation of risk, cost, and schedule.

In particular, full system proposals should contain the ability to accommodate externally developed subsystems through a modular system design approach. Subsystems can be submitted as separate proposals but are required to meet the applicable sections of this BAA in order to be considered a response. Subsystem submissions will be viewed for selection and inclusion into either path for prototype testing. It is expected that the prototypes will be used to extensively test subsystems developed under separately funded efforts, but any interfaces will be done through established interface control documents (ICDs.)

The Office of Naval Research hosted a Pre-proposal Conference/Industry Day to support interaction and discussion of the government's needs and requirements on May 16, 2012. See Sec. IV.1.for information regarding briefing slides and answers to questions submitted during the conference.

6.1.4 Additional Information.

Documents are available upon request to full weapon system proposal Offerors that have the proper facility clearances. See section “7. Point(s) of Contact” for the procedure to request classified information:
a. Development Approach for a High Energy Laser Decentralized Propagation Fire Control System. Dahlgren, VA: David C. Stoudt. 8 May 2011.
b. DON CIO Memo 02-10, 26 April 2010, Information Assurance (IA) Policy for Platform Information Technology.
c. Top level Weapon System Mission Descriptions/Requirements
d. General Guidance for Technical Reviews including Concept Design Reviews (CoDR), Preliminary Design Reviews (PDR), and Critical Design Reviews (CDR) for first article Naval S&T Prototypes, dated 08JUN2012

6.2 BAA Proposals for Subsystems, Components, and Innovative Science and Technology Ideas that support a shipboard laser weapon system prototype.

Proposals submitted in response to this part of the BAA are for subsystems, components and S&T ideas to support developing and innovative approaches to manufacturing, producing, installing, and operating a laser weapon on surface ships. Offerors are free to submit one or more subsystems or components, and across any of the subsystems outlined in Section 6.1, e.g.,

beam director, course/fine tracker, controls, laser and power/cooling subsystems. Proposals for components for use in any one of these subsystems should clearly state the subsystem and placement location in the subsystem early in the technical section of the proposal. To encourage superior proposals, partnering between vendors is encouraged even at the subsystem or component level.

Offerors are encouraged to submit separate subsystem tasks/proposals which include supporting a Level of Effort (LOE) for system engineering efforts and/or system integration tasks. In particular, the government is looking for ways to buy down risk in subsystems and critical components with technology development efforts that could be matured within one to two years. Proposals to develop higher technology readiness level (exit TRL > 6) components, subsystems from innovative Science and Technology ideas that support future weapon system capabilities will be considered highly desirable and separately evaluated after full system proposal evaluations have been completed.

Integration tasks under component/subsystems into the prototype will typically be performed by the Lead Design Agent (Industry or Government led); however technical expertise may be required to help develop and test subsystems or develop component interfaces during the installation in a laser weapon system prototype. Therefore a Level of Effort (LOE) component is requested to be included, based on estimated need to support two separate industry teams and one government team. For planning purposes, there shall be meetings where subsystem or component developers shall be required to brief government program officers and industry based system integrators together, and these meetings are expected to occur on a quarterly basis (four times a year). In some cases, the proposals for subsystems may require additional negotiation or partnering arrangements due to the technology's complexity or inter-operational requirements with other components, interfaces and subsystems used in the prototype. Subsystem and/or component proposals shall include a detailed discussion of the way in which they will meet any shipboard installation constraints and environmental requirements, be they temporary or semi-permanent.

In order for component or subsystem proposals to be properly evaluated, they must document how they will be integrated into or support the testing of a prototype to meet weapon specification metrics. This documentation should also include a discussion of the timelines outlined for testing of the prototype shown elsewhere in the BAA, as in Figure 1, and in both land and at sea testing. Additionally, proposals for components shall need to document how they anticipate interfacing through either Interface Control Documents (ICDs,) modular open systems approaches (MOSAs) and/or as line replaceable units (LRUs.) All subsystems design shall be expected to meet Modular Open System Approach (MOSA) and modularity objectives, as discussed in section 6.3.11.2.

Submissions for subsystems, components and S&T ideas are highly encouraged to identify clearly how they trace performance improvement for a prototypical laser weapon to the metrics found in the draft classified weapons specification. Subsystems and components of high interest to the Navy for developing a prototypical laser system include tracking, targeting, EO/IR dazzling, stabilization and isolation, optical components, beam directors, sensors, as well as the laser subsystem, which may be comprised of either single or multiple solid state slab or fiber

lasers. Additionally, software developments needed for tracking algorithms, automatic target recognition, aimpoint selection, aimpoint maintenance, and interface development are of high interest. Other areas of interest are listed later in this document (and in Section 6.2).

Vendors are also encouraged to submit innovative proposals for subsystems, S&T ideas, and/or components that support laser weapon system shipboard demonstration activities or those activities characterized as "Test and Evaluation" or maintenance functions. These may include specialized laser test equipment, automated optic cleaning systems, ship simulators, or Integrated Power –Distribution-Control- Cooling Management and Monitoring subsystems. Such proposals should show a pathway that takes immature technologies (e.g. TRL = 3) and that provides a significant improvement over other commercial off-the-shelf technologies available.

Should vendors feel that their subsystems or components are not quite ready to support a full proposal in response to this BAA, then an alternative approach is to submit a one page white paper under ONR's current Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology (ONR BAA 12-001, dated 28 September 2011, Section IV.2) as part of the applications focused on applied research and advanced technology development in the area of "Directed energy, solid state lasers."
Additional items (components/subsystems) of interest under this BAA include, but are not limited to:

- High Power resilient optics and optical coating
- Salt water resistant coatings
- Water and laser damage resistant optical coatings
- Fast Steering Mirrors and associated control software
- Trackers and Aimpoint maintenance/selection processors
- EO/IR dazzlers
- Tracking and beacon illuminators
- Optics designs for combining laser beams to meet the requisite powers on target and beam quality
- Aimpoint acquisition and aimpoint maintenance software
- Target identification algorithms and techniques
- In-situ atmospheric characterization for shipboard use in tactical shoot/don't shoot situations - active and/or passive modules
- Combat system and C4ISR system integration
- Secure onboard data recording for lasing events, video, and still photographs
- Adaptive Optics hardware for atmospheric and on-optical bench wave-front correction - advantages to this approach should be clearly stated and shown.
- Precision, low drift inertial reference solutions that provide precise inertial attitude knowledge
- Ship integration subsystems
  - o Shipboard laser packaging
  - o Beam director marinization
  - o Shock/vibration mounting of sensitive components/optics
- Power conditioning unit or subsystem for shipboard use
- Alternative energy storage technologies and configurations for ship applications, such as battery, capacitor-based, fuel cell, fly wheel, or superconducting energy storage

- Cooling and thermal management for the laser weapon system
- Fault Isolation/Tolerance and Built-In-Test
- Increased wall-plug efficiency
- Novel approaches for instrumentation and data collection/transmission of on-board target(s) system is of interest for support of the SSL demonstration.

The approach to hardware, software, and interfaces developed or utilized under this BAA shall support open design and open architecture design principals. If there are proposed systems, subsystems, components, software, and methods that are proprietary, these should be identified by the Offeror and clearly justified. If awarded, Government Purpose Rights in all aspects of the Technical Data and Software shall exist and is asserted.

Components and subsystems developed under this portion of the BAA should be incorporated into an SSL weapon system design no more than two (2) years from the date of award. See Section IV.3. for the potential award date. Multiple awards for components and/or subsystems are possible. Expected TRLs and technology advantage need to be clearly stated in the response. Agnostic sub-systems and components are desirable as solutions for full system partnering. Modularity in design and ease of ability to integrate and connect to open architecture designs is required. If the proposal is for long term development beyond two years, the proposal must clearly identify:

- current TRL,
- expected end state TRL,
- explanation of modular open system approach or interface requirements (e.g., power, cooling, weight, volume, data paths),
- date that effort will complete and deliver hardware or software for integration into a prototype SSL-TM system,
- a clear explanation of the advantage over other technology or approaches, and
- reasons for consideration in terms of system performance gain vice unit or NRE cost.

High risk, high (unit or NRE) cost approaches for low TRL assessed subsystems and components which do not support modular open systems approaches or the objectives stated in this BAA shall be rejected. Innovation, cost effectiveness, and ability to support a modular scalable approach which reduces technical risks rapidly shall be carefully considered. Partnering with "full system" vendors shall be expected to be requested by the government.

The development of subsystems is a critical interest to the Navy, especially if the single, Government-led Marinized design approach is used. Subsystem designs will be given the same considerations when being assessed, as full system designs and should be provided in the same detail as the full design.

6.2.1 Partnering.

As mentioned above, the government is looking for ways to buy down risk with technology development that could be matured to support a full laser weapon system. Based on the maturity and innovation of subsystems and components developed by Industry under this BAA, the Government may direct Preferred Partnering relationships among Industry. In addition, the

Government may develop or find a specific component or subsystem that may benefit a proposed design of a SSL weapon system.

6.2.2 Submission of Proposals.

Proposals for subsystems, components and S&T ideas shall be submitted in accordance with Section IV of this BAA using the ONR template and website noted. Proposals will be evaluated in accordance with the evaluation criteria listed in Section V of this BAA.

6.3 BAA Proposals for the Development and Demonstration of an SSL Weapon System.

There will be a phased approach under this BAA for the Development and Demonstration of the SSL weapon system. Phase I will involve awards for up to four Offerors based on weapon system Full Proposals submitted in accordance with Section IV of this BAA using the ONR template and website noted. Proposals will be evaluated in accordance with the evaluation criteria listed in Section V of this BAA. The Phase I awards will be for several months , and the Offeror will be tasked to mature its weapon system design and complete a Detailed Design Package to be submitted for evaluation by the government. An addendum to this BAA, which defines the top level Weapon System Mission Descriptions/Requirements, will be provided to all requestors who meet the security requirements for the purposes of developing initial responses to the BAA. Phase I awardees will be provided additional documents: Detailed Design Specifications, HPA ICD, and results of the NAVSEA 05D Ship Integration Study.

One key element of the Detailed Design Package will be a Level III Technical Design Package, which is a complete, detailed design of a SSL Weapon System, including block diagrams; schematics; mechanical drawings; parts lists and descriptions; software flow charts, identification of dimensions, materials, and vendors; explanations of how the system will work; etc. This must provide a well thought-out, reasonable plan to show how the proposed SSL prototype system will be built and operate and meet the requirements set forth in this document. In addition, at the end of Phase I, the performers will be requested to provide a four day detailed presentation and discussion of their Detailed Design Packages. A complete list of expected materials will be provided to each performer at the time Phase I awards are made. Performers are expected to deliver hard and soft copies of the presentation materials: 3 TDPs and 8 CoDR packages to assist in the review.

After this event and suitable review by the government, up to two (2) of the Detailed Design Packages will be selected for Phase II development. Phase II of this BAA is for the development, integration, tests and at-sea demonstration of a complete laser weapon system.

In the Phase I proposals for this BAA, each Offeror should include costs for weekly (Tele-conf/VTCs) and monthly reports on cost, schedule and technical progress. In addition, proposed cost should include quarterly on-site, 2 day, reviews and the final four (4) day presentation of the Detailed Design Package l.
Understanding of the Requirement/Proposal Evaluation: Proposers must demonstrate that their technical approach is comprehensive, systematic, and sound; that they have an understanding of critical technical issues and risks both at the system and subsystem functional levels; that they

have a plan for mitigation of those risks; and that the technical elements are well integrated into a cohesive program. Any analysis techniques or codes/equations for system level modeling and performance, with exception to High Energy End to End Operation Simulation (HELEEOS) or High Energy Laser Consolidated Modeling Engagement Simulation (HELCOMES) codes, shall be made available for government review.

Risks: High risk areas or trades between cost, gain, potential gain and any substantial size, weight, and power requirements should be displayed in a table. Risk reduction plans of risk areas should be displayed in a Risk Waterfall Chart to illustrate risk type and level in the y-axis and schedule in the x-axis. Points at which risk levels drop should have corresponding information on what risk mitigation or expected tech maturation was used or expected in the plan to lower risk by that point in the schedule. Risk paths should show off ramps during the schedule for mitigated risks and for alternate success paths based on development progress or lack of progress in the proposed risk element. Mitigation of risks should also be described in detail. Risk assessments and mitigation should be answered for full system designs and subsystems/S&T components proposed.

Describe clearly any conceptual design being proposed with enough developmental detail and rigor to convince the review panel that the design has mature, substantiated, and quantitative understanding and descriptive discussion, with detailed drawings/illustrations, of the system design and program technical objectives/metrics, the statistical confidence with which they may be measured, and their relationship to the concept of operations that will result from successful development and performance in the program. Detailed technical discussion is required for any innovative or breakthrough approaches proposed. Task descriptions and associated technical elements provided should be complete and in a logical sequence with all proposed deliverables clearly defined, such that the final product can be expected to achieve program goals and schedule. For complete Evaluation criteria, see Section V.

6.3.1 Government Documentation.

Upon request and after furnishing appropriate documentation of clearances to the contracting officer, Offerors will be provided several documents including a classified appendix that will describe the weapon system performance requirements, such as ranges, spot sizes, and irradiance on target, that are anticipated for the application of a baseline solid state laser weapon capability. These weapon system requirements will evolve and mature as government design studies mature and Industry reviews progress. The final weapon systems requirements will be provided to Industry during Phase I of this effort. In addition, projected shipboard installation capabilities and limitations will be provided to support the design of the SSL weapon system.

Available Documents upon request after award of Phase I contracts:

a. Ship Installation Size, Weight, and Power (SWaP) guidance based on an ongoing NAVSEA 05D SSL Ship Integration Study

b. Hybrid Predictive Avoidance Interface Control Document: HPA system will be GFE to each selected design for development

c. Detailed Weapon System Design Requirements

d. BAA Addendum: Phase II Detailed Design Requirements

6.3.2 SSL Weapon System Design.

Each Offeror's proposal must demonstrate the company's ability to design, build, integrate and test a laser weapon prototype that is traceable to an affordable system, capable of being acquired, and as a minimum meets and demonstrates the specifications provided by the government in a cost effective way. Therefore, the proposal should demonstrate a clear understanding of the SSL weapon system requirements and functions, as well as cost to build a prototype as well as a production level system. A discussion of the weapon system's engagement process should include the detection, track, target, and engagement functions. The proposal should also provide technical discussion/details, with drawings, of the system architecture and beam propagation path: how the system takes photons from the laser and places them on target when the weapon is aboard ship. This should include the effects of vibration, environment, power, beam forming, beam control and aimpoint selection and maintenance. Self alignment or system alignment mechanisms should be described in detail. Discussion of the aperture size, BQ, optic train efficiency, any free space optics and/or laser power combining methodology (passive, coherent, spectral, tiling, etc.), contamination control and elimination should also be included in detail with drawings. Details are also desired on the Intelligence, Surveillance, and Reconnaissance (ISR) functions of the system. Define and describe ability to take pictures, record video, and perform Combat Identification at range. Define this capability using National Imagery Interpretability Rating Scale (NIIRS) and range. Shared aperture tracking and ISR/BDA (Battle Damage Assessment) is encouraged/desired.

The approach to hardware, software, and interfaces developed or utilized under this BAA shall support open design and open architecture design principles. If there are proposed systems, subsystems, components, software, and methods that are proprietary, these should be identified by the Offeror and clearly justified. Weapon system designs that are part of the detailed proposals funded by ONR shall have Government Purpose Rights in all aspects of the Technical Data and Software. Proprietary data, if any, should be minimized in the design to the extent practical and should be clearly marked and defined.

A deployed SSL Weapon System requires a Satellite Predictive Avoidance Capability. The SSL design shall incorporate a Hybrid Predictive Avoidance (HPA) unit. This HPA system shall be provided as Government Furnished Equipment (GFE) to selected Offerors developing the SSL weapon system. An Interface Control Document will be furnished to provide interface requirements for the system design and development.

There are several on-going Government and Industry efforts supporting laser development. If the Offeror plans to use a laser or subsystem that is being developed under another program, the cost of the subsystem and any modifications shall be identified in the Offeror's proposal. Since this SSL weapon system is the precursor for a POR, the weapon system will be designed to meet

MIL-STD 901D Grade A shock requirements. At this time, it is not anticipated that the system will be tested to Grade A shock.

The SSL system design can include concepts using existing Navy mounts such as the CIWS (Mk15) and Mk38 gun weapons mounts and gun systems. Any proposals that include these mounts shall include the cost of acquiring or using the mount or gun weapon system as well as any modifications to the mount for the duration of the program. In particular, any such designs which use a gun weapon system shall, in detail, describe the technical risk mitigation strategy of the gun firing and the resulting operational impact on design requirements for the optical elements or laser subsystems, to include self calibration, gun blast overpressure or particulates fouling the external optical aperture of the laser, laser power scalability to 100 kilowatts, cost implications related to total ownership costs, and the advantages or disadvantages of the system to operate in either gun only, laser only or combined gun-laser modes.

Any such laser-gun weapon system proposed shall be required to be tested in combined gun and laser firings as part of the SSL-TM program, both on land, and while at sea. Further, it is expected that a separate, full technical review by the Navy's Weapon Safety Explosive Safety Review Board (WSESRB) shall be required in order to conduct any gun firing of a modified gun weapon system. Further, if the gun weapon system or mount is to be considered as GFE, the proposal shall include any required government cost estimates in using or modifying the mount, and include the basis for those estimates. Mount weight and balance limitations should be clearly related in the submission.

The SSL design shall comply with standard Navy hazardous materials (HAZMAT) and Occupational Safety and Health Administration (OSHA) standards and regulations, as well as all Safety regulations and procedures outlined in Section 6.3.9. These must be considered in the overall SSL design trade space. If material solutions exceeding OSHA and HAZMAT guidelines are recommended, they shall be identified and justified in terms of benefits (e.g., size, weight, power, and cost) versus risks. Li-Ion batteries must be safety approved, as outlined in Section 6.3.9. Mitigation techniques and methods shall be provided as part of Offeror's risk analysis.

Government models shall be provided for the base motion disturbance and maritime atmosphere immediately after Phase I award, if so requested. Required irradiances will also be provided by the government in the Detailed Weapon System Design Requirements document upon Phase I award.

Performers will be required to work under a government-led IPT team on system design and development. The IPT team will provide design and development recommendations and direction based on area expertise and previous lessons learned.

6.3.3 SSL Weapon Configurations.

The SSL Weapon System prototype concept to be developed and demonstrated in Phase III testing shall support either of two operating configurations, and potentially both:

(1) Stand-Alone. In this configuration, the SSL prototype shall be able to completely operate

without the need for ship's services. The system will have the ability to accept an external input for cue. The interface definition will be provided later as the design matures. This configuration enables field test and evaluations and limited ship installation.

(2) Partially Integrated. In this configuration, the SSL prototype must be able to operate on a ship but may be allowed to interface with ship's navigation, fire control, radar, power, and cooling systems. As a result, the SSL shall have compatible interfaces for these systems but shall only be required to passively receive data/information from ship's navigation, fire control and radar systems. The system will be designed such that the potential for future bidirectional data communications is not inhibited. System description or hooks for combat system integration and or receiving data should be defined in detail. System may be allowed above and below deck configuration based on ship availability. Designs should allow for flexibility in integration.

6.3.4 SSL Weapon Output Power.

The SSL weapon system requires a minimum optical laser sub-system output power of 30 kW but is encouraged as high as possible not to exceed 150kW. If proposing to use a copy of one of the Joint Technology Office Robust Electric Laser Initiative SSL sub-system or Excalibur configurations, 25kW will be required for the minimum. Performance expectations delineated in the Detailed Weapon System Design Requirements Document remain unchanged. Regardless of optical power proposed in the laser subsystem, the Beam Director design shall support a minimum of 100kW optical laser subsystem output, unless greater than 100kW laser subsystem is proposed. Then design shall meet or exceed the optical output of the subsystem. In addition, the SSL laser subsystem design shall illustrate in detail how and to what power level the laser subsystem's maximum scalability for increased power that can be accomplished by the proposed design, what kind of power combination, phasing, tiling or specialized combining is used. If an intermediate optics interface is required for the scalability increases, details should be provide with adequate depth to demonstrate merit of the design and growth path. Weapon system design should be easily and economically scalable from 30 kW minimum or Offeror's proposed output level to a higher power with minimal change to the system design. This scalability should be illustrated/described and should discuss the potential growth path and upgrade elements required. For example, the design of the beam director and mount should allow an exchange from the "low power" laser(s) to the "higher power" laser(s) without any significant changes to optics, optical paths or interfaces. Integration considerations, such as extra space, power, cooling, and energy storage required for the "high" power laser system, should be accounted for to assure changes to higher power lasers can be accomplished at minimal integration cost. The offeror shall discuss the maximum scalable power of the design, highlighting trade spaces required on optics, power and cooling. There is no requirement to go above 150 kW optical output power. Optical train losses are to be minimized and efficient. Laser sub-system should be power and cooling efficient in design and capability. Overall system efficiency and specifically the laser subsystem's efficiency are of great interest to the program.

If the host ship cannot supply enough continuous power for the laser weapon system, then the offeror is expected to provide stored energy sufficient to meet the continuous lase time requirement (specified in the classified appendix) prior to recharge. Stored Energy and Thermal management systems should be compact, efficient and safe. SSL vendors must be able to do

power conversion from 1000 VDC to 70 VDC for the laser diodes themselves.

6.3.5 Maturity of Beam Director.

The beam director shall be designed to support a minimum of 100kW optical laser subsystem output power. Maximum encouraged is 150kW. The Beam director design will be tested with a 100kW optical source. Offerors should provide a strategy to test at this level and or identify assets and cost that can be used for design verification tests. At the end of the prototype development phase, the SSL beam director is expected to meet Technology Readiness Level (TRL) 6, as assessed by the government using standard DAU metrics. TRL 6 means that the representative model or prototype system is tested in a relevant environment. The beam director shall be a robust design ready to handle the extreme environments expected aboard a U. S. Navy ship for a period of up to six (6) months without a team of specialized support. Areas to consider and required in detail of the proposal and design: automatic internal alignment, weather resistant apertures, long life optics, weather proofing, shock (Grade A), vibration, shared aperture tracking, use of the shared aperture for Combat ID, etc. The system and expected performance design will be verified through government M&S and T&E. Beam Director Design will be required to meet Modular Open System Approach (MOSA) and modularity discussed in section 6.3.11.2

6.3.6 SSL Weapon Land-Based and At-Sea Testing.

Factory and Land-based testing of the SSL weapon systems will cover all aspects of development and operational testing including performance measurements, verification and validation, target tracking and full power engagements. At least one or more performance tests will be planned for a government test site such as Eglin Air Force Base, White Sands Missile Range, NAWC PT Mugu, PT Hueneme, NSWC China Lake or NSWC Dahlgren Division. Testing and Evaluation will be government led and performed. Primary sub-system and full system evaluation, test bed interaction, and reviews will be at NSWC Dahlgren. Ability to proceed to the next level of testing and milestone will be based on evaluation of performance set by and measured by the government.

NAVSEA 05D is presently conducting a ship integration study to review the requirements for hosting an SSL weapon system on the LCS 4 class, LCS 5 class, DDG 51 Flt IIA class, and the DDG 51 Flt III class of ships. The results of this study, to be released later this year during Phase I performance, will provide size, weight, and power requirements for the various ship classes. After land-based testing, the SSL prototypes shall be demonstrated on one of these classes of ships or the Self-Defense Test Ship (SDTS) out of Port Hueneme, CA. Other surrogate test ships may also be considered based on cost and availability. SSL system may remain aboard a ship for a period of up to six (6) months after the demonstration for further evaluation and testing. Currently, the host platform has not been finalized. The prototype design concepts will address both the LCS and DDG class ships. The specific ship class to be used will be directed by the Government. The Software developed under this effort shall be compatible (able to be run on) with the Aegis Common Processor System (CPS)/Common Display System (CDS) hardware as defined in Ref CPS: NAVSEA 53711-8346930 and GDAIS ICD CDS 4000703. These ICDs will be made available to the awardees.

6.3.7 Targets.

The primary target of interest is unmanned aerial systems (UASs). Secondary targets include small boats and patrol-boat-launched rockets and missiles. (A specific list is provided in the classified appendix.) The design will be to the primary mission. The information requested is for both a "mission defeat" (disabling or denying a sensor) and a "hard-kill" (disabling the platform carrying the sensor). The ability to conduct a real-time damage assessment is desired. Reversible and Non-Reversible Counter ISR capability is desired against EO & IR systems. System must have sufficient track capability/ability and aimpoint stability to perform secondary missions. Full details will be given in the Weapon Design Specifications.

6.3.8 Government Furnished Equipment (GFE)/Government Furnished Information (GFI).

See Section VII.1.

6.3.9. Safety.

Full System Proposals must include consideration of safety management and compliance, which addresses the following:

- The Contractor shall establish, implement, and maintain a System Safety Program in accordance with MIL-STD-882E, NAVSEAINST 8020.6E, OPNAVINST 5100.24B, NAVSEAINST 9310.1B, NAVSEAINST 8020.7D.
- The Contractor shall integrate Environment, Safety and Occupational Health (ESOH) considerations into the systems engineering process and System Engineering Plan (SEP) and conduct ESOH analyses during the systems engineering process, as needed, to support decision-making and meet ESOH objectives.
- The Contractor shall integrate ESOH objectives and requirements into documents, studies and plans required by the system design, development, and testing processes (e.g., Life Cycle Management Plan (LCMP), SEP, Test & Evaluation Master Plan, Demilitarization & Disposal Plan, etc.).
- The Contractor shall ensure the SSL weapon system design, development, demilitarization, and disposal complies with all applicable local, state, federal, and international environmental protection laws, regulations, treaties, and agreements. The contractor shall also consider these in any production planning decisions.
- The Contractor shall establish a System Safety Program Plan (SSPP) where it will identify and evaluate safety and health hazards, define risk levels, and establish a program that manages the safety risk associated with development, test, and disposal of the system in accordance with MIL-STD-882E. The safety program shall also assess potential risk in fielding environments to consider design changes or materials selections that enhance safety as an integrated component within the technology or system. This shall include safety specific designs and mitigations associated with materials, architectures, hardware, software, compatibilities, and overall integration of system components.
- The Contractor will support the following:
  o Assess and validate the auto-generation tools (e.g., SIMulink, MATLAB) to ensure the resulting code correctly implements the safety requirements.

o Validate models and simulations IAW applicable DODI 5000.61 and/or SECNAVINST 5200.40.

o Perform software development IAW ISO 12207 and ASN (RDA) guidance. Software Safety best practices are included in the ASN (RDA) guidance.

o Complete an O&SHA and the tracing of mitigations to Tactics, Techniques, and Procedures (TTP), Standard Operating Procedures (SOP), and maintenance manuals.

o Ensure that COTS software is included in safety analyses and test. (Reference ASN (RDA) Software Guidebook).

o Ensure appropriate design analysis is performed on any Hard Real Time Safety Significant Requirements.

o Support the conduct a Functional Hazard Analysis (FHA), to reassess the safety criticality of all system functions in an integrated tactical operational environment.

o Support the development of a Safety Assessment Report (SAR) to consolidate/document safety efforts, recommendations, and risk.

- The Contractor shall identify the System Safety Lead as the Contractor's primary point of contact for all safety efforts and issues.
- The Contractor shall develop environmental and safety analyses with supporting documentation and presentation material sufficient for the Weapon System Explosives Safety Review Board (WSESRB), the Software System Safety Technical Review Panel (SSSTRP) and Laser Safety Review Board (LSRB) reviews. The Contractor shall attend and support all presentations to the WSESRB, SSSTRP and LSRB. The Contractor shall support review and the development of technical information and analysis sufficient to answer any and all WSESRB, SSSTRP and LSRB findings.
- The Contractor shall participate in the System Safety Working Groups (SSWG) to be chaired, planned, and coordinated by the Government Principal for Safety (PFS).
- The Contractor will establish and maintain an electronic Hazard Tracking System which will include results of all Contractor hazard analyses, to include analysis of third-party developed components integrated into the SSL weapon system.
- The Contractor shall support as required the development of Categorical Exclusions (CATEX), Environmental Assessments (EA), Environmental Impact Statements (EIS), and associated documentation, including the Programmatic Environment, Safety, and Occupational Health Evaluation (PESHE), National Environmental Policy Act (NEPA) Compliance Assessments, Overseas Environmental Assessments (OEAs) in accordance with Executive Order (EO) 12114, and other required environmental documentation and assessments to include any necessary NEPA/EO 12114 Memorandums for the Record (MFR) and Decision Memorandums (DM). The Contractor shall provide an assessment that includes any and all necessary information, data, studies, and reports necessary or useful to demonstrate full compliance with all Federal, State, and Local environmental laws, including any known potential compliance issues associated with the system manufacturing, testing, operations, or disposal. Any SSL studies or data developed by the Contractor pertaining to potential health or environmental impacts associated with the SSL laser shall be provided to the government.
- The Contractor shall implement and document a Hazardous Materials Management Program in accordance with National Aerospace Standard (NAS) 411, Hazardous Materials Management Program. The Contractor shall make available Material Safety Data Sheets (MSDS) to the Government for review.

- If lithium batteries (including lithium ion batteries) are used, the contractor will go through the process of safety approval in accordance with NAVSEA S9310-AQ-SAF-010 of 15 July 2010 and NAVSEAINST 9310.1B of 13 Jun 1991 or the current revision if this instruction has been superseded or canceled by revision.
- The Contractor shall identify and develop plans to handle the hazards of electromagnetic radiation ((Electromagnetic Interference (EMI), Electromagnetic Compatibility (EMC), Hazards of Electromagnetic Radiation to Ordnance (HERO), Hazards of Electromagnetic Radiation to Fuel (HERF), Hazards of Electromagnetic Radiation to People (HERP) and Radiation Hazards (RADHAZ) per MIL-HDBK-240 and NAVSEAINST 8020.7D.

6.3.10 Information Assurance.

The SSL prototype that goes aboard ship for testing shall meet the requirements of the DON CIO Memo 02-10, 26 April 2010, Information Assurance (IA) Policy for Platform Information Technology. The Contractor(s) will work closely with the Government to ensure all IA requirements are met in accordance with the RDT&E nature of the program.

6.3.11 Reliability/Maintainability.

The Offeror shall present and illustrate design decisions that minimize total ownership costs while maximizing reliability, maintainability, and supportability.

6.3.11.1 Failure Monitoring.

The contractor shall have a system or process that collects, analyzes and records all failures that occur to the prototype system, subsystems and components (valued above $5000.00) being developed, integrated and tested throughout this contract. For optics, the cost threshold for failure monitoring is $100.00. If the component is below $100 but affecting a sub-system that costs more than $5,000 in its entirety, then the failure for the component and the sub-system will be tracked. The contractor's existing data collection, analysis and corrective action system shall be utilized with modifications as necessary to meet these requirements. The government has final say on failure items that need to be tracked and agreement on design solutions to fix. This failure reporting and recording process will be used to support future acquisition programs of similar nature. The contractor shall provide status and results of this reporting system during periodic technical and programmatic reviews for the government.

6.3.11.2 Modularity.

Modular Open System Approach (MOSA) is a "business and technical strategy for developing a new system or modernizing an existing one…[that is]…focused on a system design that is modular, has well defined interfaces, is designed for change and, to the extent possible, utilizes widely supported industry standards for key interfaces." A MOSA shall be analyzed as part of the design process. This shall support future engineering changes or product improvement decisions regarding laser power upgrades or replacement. Ideally, the modules should be "plug and play" Line Replaceable Units (LRU) to the extent possible for easy access and repair.

The Beam Director design shall support replaceable modules as notionally depicted below. Sub-components proposed shall be modular to support interchangeability. The Beam Director LRUs design should be easily replaced (front loaded) pier side within a reasonable amount of time (i.e. one hour). They should be plug and play modules with standard electrical, electronic and mechanical interfaces such that new modules can easily be fitted at a later date.
Another key aspect of the modularity of the design is the ability to have easily replaceable modular support pods based on the mission. The support pods may include:

- Counter ISR Modules (e.g., high energy output of different frequencies to permanently counter EO/IR sensors)
- Non-Lethal Modules (e.g., EO/IR Jammer/Dazzlers of different frequencies and variable output)
- Tracking/Targeting Module (e.g., coarse trackers of different capabilities)
- Battle Damage Assessment Module (e.g., video/IR camera with high zoom)
- Illuminator Module (e.g., different wavelengths and/or power levels)
- Other subsystems to be determined

Figure 2 below illustrates this concept using a notional SSL beam director design. Actual and proposed designs, dimensions and shape may be varied as Phase I design is developed. However the interface control documents for such interfaces shall be developed as early as possible to enable the development of third party subsystems outlined above.

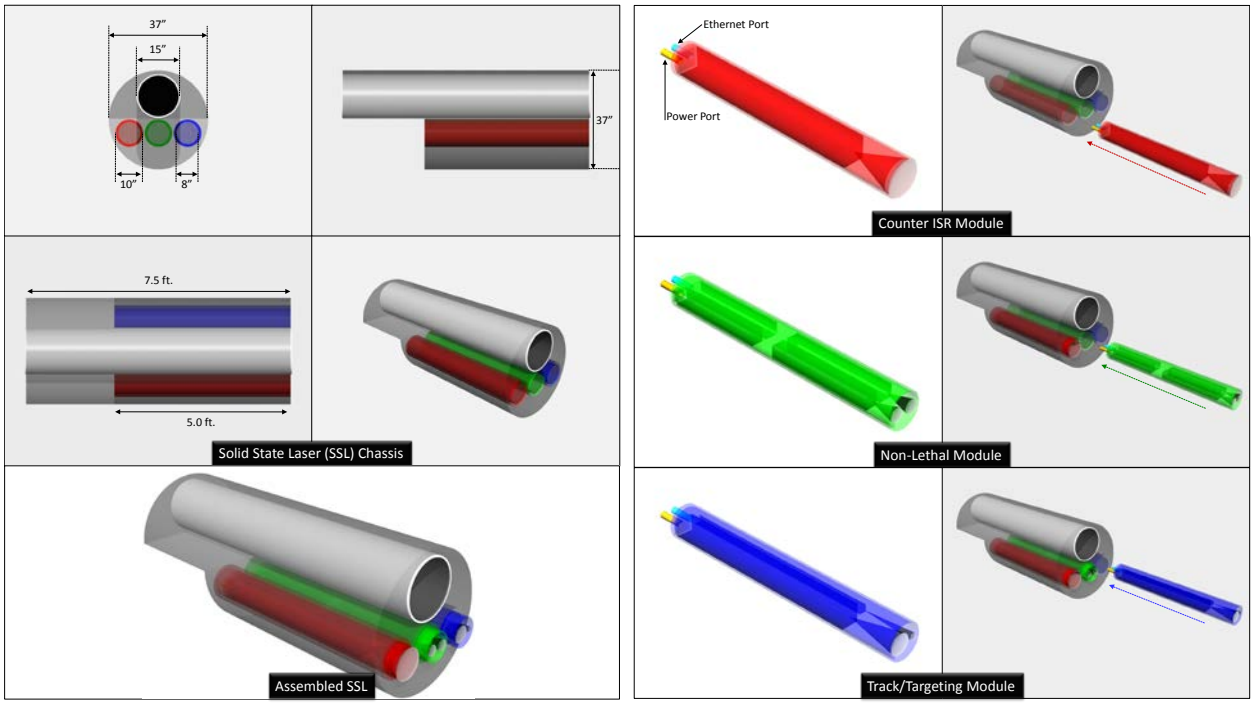

Figure 2. Notional SSL Beam Director with Removable Modules

The Offeror may consider other options or approaches to the modular concept as long as they are fully justified via cost benefit analysis and ease of the line replaceable unit concept.

Configuration of data and signal pathways, as well as format of data, should follow the requirements of MIL STD 1553 and MIL STD 1760 and include high bandwidth fiber optical couplings to enable high speed data transfers. Viable alternatives are allowed based on the Concept Design Review (CoDR) but shall be presented to the government at the CoDR for final approval/acceptance. Power interfaces for such subsystems shall be developed with MIL STD 1399 types I, II, and/or III as part of their basic designs. The government reserves the right to direct the interface configuration and standards in order to maintain existing ship system and power distribution compatibility.

6.3.12 Facilities.

The offeror shall include description of facilities capable of producing proposed systems, to include appropriate security, classification, and testing ability.

6.4 Timeline.

A table of significant dates is shown in Table A below for both systems and components & subsystems. The timeline of interest for the components & subsystems developed under this BAA must be completed in time to be incorporated into an SSL weapon system design. This is anticipated to be no more than two (2) years from the date of award.

Similarly, the timeline of interest for the SSL laser weapon development was previously shown in Figure 1. The sea-based testing is then planned, with the possibility that the weapon system may be onboard the ship for up to six (6) months to help demonstrate survivability in the sea environment.

ONR is expected to select via panel no more than four SSL weapon systems level proposals to fund concept designs. The awardees will be given several months (per Table A) to prepare their concept design for a review. The results of the review will be provided to ONR per the schedule in Table A. This will include a 4-day oral presentations by each of the funded Phase I contractors at ONR. No more than two (2) are anticipated to be selected for award of a prototype development and demonstration option, with a Kickoff meeting per Table A. Subsystems and components that demonstrate S&T value or advantage will also be separately considered for funding, based on the merits of the proposals.

Table A: Post Award Schedule of Events

Full Systems Proposals		
Event	**Date**[†,**]	**Time (Local Eastern Time)**
Phase I – Full Systems Proposals Only		
Phase I Oral Presentations at Concept Design Review (CoDR)*	6 months after Phase I award	
Delivery of Technical Design Package	6 months after Phase I award	1400
Phase II – Full Systems Proposals Only		
Phase II Kickoff Meeting	Within 10 working days after Phase II CLIN is exercised	
Delivery of Phase III Proposal Update	NTE 3 months after Phase II award	1400
Preliminary Design Review (PDR)	NTE 6 months after Phase II award	
Critical Design Review (CDR)	NTE 12 months after Phase II award	
Phase III - Full Systems Proposals Only		
Phase III Kickoff Meeting	14 days after Phase III CLIN is exercised	
System Build and Static Testing	Approximately 30 Months after Phase II CLIN awarded	
Demonstration (Land, Dynamic Targets)	Approximately 31 months after Phase II CLIN awarded	
Demonstration (Dynamic Sea)	NTE 36 months after Phase II Awarded	
Delivery of Phase IV updated Cost Schedule based on successful Phase III completion based on a period of performance of one year	3 months after Demonstration (Dynamic Sea)	1400
Delivery of Final Phase III Technical Test Report & Final "As tested" Technical design package	3 months after Demonstration (Dynamic Sea)	1400
Phase IV - Full Systems Proposals Only		
Program of Record Starts (Projected/Goal)	FY 16	
Notification of Selection to Award Phase IV contract	Within 12 months after Demonstration (Dynamic Sea)	

Table A (Continued)

Event	Date[†,**]	Time (Local Eastern Time)
Subsystems/Components Proposals		
Preliminary Design Review (PDR) ††	NTE 6 months after award	
Critical Design Review (CDR) ††	NTE 12 months after award	
Subsystem/Component Testing on Prototype Laser Weapon (as required)	NTE 36 months after award	
Final Delivery of Software or Hardware (as required)	NTE 36 months after award	

Notes:

† - Dates are best estimates at this time and are subject to change.

†† - A modified PDR and CDR process for highly complex subsystems and components may be required, and determination shall be established by the Contracting Officer prior to any award. For planning purposes, PDR and CDR for components and subsystems shall be no more than 2 days each, and held at ONR in Arlington, VA or at Dahlgren, VA

* - Four (4) days for each of the awardees selected to provide details of their concept designs at Concept Design Review (CoDR), and shall update proposal information relevant to Phases II and III. Presentations for CoDR shall be held at ONR in Arlington, VA or at Dahlgren, VA

** - If sending any proposal by certified mail, ensure delivery and receipt time based on the proposal due dates and times.

*** - The government may consider alternate contract vehicles and methods of procurement for individual components and individual subsystems, and may enter into separate negotiations from full systems proposals.

6.5 Contract Data Requirements and Deliverables.

For the purposes of proposal planning and estimating program costs, the following guidance is given with respect to meetings and deliverables expected from resulting contractual actions. This information is provided in order to enable better representation of costs, not to limit or direct specific items necessary to complete contracting actions. Where possible, progress review meetings shall be held via secure VTC or with limited program manager and lead engineering staff attendance only to reduce the needs for extensive travel. All specifics related to deliverables shall be provided in Contract Data Requirements documented in contract awards, as is in DD Form 1423, Contract Data Requirements List.

In general the notation of “negotiated format” will be standard formatting tools available through Microsoft Word, PowerPoint, Excel, Access, or other mutually acceptable means. For estimation purposes as listed below, Progress Reports and Narratives are estimated to require one (1) to twenty (20) typewritten pages each; Technical Reports, Assessments, Lists, Presentations and Plans are approximately fifty (50) to 100 pages each; and Manuals are from 100 to 500 pages each. The resulting complied “Packages” may range from 200 to 500 pages, depending on details previously provided in past deliverables or in sub-listed reports and lists. Electronic formats (via

eMail, CDROM or DVD) exchange shall be considered the norm, however classified materials will require special handling and control. Based on past program performance, on average a 60% re-utilization of previously presented materials may be expected as the norm. Similarly, based on past program performance, on average 30% of the material to be required as a deliverable shall be considered classified at the SECRET level. All information shall be considered as Distribution F, until a formal security review has been completed. Specific instructions regarding classification and operational security shall be delivered at time of contract award. Electronic data (test or reports) should be adequately segregated and protected from unintentional disclosure via the internet. All electronic submissions of data, reports, and materials shall be date stamped and archived for the entire length of the contract, and shall also support their ultimate electronic delivery into the Defense Technical Information Center's (DTIC) Scientific and Technical Information Program, as part of DFARS 252.235-7011.

Regularly required reporting (reoccurring, often at regular intervals for supporting meetings)

- SSL-TM Weekly technical progress reports (contractor format)
- SSL-TM Program Monthly Reports including
    - SSL-TM Program Monthly Technical Reports (negotiated format)
    - Solid State Laser Weapon Prototype Risk Waterfall Chart (monthly updates, negotiated format)
    - SSL-TM Program Monthly Financial Reports (negotiated format)
    - SSL-TM Program Monthly Safety Report (Post PDR, negotiated format)
- SSL-TM Quarterly Management Review Meeting Report (negotiated format)
- SSL-TM Annual Management Review Meeting Report (negotiated format)
- Solid State Laser Weapon Prototype Software Source Code Updates (Post PDR, as required for safety or system operation, negotiated format)
- Quarterly Technical Exchange Meetings (TEM) (presentation material; contractor format)

Special Event Required Reports (One time)

- Concept Design Review (CoDR) Technical Report (negotiated format)
    - CoDR Level System Narrative (negotiated format)
    - Concept Design Hardware Specification Package (negotiated format)
        - Level 3 Design Package of Concept Level Prototype
    - CoDR Analysis & Data Package, including but not limited to:
        - Concept Design Software Specification Package (negotiated format)
        - Initial Interface Control Documents (ICDs) for subsystems
        - Initial Hazards of Electromagnetic Radiation Assessment (negotiated format)
        - Initial Solid State Laser Weapon Ship Installation Report (negotiated format)
        - Initial Hazard Tracking System Implementation Report
        - Initial SSL-TM prototype Performance Report against the classified Top Level Weapon System Mission Descriptions/Requirements

        - Contractor Review of Master Test & Evaluation Plan (negotiated format)
        - Contractor Report of Estimated Prototype Cost and Projected Total Ownership Costs (negotiated format)
        - Initial Estimate Report of Prototype Operational Availability, Reliability, and Maintenance
- Preliminary Design Review (PDR) Technical Report (negotiated format)
    - PDR System Narrative
    - PDR Specification Package (negotiated format)
    - PDR Analysis & Data Package including:
        - Preliminary Design Software Specification Package (negotiated format)
        - Updated Interface Control Documents (ICDs) for subsystems
        - Updated Hazards of Electromagnetic Radiation Assessment (negotiated format)
        - Solid State Laser Weapon Ship Installation Plan (negotiated format)
        - Updated Hazard Tracking System Implementation Report
        - Updated SSL-TM prototype Performance Report against the classified Top Level Weapon System Mission Descriptions/Requirements including identified performance consideration for at sea or land based testing.
        - Updates to Estimated Prototype Cost and Projected Total Ownership Costs (negotiated format)
        - Updated Report of Prototype Operational Availability, Reliability, and Maintenance Figures of Merit
    - Manufacturing & Tooling Plan & Critical Items List (negotiated format)
    - Critical Items & Tooling Level 3 Drawing Packages (negotiated format)
    - CoDR Action Resolution Report (negotiated format)
    - Draft Solid State Laser Weapon Ship Installation Plan (negotiated format)
    - Draft Solid State Laser Weapon Operating Manual (negotiated format)
    - Draft Solid State Laser Weapon Software Manual (negotiated format)
    - Initial Solid State Laser Weapon Prototype Software Source Code (negotiated format)
- Critical Design Review (CDR) Technical Report , including:
    - CDR Specification Package (negotiated format)
    - Interface Control Documents (ICDs) for all subsystems (negotiated format)
    - CDR Analysis & Data Package (negotiated format)
    - PDR Action Resolution Report (negotiated format)
    - Parts Level & Tooling Level 3 Drawing Packages (negotiated format)
    - Critical Item Manufacturing Progress Report (negotiated format)
    - Solid State Laser Weapon Prototype Operating Manual (negotiated format)
    - Solid State Laser Weapon Prototype Maintenance Manual (negotiated format)
    - Draft Solid State Laser Weapon Training Manual (negotiated format)
    - Final Solid State Laser Weapon Software Manual (negotiated format)

    - Final Solid State Laser Weapon Ship Installation Plan (negotiated format)
    - Solid State Laser Weapon Prototype Software Source Code (negotiated format)
- Solid State Laser Weapon Prototype Critical Hardware List (negotiated format)
- Solid State Laser Weapon Prototype Land Based Factory Testing Reports (negotiated format)
- Solid State Laser Weapon Prototype Land Based Test Readiness Report (negotiated format)
- Solid State Laser Weapon Prototype Land Based Test Final Report (negotiated format)
- Solid State Laser Weapon Prototype Sea Based Test Readiness Report (Test #1 of 2) (negotiated format)
- Solid State Laser Weapon Prototype Sea Based Test Report (Test #1 of 2)
- Solid State Laser Weapon Prototype Sea Based Test Report (Test #2 of 2)
- Solid State Laser Weapon Prototype Final Report (negotiated format)

<u>Safety Reports (Regularly updated & those requiring approval for special events, assumes quarterly updates after CoDR, unless one time events)</u>

- Solid State Laser Weapon Safety Documentation (negotiated format)
    - System Safety Program Plan (negotiated format)
    - Prototype Weapon Safety Manual (negotiated format)
    - Hazard Tracking System Reports (negotiated format)
    - Laser Safety Review Board Presentation Package (negotiated format)
    - Quarterly Updates (negotiated format)
    - Prototype Weapon Safety Explosive Safety Review Board Package (negotiated format)
        - Prototype Weapon Safety Presentation (negotiated format)
        - Prototype Weapon Safety Data Package (negotiated format)
        - Hazards of Electromagnetic Radiation Assessment (negotiated format)
        - Software System Safety Technical Review Panel (SSSTRP) Data Package

<u>Hardware (Assumes one functional prototype system delivered)</u>

- Solid State Laser Weapon Prototype Hardware, S/N 001
- SSL Weapon Control Station, S/N 001
- SSL Weapon Specialty Tooling, various
- Intermediate and Auxiliary Subsystems required for prototype ship Installation

7. Point(s) of Contact -

Questions of a technical nature should be submitted to:

Mr. Peter A. Morrison
SSL Program Officer
ONR Code 352
Office of Naval Research

One Liberty Center
875 N. Randolph Street
Arlington, VA. 22203
Email Address: peter.a.morrison@navy.mil

Questions of a business nature should be submitted to:

Mr. Peter Donaghue
Contract Specialist
ONR Code 255
Office of Naval Research
One Liberty Center
875 N. Randolph Street
Arlington, VA. 22203
Email Address: desmond.donaghue@navy.mil

Questions of a security nature should be submitted to:

Diana Pacheco
Industrial Security Specialist
Office of Naval Research
Security Department, Code 43
One Liberty Center
875 N. Randolph Street
Arlington, VA 22203-1995
Email Address: diana.pacheco@navy.mil

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

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

- Federal Business Opportunities (FEDBIZOPPS) Webpage – https://www.fbo.gov/

- ONR Broad Agency Announcement (BAA) Webpage – http://www.onr.navy.mil/en/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx

Requests for "Top level Weapon System Mission Descriptions/Requirements"

The Offeror should closely read the classified document entitled "Top level Weapon System Mission Descriptions/Requirements," prior to the preparation of the technical proposal. This document is provided under separate cover. This BAA is unclassified, but the technical objectives in the "Top level Weapon System Mission Descriptions/Requirements" are classified "SECRET//NOFORN" and therefore shall only be provided under separate cover. The "Top level Weapon System Mission Descriptions/Requirements" document shall only be provided to interested Offerors who can prove to have a SECRET facility clearance with SECRET safeguarding, and proof of US citizenship of the receiver. No copies shall be mailed to foreign addresses. The "Top level Weapon System Mission Descriptions/Requirements" will be mailed in (only) either hardcopy or on CD ROM to Offerors upon their request via any of the following methods: (A) Mail (B) Fax, or (C) eMail :

Office of Naval Research
One Liberty Center
Code 35, Attn: Peter Morrison
875 North Randolph Street, Rm. 1153,
Arlington, VA, 22203-1995

Email to peter.a.morrison@onr.navy.mil; or Fax to 703-696-4274.
Facsimile verification of requests cannot be guaranteed, so all other methods should be exhausted first before resorting to facsimile requests.

All UNCLASSIFIED requests shall include two required documents:

(A) A letter request on company letterhead with BAA Number, BAA Title, Company Name, Company CAGE Code, full facility address, and the requesting security office point of contact information, including telephone number for the "Top level Weapon System Mission Descriptions/Requirements."

(B) A completed DD254, with the following filled out as shown:

Block 1a – Type "SECRET"
Block 1b – Type "SECRET"
Block 2C – X in box to left, to the right "ONR BAA 12-019", with applicable response due date.
Block 3 – Leave Blank
Block 4 – X in "NO" box
Block 5 – X in "YES" box, enter date, and "120 days"
Block 6 – Enter facility information
Block 7 – Leave Blank

Block 8 - Enter facility information
Block 9 – Enter "Solid State Laser Technology Maturation Program Broad Agency Announcement."
Block 10 – "X" in all "NO" blocks, (a though k)
Block 11 – "X" in all "NO" blocks except for 11.c and 11.g which shall be checked as "YES"
Block 12 - "X" in "THROUGH" with text below added "Office of Naval Research, 875 North Randolph Street (Attn Code 35/Morrison), Arlington VA 22203-5000"
BLOCK 13 – Type in as follows:

A) LASER WEAPON SYSTEMS AND TECHNOLOGY, Classification Guide, OPNAV INST 5513.8C, Enclosure 08-07.2
B) OPNAVINST 5513.1F Department of the Navy Security Classification Guides
C) OPNAVINST 5513.8C Department of the Navy List of Security Classification Guides for Electronic Warfare

BLOCK 14 - "X" in "NO" block
BLOCK 15 - "X" in all "NO" blocks
BLOCK 16 – Prepare as indicated
BLOCK 17 – "X" in block "a. CONTRACTOR" only.
(Sign and date as required)

No copies shall be sent via email, fax, or secure email or secure fax. Due to security requirements, full postal addresses with street addresses and zip+4 codes are required. None shall be sent to post office boxes or other mail drop facilities. Unless contracts are awarded, the Offerors are required to destroy all held copies of the Top level Weapon System Mission Descriptions/Requirements" within 90 days.

All requests for the classified document shall be acknowledged within 5 working days. Typical delivery time from the acknowledgement of request is 10 working days. Where possible, overnight delivery and tracking information shall be provided as it becomes available. If requested documentation does not arrive in the time expected, contact your local security officer, who may then contact the ONR security officer listed in section 7, "Point(s) of Contact." Requests for updates of status of delivery of the classified document to either the technical or contracting points by individuals other than the Offeror's cognizant operational security officer should be avoided.

In the event there is a conflict between the language in the "Top level Weapon System Mission Descriptions/Requirements" and that in this BAA document, the language in the BAA shall take precedence. In the "Top level Weapon System Mission Descriptions/Requirements" the numbers in the table take precedence over the numbers provided in the rest of the BAA. In order to respond adequately in the technical section of their proposal, Offerors shall provide a table listing each evaluation criterion contained in the "Top level Weapon System Mission Descriptions/Requirements" and the relevant proposal pages that address each.

8. Instrument Type(s) - Contracts

Awards will be issued as Contracts. ONR reserves the right to award a different instrument type if deemed to be in the best interest of the Government.

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

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

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

11. Other Information -

Work funded under a BAA may include basic research, applied research and some advanced technology development (ATD). With regard to any restrictions on the conduct or outcome of work funded under this BAA, ONR will follow the guidance on and definition of "contracted fundamental research" as provided in the Under Secretary of Defense (Acquisition, Technology and Logistics) Memorandum of 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 6.2 (Applied Research) and NOT performed on-campus at a university or b) funded by Budget Activity 6.3 (Advanced Research) does not meet the definition of "contracted fundamental research." In conformance with the USD(AT&L) guidance and National Security Decision Direction 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. ATD is normally awarded under contracts and may require restrictions during the conduct of the research and DoD pre-publication review of research results due to subject matter sensitivity.

As regards to the present BAA, the Research and Development efforts to be funded will consist of applied research and advanced technology development. The funds available to support awards are Budget Activities 2 and 3.

FAR Part 35 restricts the use of the 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.

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

II. AWARD INFORMATION

1. Amount and Period of Performance-

1.1 BAA Proposals for Subsystems, Components and Innovative Science and Technology Ideas that support a shipboard laser weapon system.

The amount and period of performance of each selected proposal will vary depending on the research/technology area and the technical approach to be pursued by the selected Offeror. The components and subsystems developed under this BAA must be completed in time to be incorporated into an SSL weapon system design. This is anticipated to be no more than two (2) years from the date of award. Multiple awards for components and/or subsystems are possible. Funds have been set aside for components and subsystems

1.2 BAA Proposals for the Development and Demonstration of a Full SSL Weapon System.

There will be a four phased contract under this BAA for the Development and Demonstration of the SSL weapon system. Offerors will be proposing for Phase I, II and Phase III when submitting proposals under this BAA. Each contract will be structured with a Base period for the Phase I work, and Options for the Phase II and III efforts, with awards made to several Offerors based on the weapon system Full Proposals submitted. Under this solicitation up to four (4) awards are anticipated to be issued for the Phase I effort, and it is planned that each award will have a Base period structured as a Firm Fixed Price contract, valued at $1,500,000, and a period of

performance of six months. Phase I tasking will include maturation of the proposed weapon system concept. Offerors are not submitting for Phase IV under this BAA.

At the conclusion of Phase I, it is anticipated that up to two (2) of the designs will be selected for Phase II performance. Phase II efforts will be structured as Cost Plus Fixed Fee options and have a period of performance of eighteen (18) months. Phase II is for the detailed design of the prototype. After approximately six months, at a date agreeable and set by the government, a preliminary design review (PDR) of each prototype will be held. If PDR is successfully completed, the Cost Plus Fixed Fee option for Phase III will be exercised and have a period of performance of eighteen (18) months. The Phase III option will include prototype development, integration, and land and at sea tests of a complete laser weapon system. Phases II and III may have overlap in execution but shall have separated lines of accounting, and separated deliverables and products.

Although ONR expects a program phasing plan similar to the above to be executed, ONR reserves the right to make changes as required.

2. Production and Testing of Prototypes-

In the case of funded proposals for the production and testing of prototypes, ONR may during the contract period add a contract line item or contract option for the provision of advanced component development or for the delivery of additional prototype units. However, such a contract addition shall be subject to the limitations contained in Section 819 of the National Defense Authorization Act for Fiscal Year 2010.

III. ELIGIBILITY INFORMATION

All responsible sources from academia and industry may submit proposals under this BAA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals. However, no portion of this BAA will be set aside for HBCU and MI participation.

Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this BAA. However, teaming arrangements between FFRDCs and eligible principal bidders are allowed so long as they are permitted under the sponsoring agreement between the Government and the specific FFRDC.

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

federal organizations may team with other responsible sources from academia and industry that are submitting proposals under this BAA.

University Affiliated Research Centers (UARC) are eligible to submit proposals under this BAA unless precluded from doing so by their Department of Defense UARC contracts.

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.

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

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process - Industry Day, Full Proposals

The Office of Naval Research hosted a Pre-proposal Conference/Industry Day to support interaction and discussion of the government's needs and requirements on May 16, 2012. The purpose of the meeting was to provide potential Offerors with a better understanding of the scope of the Program and objectives of the BAA. Those not able to attend this briefing should consult the web page http://www.onr.navy.mil/02/BAA / to see briefing slides and answers to questions submitted during the conference.

Full Proposals: The due date for full proposals is no later than the date and time specified in Section IV.4. below. Full proposals are to be submitted per the instructions in Section IV. Late proposals, as defined in Section IV.4., are not eligible for funding. The submitters of late proposals are also not eligible to participate in the Detailed Design stage for an SSL weapon system prototype and demonstration. Each proposal should state that it is submitted in response to this BAA and cite the particular sub-section of the Research Opportunity Description that the proposal is primarily addressing, e.g., a "System", "Subsystem", or "Component" development effort.

Proposal Evaluation/Notification: Navy evaluations of the proposals will be issued via email notification on or about the date specified in Section IV.4.

2. Content and Format of Full Proposals -

Full Proposals submitted under the BAA are expected to be unclassified ; however, confidential/classified responses are permitted. If a classified response is submitted, the resultant contract will be unclassified .

Unclassified Proposal Instructions:

Unclassified Full Proposals shall be submitted in accordance with Section IV. Application and Submission Information.

Classified Proposal Instructions:

Classified Full Proposals shall be submitted directly to the attention of ONR's Document Control Unit at the following address:

OUTSIDE ENVELOPE (no classification marking):

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

The inner wrapper of the classified proposal should be addressed to the attention of Peter Morrison, ONR Code 352 and marked in the following manner:

INNER ENVELOPE (stamped with the overall classification of the material)
Program: Research and Development/Technology Maturation of Solid State High Power Laser Weapon Systems, Subsystems, and/or Components for Surface Navy, USN
Office of Naval Research
Attn: Peter Morrison, ONR Code: 352
875 North Randolph Street
Arlington, VA 22203-1995

An 'unclassified' Statement of Work (SOW) must accompany any classified proposal.

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.

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

a. FULL PROPOSALS

i. INSTRUCTIONS FOR CONTRACTS

NOTE: *Submission instructions for BAAs issued after FY 2010 have changed significantly from previous requirements. Potential Offerors are advised to carefully read and follow the instructions below. The new format and requirements have been developed to streamline and ease both the submission and the review of proposals.*

Proposal Package: The following three documents with attachments comprise a complete proposal package*:*

(1) Technical Proposal Template (pdf)
(2) Technical Content (word)
(3) Cost Proposal Spreadsheet (excel)

These documents can be found at: http://www.onr.navy.mil/Contracts-Grants/submit-proposal/contracts-proposal/cost-proposal.aspx
All have instructions imbedded into them that will assist in completing the documents. When completing the Technical Content document, Offerors should ensure that they address all of the key technical points detailed in this BAA under Section V.1 Evaluation Criteria. Also, both the Template and the Spreadsheet require completion of cost-related information. Please note that all the attachments listed can be incorporated into the Technical proposal template for submission.

The format requirements for any 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

The Cost Proposal Spreadsheet can be found by following this link: http://www.onr.navy.mil/Contracts-Grants/submit-proposal/contracts-proposal/cost-proposal.aspx. Click on the "proposal spreadsheet" link and save a copy of the spreadsheet. Instructions for completion have been embedded into the spreadsheet. Any proposed options that are identified in the Technical Proposal Template or Technical Content documents , but are not fully priced out in the Cost Proposal Spreadsheet, will not be included in any resulting contract or other transaction. If proposing options, they **must** be separately priced and separate spreadsheets should be provided for the base period and each option period. 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.

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 also familiarize themselves with the new subcontract reporting requirements set forth in Federal Acquisition Regulation (FAR) clause 52.204-10, Reporting Executive Compensation and First-

Tier Subcontract Awards. The pertinent requirements can be found in Section VII, Other Information, of this document.

Offerors should submit an appropriate number of hard copies as discussed with the cognizant Program Officer, of their proposal package. The electronic copy should be submitted in a secure, pdf-compatible format, except for the electronic file for the Cost Proposal Spreadsheet which should be submitted in a Microsoft Excel 2007 compatible format. All attachments should 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. Offerors may also submit their Technical Proposal Template and Technical Content in an electronic file that allows for revision (preferably in Microsoft Word) to facilitate the communication of potential revisions. 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.

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.

3. Intellectual Property Information

Below are three aspects of Intellectual Property (IP) that each proposer should address as part of its proposal. Rapid transitioning of successful R&D projects to production and to the warfighters has too often in the past been delayed or prevented because of unanticipated intellectual property issues that surfaced only later. It is a key desire of the ONR Program Office to understand in advance any IP issues that might adversely impact implementation by the Navy of an otherwise successful Solid State High Power Laser Weapon Systems, Subsystems, and/or Components for Surface Navy.

- **Intellectual Property:**

a. Noncommercial Items (Technical Data and Computer Software):

Proposers responding to this BAA shall identify all noncommercial technical data and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Proposers shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that proposers do not submit Data Rights Assertions, the Government will assume that it automatically has "unlimited rights" to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed

funding. If mixed funding is anticipated in the development of noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, then proposers should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire "unlimited rights" unless the parties agree otherwise. Proposers are advised that the Government will use the Data Rights Assertions during the source selection evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE"

A sample Data Rights Assertion Table for complying with this request is shown below:

NONCOMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

b. Commercial Items (Technical Data and Computer Software):

Proposers responding to this BAA shall identify all commercial technical data and commercial computer software that may be a deliverable under, or embedded in any deliverables contemplated under, the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or commercial computer software. In the event that proposers do not submit Data Rights Assertions, the Government will assume that there are no restrictions on the Government's use of such commercial items. The Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE."

A sample Data Rights Assertion Table for complying with this request is shown below:

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

- **Patents:**

Proposers shall list, and include documentation proving their ownership of, or possession of, appropriate licensing rights to, all patented inventions (or inventions for which a patent application has been filed, or inventions already conceived or reduced to practice) that will be utilized under their proposal for the ONR program. For each invention that the proposer will utilize, the proposer shall provide, to the extent known and applicable, the patent number, serial number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: 1) a representation that the proposer owns the invention, or 2) proof of possession of appropriate licensing rights in the invention. If the proposer will not utilize any patented inventions, or inventions for which a patent application has been filed, or inventions already conceived or reduced to practice, then the proposer should state "NONE."

- **Intellectual Property Representations:**

Proposers shall provide a good faith representation that they either own or possess appropriate licensing rights to all other intellectual property that will be utilized under their proposal for the ONR program.

Additionally, proposers shall provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.

Proposers shall provide, for each patented invention (or invention for which a patent application has been filed, or inventions already conceived or reduced to practice) to be provided to the Government without at least a worldwide, nonexclusive, nontransferable, irrevocable, paid-up license to practice, or have practiced for or on its behalf, the invention throughout the world, a short summary that describes the nature of any restriction on the Government's use, including the conditions under which the Government may acquire a license to the invention, and the intended use of the invention in any deliverable under any proposed award instrument. The Government may use the short summary during the source selection evaluation process to evaluate the impact of any restrictions or conditions and may request additional information from the proposer, as may be necessary, to evaluate that impact.

4. Significant Dates and Times -

Full System and Subsystems/Components Proposals		
Event	Date	Time
Full Proposal Due Date	10/16/2012	2:00 PM Eastern Daylight Time
Proposal Reviews	Up to 45 days after receipt of proposal*	
Notification of Initial Selections for Award	50 days after receipt of proposal*	
Contract Awards	120 to 180 days after Notification of Initial Selection for Award*	

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

NOTE: Due to changes in security procedures since September 11, 2001, the time required for hard-copy written materials to be received at the Office of Naval Research has increased. Materials submitted through the U.S. Postal Service, for example, may take seven days or more to be received, even when sent by Express Mail. Thus any hard-copy proposal should be submitted long enough before the deadline established in the solicitation so that it will not be received late and thus be ineligible for award consideration.

5. Submission of Late Proposals -

Any proposal, modification, or revision that is received at the designated Government office after the exact time specified for receipt of proposals is "late" and will not be considered unless it is received before award is made, the contracting officer determines that accepting the late proposal would not unduly delay the acquisition and:

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 extended to the same time of day specified in the announcement on the first work day on which normal Government processes resume.

The contracting officer must promptly notify any offeror if its proposal, modifications, or revision was received late and must inform the offeror whether its proposal will be considered.

6. Address for the Submission of Full Proposals for Contracts

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

Office of Naval Research
Attn: Peter Morrison
ONR Department Code 352
875 N. Randolph Street
Arlington, VA 22203-1995
peter.a.morrison@navy.mil

V. EVALUATION INFORMATION

1. Evaluation Criteria -

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

a. Ability to Meet Technical Requirements:

The feasibility and likelihood of the proposed approach to meet the program technical objectives/metrics are the primary technical evaluation criteria.

1. Technical Maturity - The extent to which the proposal reflects a mature, substantiated, and quantitative understanding of the program technical objectives/metrics and their relationship to the concept of operations. For full systems proposals, this shall include the extent to which the proposal provides a basis for assessment of technical maturity and technical maturation plan for elements that require additional risk reduction or maturation. For subsystem or component proposals, this shall include the extent to which the proposal provides a basis for understanding the technical maturity and technical maturation plan for individual elements that identify additional risk reduction or maturation is necessary.

2. Detailed Technical Discussion - For full systems proposals, the extent to which the proposal provides an end-to-end description with functional relationships and a clear explanation of the conceptual design. Extent to which the task descriptions and associated technical elements provided adequately address the level of effort required and extent to which these tasks are adequate to address the proposed approach. The extent to which the proposal documents the company's ability to design, build, integrate and test a laser weapon prototype or component that meets the specifications and details outlined in the BAA. For subsystem or component proposals, the extent to which the task descriptions, components and associated technical elements for the components/subsystems provided adequately address the level of effort required and extent to which these tasks are adequate to address the proposed approach and address modular open system approaches (MOSA.) The extent to which the proposal documents the company's ability to develop, build, test integrate component and test with a notional laser weapon prototype that meets the specifications and details outlined in the BAA shall be evaluated.

b. Overall Scientific and Technical Merit:

Proposers must demonstrate that their technical approach is comprehensive, systematic and sound, that they have an understanding of critical technical issues and risks, that they have a plan for management of those risks, and that the technical elements are well integrated into a cohesive program.

1. Novel and Innovative Approaches - Extent to which the proposal documents a detailed, clear technical discussion for any innovative or breakthrough approaches proposed.

2. Risk Management - The extent to which the proposal documents major technical risks and planned risk reduction efforts.

3. Completeness - The extent to which the proposal task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly documented and defined such that the final product can be expected to achieve the program goals.

c. Potential for the Technology to Transition:

This factor assesses a technology's potential and likelihood of implementation on Navy platforms. It is expected that all proposals for the BAA will discuss the approach to ship integration.

For full systems proposals this should address:

1. Shipboard Compatibility - Extent to which the proposed design appears compatible with the concepts of operation and maintenance aboard Navy combatants.

2. Government Rights - Acceptance of Government Purpose Rights are clearly stated or the extent to which Offeror IP assertions are clearly delineated and substantiated. Extent to which licensing terms or limited data rights assertions may limit future development or competition will be evaluated.

For subsystem or component proposals this should address:

1. Relationship of the subsystem or component to future laser weapon system functions, in terms of meeting mission objectives, reducing costs, or buying down technical risk elements. Specific metrics relating to cost, if reductions are being offered, shall be articulated with the basis for any claims made.

2. Shipboard Compatibility - Extent to which the proposed design appears compatible with the concepts of operation and maintenance aboard Navy combatants.

3. Government Rights - Acceptance of Government Purpose Rights are clearly stated or the extent to which Offeror IP assertions are clearly delineated and substantiated. Extent to which

licensing terms or limited data rights assertions may limit future development or competition will be evaluated.

d. Proposer's Capabilities and Related Experience:

Each team of proposers should demonstrate prior experience in similar efforts and must clearly demonstrate an ability to deliver products that meet the proposed technical performance within the proposed budget and schedule.

1. Key Personnel and Facilities - The extent to which the proposal documents experience, technical expertise, leadership and level of commitment for key personnel, to accomplish the program objectives. The extent to which the proposal shows relevant prior experience on programs of comparable complexity should be discussed in short resumes for all key personnel. Extent to which the proposal documents required test facilities and equipment, and documents availability of those resources.

2. Program Management - The extent to which the proposal documents the expertise to show effective management methods, metrics and tools to be used to plan, monitor, assess and control performance, cost, schedule and risk. The extent to which the proposal documents an effective earned value management tool.

e. **Cost: The realism of the proposed costs and availability of funds:**

The proposed costs in the BAA response should be realistic and reasonable for the proposed technical and management approach, and substantiate the proposing team's practical understanding of the effort and provides best value to the government.

1. Cost Realism - Extent to which the proposal provides a detailed cost proposal with basis of estimates explained showing adequate levels of effort for the Offeror's proposed approach.

2. Availability of Funds - Extent to which the proposal's projected cost to perform the several identified phases of the project is within the anticipated funds available to support this solid-state laser weapon program.

Contract awards will be made to those proposals evaluated as providing the best value to the government in terms of addressing the government's program objectives and utilizing existing expertise, facilities, and prior research to reduce development cost. Technical factors a. through d. are listed in descending order of importance. Overall, the technical factors a. through d. listed above are significantly more important than the cost factor e. The degree of importance of cost will increase with the degree of equality of the proposals in relation to the other factors on which selection is to be based, or when the cost is so significantly high as to diminish the value of the proposal's technical superiority to the Government.

Industry-Academia Partnering - ONR highly encourages partnering among industry and academia with a view toward speeding the incorporation of new science and technology into

fielded systems. Proposals that utilize industry-academic partnering which enhances the development of novel S&T advances will be given favorable consideration.

Industry-Government Partnering - ONR highly encourages partnering among industry and Government with a view toward speeding the incorporation of new science and technology into fielded systems. Proposals that utilize industry-Government partnering which enhances the development of novel S&T advances will be given favorable consideration

The ultimate recommendation for award of proposals is made by ONR's scientific/technical community. Recommended proposals will be forwarded to the contracts department will perform costs analysis prior to any ensuing negotiations. 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 above and has been sent to the contracting department to conduct cost analysis, determine the offeror's responsibility, and any take any other relevant steps necessary prior to commencing negotiations with the offeror.

2. Commitment to Small Business -

The Office of Naval Research is strongly committed to providing meaningful 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.

a.) Subcontracting Plan - For proposed awards to be made as contracts that exceed $650,000, large businesses and non-profits (including educational institutions) shall provide a Subcontracting Plan that contains all elements required by FAR 52.219-9, as supplemented by DFARS 252.219-7003. Small businesses are exempt from this requirement.

The Subcontracting Plan should be submitted as an attachment to the "Technical Proposal Template"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 "Technical Proposal Template."

Plans will be reviewed for adequacy, ensuring that the required information, goals, and assurances are included. If a subcontracting plan is not submitted with the proposal package or the negotiation of an acceptable subcontracting plan is required, there could be a delay in the issuance of an award. In addition, in accordance with FAR 52.219-9, failure to submit and negotiate a subcontracting plan may make an offeror ineligible for contract award.

Offerors shall propose a plan that ensures small businesses (inclusive of SDBs, WOSBs, HUBZone, VOSBs and SDVOSBs, etc…) will have the maximum practicable opportunity to participate in contract performance consistent with its 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 fiscal year subcontracting goals found on the Department of Defense Office of Small Business Program website at: http://www.acq.osd.mil/osbp/ If proposed goals are below the statutory requirements, then the offeror should provide a viable written explanation as to why small businesses are unable to be utilized and what attempts have been taken to ensure that small business were given the opportunity to participate in the effort to the maximum extent practicable.

b.) 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 to the maximum practicable opportunity to participate in contract performance consistent with its efficient performance.

NOTE: Small Business Offerors may meet the requirement using work they perform themselves.

This assertion will be reviewed to ensure that it supports this policy by providing meaningful subcontracting opportunities. The statement should be submitted as a part of the proposal package and will not be included in the page count.

3. 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 the period of performance.

4. 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.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements -

- The North American Industry Classification System (NAICS) code - The NAICS code for this announcement is "541712" with a small business size standard of "500 employees".
- Central Contractor Registration: All Offerors submitting proposals or applications must:
  (a) be registered in the Central Contractor Registration (CCR) prior to submission;
  (b) maintain an active CCR registration with current information at all times during which it has an active Federal award or an application under consideration by any agency; and
  (c) provide its DUNS number in each application or proposal it submits to the agency.

- Access to your Contract Award

  Hard copies of award/modification documents will no longer be mailed to Offerors. All Office of Naval Research (ONR) award/modification documents will be available via the Department of Defense (DoD) Electronic Document Access System (EDA).

  EDA

  Effective 01 October 2011, EDA is a web-based system that provides secure online access, storage, and retrieval of awards and modifications to DoD employees and vendors.

  If you do not currently have access to EDA, you may complete a self-registration request as a "Vendor" via http://eda.ogden.disa.mil following the steps below:

  Click "New User Registration" (from the left Menu) Click "Begin VENDOR User Registration Process" Click "EDA Registration Form" under Username/Password (enter the appropriate data) Complete & Submit Registration form

  Allow five (5) business days for your registration to be processed. EDA will notify you by email when your account is approved.

  Registration questions may be directed to the EDA help desk toll free at 1-866-618-5988, Commercial at 801-605-7095, or via email at cscassig@csd.disa.mil (Subject: EDA Assistance

VII. OTHER INFORMATION

1. 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 submitting proposals for contracts, cooperative agreements and Other Transaction Agreements should indicate in the Technical Proposal Template, Section II, Blocks 8 and 9, which of these facilities are critical for the project's success.

2. Security Classification

In order to facilitate intra-program collaboration and technology transfer, the Government will attempt to enable technology developers to work at the unclassified level to the maximum extent possible. If access to classified material will be required at any point during performance, the Offeror must clearly identify such need by completing Section II, Block 11, DD 254 – Security Classification Specification, of the Technical Proposal Template.

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.

3. Use of Animals and Human Subjects in Research

RESERVED

4. Recombinant DNA

RESERVED

5. 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 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 and 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 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.

6. Department of Defense High Performance Computing Program

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S&T and RDT&E communities with use-access to very powerful high performance computing systems. Awardees of ONR contracts, grants, and assistance instruments may be eligible to use HPCMP assets in support of their funded activities if ONR Program Officer approval is obtained and if security/screening requirements are favorably completed. Additional information and an application may be found at http://www.hpcmo.hpc.mil/.

7. Organizational Conflicts of Interest

All Offerors and proposed subcontractors must affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any ONR technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the offeror supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure shall include a description of the action the offeror has taken or proposes to take to avoid, neutralize, or mitigate such conflict. In accordance with FAR 9.503 and without prior approval, a contractor cannot simultaneously be a SETA and a research and development performer. Proposals that fail to fully disclose potential conflicts of interests or do not have acceptable plans to mitigate identified conflicts will be rejected without technical evaluation and withdrawn from further consideration for award. Additional ONR OCI guidance can be found at http://www.onr.navy.mil/About-ONR/compliance-protections/Organizational-Conflicts-Interest.aspx. If a prospective offeror believes that any conflict of interest exists or may exist (whether organizational or otherwise), the offeror should promptly raise the issue with ONR by sending his/her contact information and a summary of the potential conflict by e-mail to the Business Point of Contact in Section I, item 7 above, before time and effort are expended in preparing a proposal and mitigation plan. If, in the sole opinion of the Government after full consideration of the circumstances, any conflict

situation cannot be effectively avoided, the proposal may be rejected without technical evaluation and withdrawn from further consideration for award under this BAA.

8. Project Meetings and Reviews

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

9. Executive Compensation and First-Tier Subcontract Reporting

Section 2(d) of the Federal Funding Accountability and Transparency Act of 2006 (Pub. L. No. 109-282), as amended by section 6202 of the Government Funding Transparency Act of 2008 (Pub. L. 110-252), requires the Contractor to report information on subcontract awards. The law requires all reported information be made public, therefore, the Contractor is responsible for notifying its subcontractors that the required information will be made public.

Unless otherwise directed by the Contracting Officer, by the end of the month following the month of award of a first-tier subcontract with a value of $25,000 or more, (and any modifications to these subcontracts that change previously reported data), the Contractor shall report the following information at http://www.fsrs.gov for each first-tier subcontract:

- (a) Unique identifier (DUNS Number) for the subcontractor receiving the award and for the subcontractor's parent company, if the subcontractor has one.
- (b) Name of the subcontractor.
- (c) Amount of the subcontract award.
- (d) Date of the subcontract award.
- (e) A description of the products or services (including construction) being provided under the subcontract, including the overall purpose and expected outcomes or results of the subcontract.
- (f) Subcontract number (the subcontract number assigned by the Contractor).
- (g) Subcontractor's physical address including street address, city, state, and country. Also include the nine-digit zip code and congressional district.

- (h) Subcontractor's primary performance location including street address, city, state, and country. Also include the nine-digit zip code and congressional district.

- (i) The prime contract number, and order number if applicable.

- (j) Awarding agency name and code.

- (k) Funding agency name and code.

- (l) Government contracting office code.

- (m) Treasury account symbol (TAS) as reported in FPDS.

- (n) The applicable North American Industry Classification System (NAICS) code.

By the end of the month following the month of a contract award, and annually thereafter, the Contractor shall report the names and total compensation of each of the five most highly compensated executives for the Contractor's preceding completed fiscal year at http://www.ccr.gov, if -

- (a) In the Contractor's preceding fiscal year, the Contractor received -
    - (i) 80 percent or more of its annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and
    - (ii) $25,000,000 or more in annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and
- (b) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at http://www.sec.gov/answers/execomp.htm.).

Unless otherwise directed by the Contracting Officer, by the end of the month following the month of a first-tier subcontract with a value of $25,000 or more, and annually thereafter, the Contractor shall report the names and total compensation of each of the five most highly compensated executives for each first-tier subcontractor for the subcontractor's preceding completed fiscal year at http://www.fsrs.gov, if -

- (a) In the subcontractor's preceding fiscal year, the subcontractor received -
    - (i) 80 percent or more of its annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and
    - (ii) $25,000,000 or more in annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and
- (b) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal

Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at http://www.sec.gov/answers/execomp.htm.).

If the Contractor in the previous tax year had gross income, from all sources, under $300,000, the Contractor is exempt from the requirement to report subcontractor awards. Likewise, if a subcontractor in the previous tax year had gross income from all sources under $300,000, the Contractor does not need to report awards to that subcontractor.

10. Other Guidance, Instructions, and Information

None