

Amendment 0002
Solicitation Number: ONRBAA11-028
“Large Displacement Unmanned Underwater Vehicle Innovative Naval Prototype
(LDUUV INP) Energy Section Technology”
Date: (4 AUG 2011)

The purpose of Amendment 0002 is to amend the BAA and respond to questions submitted prior to 15 AUG 2011. Section IV, “Application and Submission” is revised to reflect changes to the instructions for submitting technical and cost proposals for this BAA. Table 2, “Desired Metrics” has been replaced. Enclosure Number 1 to Amendment 0002 entirely replaces/supersedes the original ONRBAA11-028 previously posted.

Questions received after that date and before the deadline for submissions of questions will be addressed in a subsequent amendment.

BAA 11-028 is hereby amended as follows:

1. The **attachment** to Amendment 0002 entirely replaces all previous postings for ONR BAA 11-028.
2. Questions and Answers are provided as follows:

Question 1:

Can a proposer have a non-US base supplier for this program?

Answer 1:

Please see section III, Eligibility Information for ONR BAA 11-028

Question 2:

Within the BAA is there any preference for the fuel to be used? For instance are fuels that are already commonly available in the naval inventory preferred over unique fuels? Are any of the following fuels either preferred or unallowable?

Answer 2:

ONR has no preferred fuel or oxidant sources for BAA 11-028

Question 3:

Table 2, “Desired Metrics,” states that the desired metric for Open vs. Closed Cycle is “Closed” however Note 2 states that Open systems will be considered. Will the evaluation process rank a Closed system higher than an Open system?

Answer 3:

Per Table 2, the Open vs. Closed Cycle metric is closed, however per “Note 2,” open systems will be considered. Please refer to Section V, “Evaluation Criteria” for information on how award decisions are made.

Question 4:

Table 2 states that the Objective depth is 1000 ft. Is there a mission dive profile available or a maximum rate of change for either depth or external pressure?

Answer 4:

Information regarding mission dive profile or a maximum rate of change for either depth or external pressure will not be provided by ONR.

Question 5:

Regarding the information provided in Table 1 of ONR BAA 11-028, the nominal power density of 0.4 W/L is not consistent with the information presented within the table for energy, duration, and volume (817 kWh/1104 hours = 0.740 kW; 740 W/3454 L = 0.214 W/L). How was the nominal power density in Table 1 calculated? Are these values of 0.4 W/L for threshold and 0.6 W/L for the objective correct or are the calculated values from the info on the table (0.214 W/L for threshold and 0.310 W/L for the objective) the correct values?

Answer 5:

The correct values for Table 1 nominal power density are 0.214 W/l and 0.310 W/l for Threshold and Objective, respectively.

Question 6:

Can the vehicle hull section described in Figure 1 be designed by the contractor to act as a pressure vessel?

Answer 6:

Please see Table 1 and Figure 1 (and their notes) of ONRBAA 11-028.

Question 7:

Page 6. Table 2 Hibernation Cycle: Is there an expected duration of the hibernation cycle? Do the hibernation cycles coincide with the two ~100 hour zero power level periods in Figure 3?

Answer 7:

Reference Figure 2, Figure 3 and Appendix A Power Profile. Hibernation periods are those times during which Power is 0 Watts.

Question 8:

The amount of energy for the threshold is listed in Table 1 as 817 kWh. In Table 1 Note 4 states that this includes a 10% reserve energy beyond that required for power profiles in Figures 2 & 3. From the information in Appendix A: Power Data for the Threshold, this adds up to only 720 kWh. If 10% is then added to it that gives 792 kWh. There is 25 kWh that is not accounted for. Can you provide information what the additional 25 kWh is required for or clarify this discrepancy?

Answer 8:

Table 1, Note 4 which states 10% Reserve Energy is a nominal value; specific values for reserve energy are 13.5% and 9.4% for Threshold and Objective, respectively.

Question 9:

Does ONR intend to preclude those firms that have been recommended for funding following the FNC BAA from receiving funding under the INP BAA?

Answer 9:

ONR will make its selection based on the eligible proposal(s) that best meet the requirements of the evaluation criteria described in the LDUUV INP Energy BAA. Eligibility is addressed in the solicitation.

Question 10:

Section III - Eligibility Information- page 12 clearly states that research in these areas is limited to "US person", but yet Section IV Other information, paragraph 9 states that the contractor should secure export licenses if utilizing a foreign person. I am concerned that these two sections contradict each other and would like clarification as to whether we are permitted to utilize foreign persons or companies for subcontractors/vendors provided we have obtained all the proper export license.

Answer 10:

The information pertaining to “Export Control,” contained in Section VII, paragraph 9, entitled “Other Guidance, Instructions, and Information” is general information pertaining to U.S. export control laws, regulations, and licenses. The “Eligibility Information,” contained in Section III, page 12 addressing “Export Controlled Technologies,” contains information that pertains specifically to BAA 11-028.

Question 11:

Does the 20 page limit for section 3i.1 truly apply to all appendices?

Answer 11:

Please see Section IV of ONRBAA 11-028. Page limitations apply as stated within the BAA.

Question 12:

Is a complete safety analysis required as part of the proposal?

Answer 12:

Please see Section I, Paragraph 6 of ONRBAA 11-028. Safety information is addressed throughout this section.

Enclosure Number 1:
ONRBAA11-028



ONR BAA Announcement Number 11-028

Date: 4 AUG 2011

Enclosure Number 1 to Amendment 0002

The purpose of this amendment is to revise “Section IV Application and Submission Information” in regards to the instructions for submitting technical and cost proposals, and to replace “Table 2, Desired Metrics” for ONR BAA 11-028. Amendment 0002 entirely replaces all previous postings for ONRBAA11-028.

Large Displacement Unmanned Underwater Vehicle Innovative Naval Prototype (LDUUV INP) Energy Section Technology

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 - Large Displacement Unmanned Underwater Vehicle Innovative Naval Prototype (LDUUV INP) Energy Section Technology

3. Program Name - Large Displacement Unmanned Underwater Vehicle Innovative Naval Prototype (LDUUV INP)

4. Research Opportunity Number - 11-028

5. Response Date -

White Papers:
Full Proposals: 9/19/2011

6. Research Opportunity Description -

The Office of Naval Research (ONR) is interested in receiving proposals for an energy dense air-independent,

rechargeable/refuelable energy system for the Large Displacement Unmanned Underwater Vehicle Innovative Naval Prototype (LD UUV INP). The performers will deliver a scalable energy system with threshold and objective performances as defined in Table 1.

	Threshold	Objective
Nominal Power Density (Watts/liter)	0.4	0.6
Energy Section Length	304.8 cm (120'')	304.8 cm (120'')
Energy System Volume (liter) (see Figure 1)	3454 ⁽¹⁾ liters	3454 ⁽¹⁾ liters
Energy System Mass (kg)	3540 ^(2,3)	3540 kg ^(2,3)
Energy System Buoyancy (kg)	0 ⁽³⁾	0 ⁽³⁾
Energy (kWh)	817 ⁽⁴⁾	1800 ⁽⁴⁾
Duration (hrs)	46 Days (1104 Hrs)	70 Days (1680 Hrs)
Note 1. Flooded volume with ambient seawater per the 42" X 42" X 120" inner hull geometry (reference Figure 1) Note 2. Includes the fuel + oxidizer + tankage + BOP + Power converter + pressure vessel (if required) + ballast/syntactic-foam (if required) + seawater with a tolerance of +/- 50kg. Note 3. Ambient seawater Specific Gravity of 1.025 Note 4. Includes an additional 10% of reserve energy beyond that required for power profiles in Figures 2 & 3.		

Table 1: Threshold and Objective Metrics

The goal of this program is to develop and demonstrate power system technologies capable of the performance specifications and characteristics contained in Tables 1-4. Proposals shall describe a complete system concept, provide a detailed scope of work for the development of the core technology(ies) and conduct integrated bench-top system testing to achieve a Technology Readiness Level (TRL) of no less than 4 (Phase I Base). In addition to the specific S&T performance capabilities, proposers are expected to conduct a safety analysis (Preliminary Hazard/Safety Analysis (PHSA), reference in Appendix B) of the system energy technology concept. Any proposal that does not provide a specific full system solution, as well as a safety analysis, will not be considered.

PLEASE NOTE: NUCLEAR POWER OPTIONS WILL NOT BE CONSIDERED FOR THIS EFFORT

6.1 Background:

This background is provided for informational purposes only. Greater breadth of mission profiles for current and future Naval UUVs require longer endurance stealthy propulsion systems that extend the current capability of 10-40 hours to several days or weeks (UUV Master Plan; www.navy.mil/navydata/technology/uuvmpl.pdf). Current and future anticipated technologies based solely on high energy density batteries will not provide adequate endurance for the missions envisioned for the LDUUV. Solutions beyond battery-only technology capabilities are required.

This BAA seeks proposals for an energy section that will be incorporated into the LD UUV INP. The request for approaches to develop and demonstrate the other component technologies that comprise the LD UUV INP, autonomy and endurance, will be solicited in a separate BAA. While this BAA is a stand-alone BAA and proposers should propose solutions based on the desired capabilities, metrics, and technical, selection and contracting information contained in this BAA, proposers should also review the materials provided during the Industry Day for this program to better understand the entire system concept.

Briefs that describe the Navy need, current state-of-the-art, and program goals from the ONR Industry Day for this BAA, held on 10 March 2011, are available on the ONR web site at the hyperlink in Appendix B.

Information in ONR BAA 11-028 regarding desired capabilities, metrics, and any other technical or contracting

information supersedes any previously published information (including that briefed at the industry day). Only information published in ONR BAA 11-028 and any ensuing amendments will be used during source selection.

6.2 Program Plan:

Three (3) planned phases, Phase I Base, Phase I Option, and Phase II, are covered by this BAA, and the objectives for each are described below.

Phase I Base (up to 18 months):

Phase I Base has an up to 18-month period of performance that must be capable of meeting at a minimum, the **THRESHOLD** metrics listed in Table 1, and be capable of meeting the mission profile in Figure 2.

Objective:

- Conduct subscale (at least 5 kW peak power) component and/or full-scale critical component and integration testing and analysis as a basis to meet at a minimum the Table 1 threshold metrics and the Figure 2 Mission Profile at a TRL 4 system level demonstration. The demonstration is expected to be at a minimum a breadboard or brassboard demonstration. The weight and volume metrics should at a minimum be demonstrated in the 3D solid model deliverable. Integration of the major components (i.e. power plant, fuel and oxidant storage/delivery subsystems, reaction product storage/handling subsystem and Balance of Plant (BOP) components) must be part of the system demonstration. In addition, proposers must demonstrate that their proposed technology has the ability to meet a load profile representative (in regards to transients, duration) of the Figure 2 mission profile (Data Table in Appendix A). A matrix listing all test parameters and test conditions of component and full-scale testing should be provided in the proposal. The proposal matrix requirement is expected to be a high level testing outline including applicable ranges of all key parameters of critical components to be tested. System reliability should be demonstrated by conducting several start/stops without refueling, defined by complete shut-down, followed by re-start from the state of the system prior to initial start-up (system at time = zero)
- Develop a preliminary Energy System 3D CAD based Solid Model demonstrating attainment of the performance specifications as stated in Table 1. This solid model must contain all components/subsystems of the energy section, necessary interfaces, and representative volumes of the final system. This 3D solid model is a deliverable to be incorporated in the Phase I Base final report.
- Provide a development plan that details how the desired and environmental metrics as listed in Tables 2 and 3 will be met. Environmental metrics **MUST** be met and desired metrics should be met if possible. Identify low, medium and high risk items along with mitigation plans to address the risks.
- Generate a table listing the weights and volumes of all the representative full-system energy section components, TRLs of the subcomponents, and necessary BOP items, including mounting methods. Table should also include an initial high level cost analysis of identified components; a more detailed cost analysis is a Phase I Option deliverable. This table will be updated monthly (provided with each monthly report) and a final version will be included as a deliverable in the final report.
- Demonstrate via analysis and documentation the safe and reliable operation of high specific energy reactants (fuels, oxidizers, etc.) and power conversion equipment/systems via a Preliminary Hazards Analysis (PHA) for both component level hardware and systems level hardware and their subsequent operations in an autonomous environment. This will include identification and control of hazards, subsequent risk assessment and the necessary mitigation/countermeasure strategies to eliminate/control those hazards as necessary to manage those risks at an acceptable level.

Deliverables:

- Monthly Technical Reports
- Monthly Financial Reports
- Preliminary Hazard/Safety Analysis for the energy subsection using MIL-STD-882D as guidance. Format shall be in accordance with DI-SAFT 80101B (links available in Appendix B).
- Preliminary System Design
- Preliminary Design Review
- TRL 4 system demonstration
- Final Report that includes a table of all system components with weights/volumes, TRLs, etc.
- Phase II Plan of Action (including a prioritized list of risks associated with the Phase II final system); due 30 days prior to the end of the Phase I Base period.
- A 3D solid model of a full scale energy system in one of the following CAD universal exchange formats:
--STEP (214)

--IGES

- Energy System layout drawings of critical components, interfaces and subsystems integrated into the hull; this would be 2-D Level I drawings at a minimum. Use both .dxf and .pdf formats
- Table describing all observables, emissions and signatures of the system. Neutral buoyancy ($\pm 50\text{kg}$) must be maintained and effluence, except seawater used for cooling, is prohibited during peak power operations.

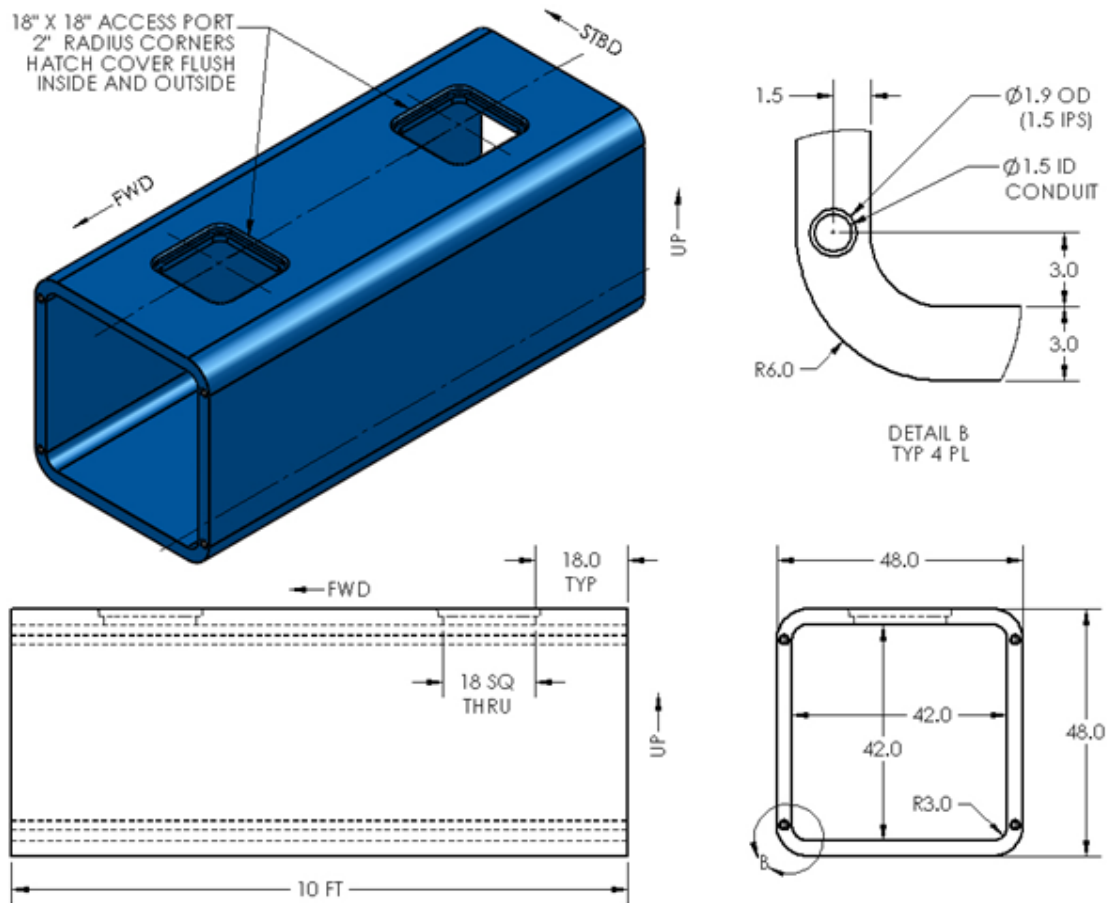


Figure 1. Vehicle Hull Section

Notes:

1. This section is flooded
2. A pressure vessel, if one is required for your proposal, must fit inside this volume.
3. UUV pass-through conduit is in the hull and thus does not impact energy section.
4. Ports may be anywhere, but preference is on top (dimensions and locations as shown in Figure 1 are examples). In addition to providing access to the energy section, ports will be used for cooling water inlet/outlet
5. Do not assume heat conduction through the hull.

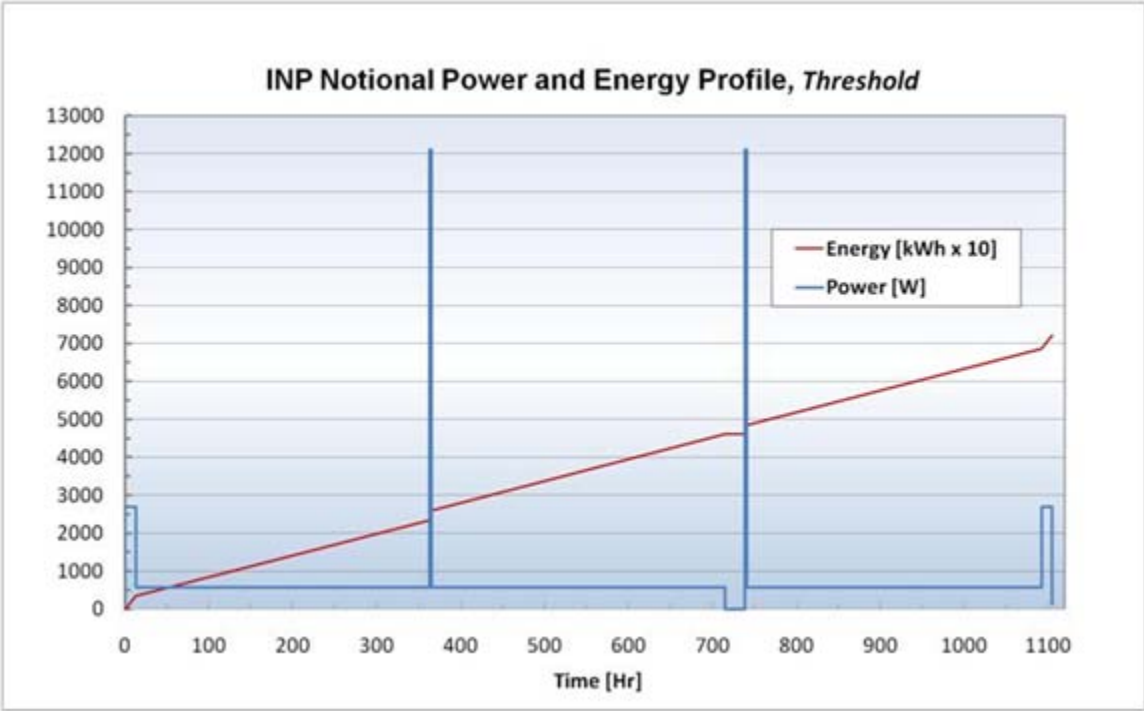


Figure 2: Threshold Mission Profile
(Data available in Appendix A)

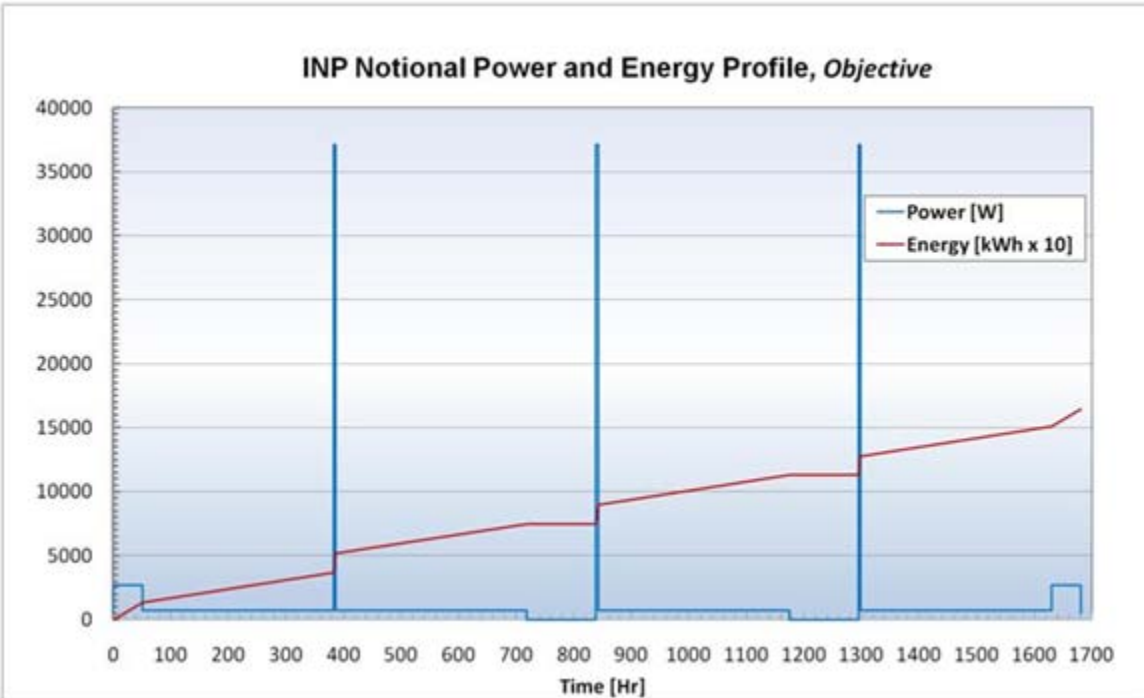


Figure 3: Objective Mission Profile
(Data available in Appendix A)

Specification	Metric
Endurance	= 1680 hours
Start/Stop Cycles	3-5 cycles as defined by complete shut-down , followed by re-start from the state of the system prior to initial start-up (system at time = zero)
Hibernation Capability	2 hibernation cycles
Refuelability	Yes ¹
Scalable	Yes
Open vs. Closed Cycle	Closed ²
Operating Depth	Threshold: 400 ft Objective: 1000' continuous (depth independent desirable)
Power Profile	See Power Profile Figs. 2 & 3. and Appendix A
Power Transients	Threshold: 2 hrs continuous operation at peak power. Objective: 4 hrs continuous operation at peak power.
Safety Considerations	See Section 6.2, page 09.
Peak Power	See Figs. 2&3. and Appendix A
Power Quality	Frequency <1 % voltage ripple Voltage: 240-320 volts Power : +/- 3% commanded
Orientation: Roll, Pitch	± 45 Degrees (operation) ± 90 Degrees (storage, pitch only)
Center of Gravity/Center of Buoyancy	See note 3
Turn-around Time (between missions)	Threshold: 24 hrs Objective: 12 hrs
Maintenance Specifications	Minimum of 5 missions before depot maintenance required.
Safety	Safe storage (energy section fueled or unfueled) The developer should identify any restrictions the technology has on stand-by waiting in a fueled condition. The system should be capable of at least six months storage in the un-fueled condition.
<ol style="list-style-type: none"> 1. Refueling may be accomplished via panels or ports installed in the UUV hull and/or pressure vessel. However, refueling solutions that involve sectioning or disassembly of the UUV will not be considered. Refueling of the UUV energy section will occur when it is mated to other sections of the UUV and thus cannot be separated or disassembled in any fashion 2. Open systems will be considered. For both closed and open systems, proposers must describe all observables, emissions and signatures of the system. Neutral buoyancy must be maintained at all times (±50kg). Energy section hull mass/volume does not need to be considered for neutral buoyancy purposes. Effluence (except seawater used for cooling) is prohibited during peak power operations. The energy section must make provisions for any buoyancy and effluence changes in the energy section. 3. The center of gravity and center of buoyancy should be identified by the proposer and should be maintained during operation as close as possible with minimal variation. 	

Table 2. Desired Metrics

Specification	Metric
Environment (Operating Conditions)	
Salinity	0 to 50 parts per thousand (ppt)
Salinity Variation	± 10 ppt during a single sortie
Water Temperature	-1.1°C – 35.0°C (30°F to 95°F)
Air Temperature	-28.9°C to 50°C (-20°F to 122°F)
Temperature Shock	-28.9°C to 50°C (-20°F to 122°F)
Shipboard Shock	MIL-STD-901D (Grade B) while secured to transportation pallet (Appendix B)
Shipboard Vibration	MIL-STD-167-1 (Appendix B)
Humidity	0-100 % relative humidity
Salt Fog	Marine Environment
Fungus	Avoid Materials that promote fungal growth
Icing/Freezing Rain	Operate where icing may occur from sea splash/spray
Electromagnetic Environment	MIL-STD-461F (RE101, RE102, RS101, RS103) (Appendix B)
Environment (Non Operating Conditions)	
Transportation Altitude	0 to 12,192 M(0-40,000 ft) (pressurized or non-pressurized)
Transportation & Storage Temperature	-40°C to 71°C (-40°F to 160°F)
Transportation Shock & Vibration	Withstand ground, air, rail, ship transport (MIL-STD-1366E guidance) (Appendix B)

Table 3. Environmental Metrics

Specification	Metric
On-Board Battery (external to energy section)	8 KWh for 1 hour available for energy section start-up. Max power is 8KW. Energy Section may request power from battery through the control interface
Key Interfaces	300 VDC (bus voltage); Systems need to provide conversion to electrical power on demand at the bus voltage. (Also, see On-Board Battery specification above.)

Table 4. General Information

Phase I Option (6 months):

Decisions for continuation to Phase I Option will be based on the degree to which Phase I Base results meet key metrics as described in Section 6.2 above.

Objective:

- Finalize the design and initiate full-scale system component procurement for the Phase II demonstration, final BOP integration strategy and the test plan detailing the conditions for the final TRL 6 demonstration.
- Conduct Critical Design Review
- Conduct preliminary system level cost analysis, including up front (capital cost) and life cycle cost

Deliverables:

- Monthly Technical Reports
- Monthly Financial Reports
- 3D solid model of a full scale energy system in one of the following CAD universal exchange formats:
--STEP (214)
--IGES
- Energy System layout drawings of critical components, interfaces and subsystems integrated into the hull; this would be 2-D Level I drawings at a minimum. Use both .dxf and .pdf formats.
- Prioritized list of Phase II risk and mitigation strategies
- Table of final system components with weights, volumes, and associated cost
- Final Report
- System Cost Analysis. The Cost analysis should include estimates of Non-Recurring Engineering (NRE), Production, and Reoccurring Operational costs along with the basis and assumptions. Specifically the cost analysis should provide the following:
 1. Per unit production cost assuming production rates of 5 per year and 10 per year for 10 years.
 2. Reoccurring Operational cost for one energy section to conduct 3 missions over one year at 800 and 1800 kWh per mission. This should include labor hours and consumables for the full operational cycle of the mature system, i.e. refueling/recharging/reconfiguring/maintaining before, during and after missions.
- Phase II Technical and Cost Proposal

Phase II (up to 24 months):

The Government intends to evaluate Phase II Proposals from those contractors whose efforts have met at least the THRESHOLD metrics in Phase I Base and whose Phase II Plan of Action quantifies the extent to which the OBJECTIVE metrics listed in Table 1 and the mission profile in Figure 3 (data table in Appendix A) can be attained. The performer will conduct integrated full-scale testing, at a TRL 6 land-based demonstration of an energy section fully integrated into the LD UUV hull shown in Figure 1. Proposers must demonstrate that their proposed technology has the potential to meet a load profile representative (in regards to transients, duration) of the Figure 3 mission profile. A full scale UUV Energy Section hull (Figure 1) and hull/energy section interface documentation will be provided as GFE/GFI. Interface documentation will be provided to performers continuing on to Phase I option of the effort. The energy section hull (not a pressure vessel) can be customized to provide access ports; preferred fueling/penetrator port dimensions are as defined in Figure 1.

Objectives:

- Full scale system integration into a UUV Energy Section hull
- Land-based (TRL 6) test demonstration of the OBJECTIVE metrics (Table 1) and OBJECTIVE mission profile (Figure 3) in a UUV Energy Section hull.
- Develop all necessary Standard Operating Procedures (SOPs), operating manuals, maintenance schedules, a detailed system flow and instrumentation schematic to show the functional relationship of piping, instrumentation and system equipment components, and a parts list for the energy system (this system package will be a deliverable).

Deliverables:

- Monthly Technical Reports
- Monthly Financial Reports
- Final Report (along with the summary of all the test results, this report should also include recommendations necessary to further mature the technology, such as component risks that need further development/testing, component system reliability, component system manufacturing improvements, etc.)

•3-D Solid model of a full scale energy system, CAD formats should be as follows (use either):

--STEP (214)

--IGES

- Detailed Design Package, containing Level II 2-D drawings and an accompanying parts list. Use both .dxf and .pdf formats.
- Energy System layout drawings of critical components, interfaces and subsystems integrated into the hull/pressure vessel; this would be 2-D Level I drawings at a minimum. Use both .dxf and .pdf formats
- Standard Operating Procedures (SOPs), operating manuals, maintenance schedules.
- Piping and Instrumentation Diagram (P&ID) schematic illustrating the functional relationship of piping, instrumentation and system equipment
- Hazards Assessment using MIL-STD-882D as guidance. Format shall be in accordance with DI-SAFT 80101B (links available in Appendix B).
- Full scale system integrated into a UUV energy section hull and tested.
- System Cost Analysis. The cost analysis will refine the Phase I Option deliverable cost analysis. Include estimates of Non-Recurring Engineering (NRE), Production, and Reoccurring Operational costs along with the basis and assumptions. Specifically the cost analysis should provide the following:
 1. Per unit production cost assuming production rates of 5 per year and 10 per year for 10 years.
 2. Reoccurring Operational cost for one energy section to conduct 3 missions over one year at 800 and 1800 kWh per mission. This should include labor hours and consumables for the full operational cycle of the mature system, i.e. refueling/recharging/reconfiguring/maintaining before, during and after missions.

The Energy System shall be designed for safety of all personnel involved in testing, shipping, loading and handling, operation, and maintenance of the system. No single point of failure or human error shall lead to initiation of a Category I hazard (Catastrophic - defined as death, system loss, or severe damage) or Category II hazard (Critical - defined as severe injury, severe occupational illness, major system or environmental damage). Two or more independent faults, which may result in a Category I or II hazard, shall not be permitted unless their total probability of occurrence is less than or equal to 1×10^{-6} . Energy volume does not include the hull & bulkhead, but does include the pressure vessel and mounting hardware if needed.

Details of the thermal performance of the GFE hull section and end-caps in air and water, at rest and at speed will be provided to successful offerors during Phase I. Do not rely on thermal conduction through the hull.

Communications Standards: Developers can propose any suitable, non-proprietary commercial or military communication standards.

Electrical Connector Requirements: Internal connectors shall incorporate positive locking features to prevent loosening during shipment and usage aboard ship. Pre-manufactured commercial off-the-shelf (COTS) cables (and associated connectors) shall be allowed, however, where a press-fit only connector is provided (e.g., USB) an external mechanism to retain the connector in the mated position shall be provided.

All vehicle connectors shall use unique mechanical keying to prevent incorrect cable connections, shall use a stainless steel body, shall utilize gold-plated pins and sockets, and shall provide continuation of the overall cable shield to the pressure vessels. Vehicle connectors used to penetrate pressure vessels (if utilized)/air-tight spaces shall be hermetically sealed.

Although ONR expects a program phasing plan similar to the above to be executed, ONR reserves the right to make future changes as determined to be in the best interest of the government.

7. Point(s) of Contact -

Questions of a **technical** nature should be submitted to:

Maria Medeiros
Program Officer
Office of Naval Research
Sea Platforms and Weapons Division, Code 333
One Liberty Center
875 North Randolph Street
Arlington, VA 22203-1995

Phone: (703) 696-5034
Email Address: maria.medeiros1@navy.mil

Questions of a **business** nature should be submitted to:

Tracie Simmons
Business Analyst
Office of Naval Research
Contracts & Grants, BD 253
One Liberty Center
875 North Randolph Street
Arlington, VA 22203-1995
Phone: (703) 696-7827
Email Address: tracie.simmons@navy.mil

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

Questions 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 webpages:

- 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>

8. Instrument Type(s) - Contracts

It is anticipated that awards will be in the form of cost-type contracts, specifically Indefinite Delivery/Indefinite Quantity (IDIQ) contracts with cost-type Task Orders made from those IDIQ contract vehicles, with the evaluation criteria provided in Section V of this BAA. (The specific type of Cost-Type contracts expected are Cost-Plus-Fixed-Fee (CPFF) or Cost Reimbursement as defined in the FAR under Part 16.306 and 16.302 respectively)

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 Category 6.2 (Applied Research) and NOT performed on-campus at a university or b) funded by Budget Category 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.

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

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

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

II. AWARD INFORMATION

ONR anticipates that up to three (3) IDIQ contracts and task order 0001 awards will result from this BAA. A total of approximately \$20M is anticipated to be available over the four (4) year span (FY12-15) for all phases of the BAA, however the IDIQ basic contract will be awarded with a five (5) year ordering period, to allow for delays in negotiation/award of Phase II orders. Although the amount of funds and period of performance for each proposal will vary depending on the technical approach to be pursued by the proposer, it is expected each proposal will be structured according to the Research Opportunity Description above.

The IDIQ minimum quantity will be \$25,000. The IDIQ maximum quantity will be based on the total program estimate, which is approximately \$20M.

It is expected that each Phase I (base plus option) task Order 0001 will total approximately \$4.5M. ONR is looking for the best value with regards to this research. (See Section 6.2 for period of performance)

Subsequent Task Orders will be issued based on the success of the prior phase and will follow the criteria established in FAR 16.505.

ONR currently expects to make Phase II awards to all Phase I Base/Option performers whose products have met at least the THRESHOLD metrics (Tables 1, 3, and 4/ Figures 1-2) and have the likelihood to meet overall program objectives described in the BAA. Approximately \$7M is available for Phase II awards, however, if sufficient funds are not available to make Phase II awards to all Phase I contractors that have met these criteria, then a down-selection would occur that provides fair opportunity in accordance with FAR 16.505 by making awards to the Phase I performer or performers that have best met or exceeded the metrics and have the best likelihood to meet the overall objectives described in the BAA.

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 limitation contained in Section 819 of the National Defense Authorization Act for Fiscal Year 2011.

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 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.

This BAA topic covers export controlled technologies. Research in these areas is limited to "U.S. persons" as defined in the International Traffic in Arms Regulation (ITAR) - 22 CFR § 1201.1 et seq. Additionally, since access to US Navy and other access controlled research facilities will be required, **All Key Personnel** for each proposer must be United States citizens.

Proposers must possess an active PKI certificate (External Certificate Authority) from 30 days after contract award through the duration of the performance period. This is required for access to a government run sharepoint site for report and briefing materials submission.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process - Full Proposals

Technical Proposals: (Limited to 20 pages + Statement of Work):

- **IDIQ Proposal (address Phase I Base, Phase I Option, and Phase II):**
Includes: Technical Approach and Justification, and Management Approach. Proposers are to address their technical approach and justification, and management approach; as it pertains to their overall effort for Phase I Base, Phase Option, and Phase II.
- **Task Order 0001 Proposal: (Address Phase I Base and Phase I Option):**
Includes: Proposal Checklist, Table of Contents, Statement of Work, Technical Approach and Justification, Project Schedule and Milestones, Assertion of Data Rights, Deliverables/Reports, Technology Transition, Software Development Plan, Technical/Design Reviews, and Qualifications. The Statement of Work (SOW) should clearly detail the scope and objectives of the Task Order 0001 effort and the technical approach. It is anticipated that the proposed SOW will be incorporated as an attachment to the resultant award instrument. To this end, such proposals must include a severable, self-standing, task-oriented SOW without any proprietary restrictions, which can be attached to the contract or agreement award. Include a detailed listing of the technical tasks/subtasks organized by year and a section which lists all proposed deliverables. (This statement of work shall provide separate sections/tasks for each Phase).

Cost Proposals: (No Page Limit):

- **Task Order 0001 Proposal (address Phase I Base and Phase I Option):**
Full Cost Proposal per the spreadsheet. 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>.

- **Phase II:**
Rough Order of Magnitude (ROM) Phase II cost estimate. The ROM should be a high level break down by major Phase II tasks and does not require completion of a cost proposal spreadsheet at this time.

The due date for receipt of Full Proposals is 2:00 PM (Eastern Daylight Time) on 19 Sept 2011. It is anticipated that initial selections will be made by 15 January 2012. As soon as the final proposal evaluation process is completed, the proposers will be notified via email of their selection or non-selection for an award. Full Proposals shall be **mailed or hand delivered** to the technical point of contact listed above in Section I.7. If hand delivered, building security will contact the Technical Point of Contact or Mr. Frank Pennypacker @ 703-696-5074 if the Technical Point of Contact is not available to receive the proposal in person. ONR accepts deliveries during normal business hours Monday through Friday.

Proposers may add a second option to the base period to allow the government to buy government purpose rights to any technology that has been proposed, that has been developed exclusively at private expense This proposed cost will count toward the total contract value.

Please Note: A cover page for the purpose of addressing proprietary markings may be included as an attachment within the Technical and Cost Proposal Template. The cover page must not exceed one (1) page, and will not count towards the overall page count of the proposal packet.

a. Technical Content Section III.1 entitled "Technical Approach and Justification" in the Technical and Cost Proposal Template is **limited to a total of 20 pages**, including supplementary attachments to further explain scientific approach. **Sections within the technical proposal must be identified as relevant to either the overall IDIQ or Task Order 0001 effort.**

b. Sections entitled, "Future Naval Relevance", "Operational Naval Concept", and "Operational Utility Assessment Plan" stated in Section III.1 of the Technical and Cost Proposal Template **are not required** for this solicitation.

c. SOW Section III.2 (3.0) entitled, "Requirements" in the Technical and Cost Proposal Template has numbering requirements for tasks, which **must** map directly to the Work Breakdown Structure (WBS) developed for pricing the proposal. Additionally, all subcontractors and internal organizations must use the same SOW and WBS numbering/definitions in their proposal to the prime contractor.

Please note that the following additional factors listed below: Intellectual Property, Patents, Intellectual Property Representations, and Letters of Commitment must be addressed within your proposal under this BAA, which can be incorporated into the Template file for submission as attachments to the Technical and Cost Proposal Template.

d. Intellectual Property Information:

Below are three aspects of intellectual property 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 energy system for long duration, unmanned undersea vehicles.

•Intellectual Property: (Does not count towards page limit)

--Noncommercial Items (Technical Data and Computer Software):

Each proposer responding to this BAA shall identify all noncommercial technical data and noncommercial computer software that it plans to acquire, generate, develop, utilize and/or deliver under any award if the Government will acquire less than unlimited rights in the technical data and software. Proposers will follow the format under DFARS 252.227-7017 to assert specific rights restrictions on these deliverables. In the event that a proposer and its subcontractors do not submit any Data Rights Assertions, the Government will assume that it has unlimited rights to all noncommercial technical data and noncommercial computer software acquired, generated, developed, utilized 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 used in the development of noncommercial technical data and noncommercial computer software acquired, generated, developed, used and/or delivered under any award, then the proposer 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. Equivalent data/software generated under an SBIR contract may be subject to SBIR rights in accordance with DFARS 252.227-7018. The Government will assume that any such GPR or SBIR rights restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses. At the end of that period the Government will acquire unlimited rights in the data and software unless the parties have agreed otherwise. Be aware that the Government will use the proposer's Data Rights Assertions during the source selection evaluation process to evaluate the impact of any identified IP restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no IP restrictions are intended, then the proposer should so indicate in his proposal.

A sample Data Rights Assertion table for noncommercial items 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)

--Commercial Items (Technical Data and Computer Software):

Each proposer responding to this BAA shall identify all commercial technical data and commercial computer software that may be delivered under the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or commercial computer software. DFARS 252.227-7015 shall apply as regards rights in technical data involving commercial items. In the event that a proposer and its subcontractors do not submit Data Rights Assertions regarding commercial items, the Government will assume that there are no restrictions on the Government's use of such commercial items. The Government will use the proposer's 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 commercial items 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: (Does not count towards page limit)

Each proposer responding to this BAA shall 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) that will be utilized under their proposal for the ONR program, or 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 the proposer owns the invention, or 2) proof of possession of appropriate licensing rights in the invention.

•Intellectual Property Representations: (Does not count towards page limit)

Each proposer responding to this BAA 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. The summary shall describe 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) 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. The proposer shall also clarify the intended use of the invention in any deliverable under the proposed award instrument.

e. Letters of Commitment: (Does not count towards page limit)

Include Letters of Commitment from key member companies/organizations. These letters shall not exceed one page in length and must reflect commitment (e.g., cost share, other donated services, etc.) to the project and not discuss technical information.

In addition, all of the attachments listed in Section III.8 of the *Technical and Cost Proposal Template* can be incorporated into the Template file for submission.

The format requirements for any attachments to the Technical and Cost Proposal Template 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

2. Content and Format of Full Proposals -

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

Unclassified Proposal Instructions:

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

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.

b. FULL PROPOSALS

INSTRUCTIONS FOR CONTRACTS. *NOTE: Submission instructions for BAAs issued after FY2010 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 review of proposals. Both the Template and the Spreadsheet have instructions imbedded into them that will assist in completing the documents. Also, both the Template and the Spreadsheet require completion of cost-related information – both documents must be fully completed to constitute a valid proposal.*

*All proposals **must** use ONR's Technical and Cost Proposal Template and Cost Proposal Spreadsheet. The Template can be found by following this link: <http://www.onr.navy.mil/Contract-Grants/submit-proposal/contracts-proposal/cost-proposal.aspx>. Please note that all the attachments listed in Section III.8 of the Template can be incorporated into the Template file for submission.*

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 and Cost Proposal Template, 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.

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. From October 1, 2010 through February 28, 2011, any newly awarded subcontract must be reported if the prime contract award amount is \$550,000 or more. Starting March 1, 2011, any newly awarded subcontract must be reported if the prime contract award amount was \$25,000 or more. The pertinent requirements can be found in Section VII, Other Information, of this document.

Offerors should submit one (1) original, plus 5 hard copies and one (1) electronic copy on CD-ROM. Offerors shall follow the Technical and Cost Proposal Template. The electronic Technical and Cost Proposal should be submitted in a secure, pdf compatible format, save 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, copy, and paste text, images, and other content. Offerors may also submit their Technical and Cost Proposal in an electronic file that allows for revision (preferably in Microsoft Word) to facilitate the communication of potential revisions. Should an Offeror amend its Technical and Cost Proposal package, 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. Significant Dates and Times -

Event	Date	Time
Full Proposal Due Date	9/19/2011	2:00 PM Eastern Standard Time
Notification of Selection: Full Proposals*	1/15/2012	
Awards*	5/15/2012	

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

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

4. Submission of Late Proposals -

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

- 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.

5. Address for the Submission of Full Proposals.

Full Proposals shall be sent to the Office of Naval Research at the following address:

Primary Contact	Secondary Contact
Office of Naval Research Attn: Mrs. Maria Medeiros ONR Department Code: 333 875 North Randolph Street Arlington, VA 22203-1995	Office of Naval Research Attn: Mr. Frank Pennypacker ONR Department Code: 333 875 North Randolph Street Arlington, VA 22203-1995

V. EVALUATION INFORMATION

1. Evaluation Criteria -

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

1. Ability to Meet Program Technical Metrics:
The feasibility and likelihood of the proposed approach to meet the program technical objectives/metrics. The extent to which the proposal reflects a mature, substantiated, and quantitative understanding of the program technical objectives/metrics, the statistical confidence with which they may be measured (the extent to which the proposal basis of information (data, testing analysis, etc) imparts confidence that the proposer can achieve program objectives), and their relationship to the technical concept of operations (CONOPS) (technical CONOPS derived from Tables 1, 2, 3 and 4 and Figures 1, 2, 3) that will result from successful performance in the program. A proposal that fails to adequately address how it will meet Program Technical Objectives/Metrics shall not be reviewed further. If the proposal is rated unacceptable in this category it shall not be reviewed any further.
2. Overall Scientific and Technical Merit:
The extent to which the proposed technical approach is feasible, achievable, and complete. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final product that achieves the goal can be expected as a result of award. The proposal identifies major technical risks and planned mitigation efforts are clearly defined and feasible.
Proposers must demonstrate that their proposal is innovative, that the technical approach is comprehensive, systematic and sound, that they have an understanding of critical technical issues and risks, that they have a plan for mitigation of those risks, and that the technical elements are well integrated into a cohesive program. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly

defined such that the final product can be expected to achieve the program goals. Proposers must identify the critical path with quantitative, intermediate metrics.

3. Potential for the Technology to Transition:

This factor assesses a technology's potential and likelihood of implementation on Navy platforms.

A concern for the government is the ability to transition the LD UUV INP energy program to production once the technology is proven. Key to a successful transition is upfront planning, acknowledging and resolving all aspects of IP rights. The following criteria will be considered to evaluate best value and best fit to any future transition:

- The IP assertions are realistic and clearly delineated.
- IP assertions are well substantiated.
- Licensing terms are clear and enforceable.

4. Proposer's Capabilities and/or Related Experience:

The proposer's prior experience in similar efforts must clearly demonstrate an ability to deliver products that meet the proposed technical performance within the proposed budget and schedule. The proposed team, including key personnel has the expertise to manage the cost and schedule. Similar efforts completed/ongoing by the proposer in this area are fully described including identification of other Government sponsors.

5. The reasonableness/realism of the proposed costs and availability of funds.

Overall the Technical Factors (Factors 1- 4 above) are significantly more important than the Cost Factor (Factor 5 above), with the Technical Factors weighted in descending order of importance, from Factor 1 through Factor 4.

Award(s) will be made to proposers whose proposals are determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work to the overall research program and the availability of funding for the effort. The Office of Naval Research is strongly committed to providing meaningful subcontracting opportunities for small businesses, small disadvantaged businesses, woman-owned small businesses, HUBZone small businesses, veteran-owned small business, service disabled veteran-owned small businesses, historically black colleges and universities, and minority institutions through its awards.

For proposed awards to be made as contracts (that exceed \$650,000) to other than small businesses, the Offeror is required to submit a Small Business Subcontracting Plan in accordance with FAR 52.219-9. As such, Subcontracting Plans will be evaluated to ensure that submissions are compliant with FAR Subpart 19.7.

For proposed awards made as contracts to small businesses at any value or to other than Small Businesses that are less than \$650,000, the Offeror shall provide a statement which demonstrates how it intends to provide meaningful subcontracting opportunities to support this policy.

The Government will evaluate options for award purposes by adding the total cost for all options, except those to procure IP rights, 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.

2. Evaluation Panel -

Technical and cost proposals submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR 3.104-4 and 15.207. The cognizant Program Officer and other Government scientific experts will perform the evaluation of technical proposals. Restrictive notices notwithstanding, one or more support contractors may be utilized as subject-matter-expert technical consultants. 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.

NOTE: Central Contractor Registry (CCR), Subcontracting Plan requirements and Certification requirements are all set forth in the ONR Technical and Cost Proposal Template for those submitting contract proposals.

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 and Cost Proposal Template, Section II, Blocks 8 and 9, which of these facilities are critical for the project's success. Offerors submitting proposals for grants should address the need for government-furnished facilities in their technical proposal. **NOTE: The energy section hulls provided in Phase II will not be customized by the Government beyond the need for fueling/penetrator ports.**

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 in the technical and cost proposal template.

3. Use of Animals and Human Subjects in Research

RESERVED

4. Recombinant DNA

RESERVED

5. 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/>.

6. 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. 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 or mitigated, the proposal may be rejected without technical evaluation and withdrawn from further consideration for award under this BAA.

7. 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.

8. 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.fsrc.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/excomp.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.fsr.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/excomp.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.

9. Other Guidance, Instructions, and Information

Additional Award Administration Information

Export Control:

(1) The contractor shall comply with all U.S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730

through 799, in the performance of this contract. In the absence of available license exemptions/exceptions, the contractor shall be responsible for obtaining the appropriate licenses or other approvals, if required, for exports of (including deemed exports) hardware, technical data, and software, or for the provision of technical assistance.

(2) The contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract, including instances where the work is to be performed on-site at any Government installation (whether in or outside the United States), where the foreign person will have access to export-controlled technologies, including technical data or software.

(3) The contractor shall be responsible for all regulatory record-keeping requirements associated with the use of licenses and license exemptions/exceptions.

(4) The contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors.

Appendix A: Power Data

Threshold:

Time [hr]	Power [W]
0	143
0.5	143
0.5	2700
13	2700
13	575
363	575
363	12100
365	12100
365	575
715	575
715	0
739	0
739	12100
741	12100
741	575
1092	575
1092	2700
1104.5	2700
1104.5	143
1105	143

Objective:

Ttime [hr]	Power [W]
0.0	500
0.5	500
0.5	2700
50.5	2700
50.5	700
382.5	700
382.5	37100
386.5	37100
386.5	700
718.5	700
718.5	0
838.5	0
838.5	37100
842.5	37100
842.5	700
1174.5	700
1174.5	0
1294.5	0
1294.5	37100
1298.5	37100
1298.5	700
1630.5	700
1630.5	2700
1680.5	2700
1680.5	500
1681.0	500

APPENDIX B: Hyperlinks

ONR Industry Day Briefs	http://www.onr.navy.mil/en/Contracts-Grants/Funding-Opportunities/Special-Notices.aspx (Click on the expired tab at the top of the page to access briefs under the Industry Day notice for the Large Unmanned Undersea Vehicle UUV Science and Technology 11-SN-0009)
MIL-STD-882D	https://assist.daps.dla.mil/docimages/A.0000.0003/6027/000000198718_000000141972_DJLKNM XRWC.PDF?CFID=24160174&CFTOKEN=97572158&jsessionid=5c30dbe089c6fbefce5740556634e187b109
DI-SAFT 80101B	https://assist.daps.dla.mil/quicksearch/basic_profile.cfm?ident_number=209470
MIL-STD-901D (Grade B)	http://www.assistdocs.com/search/document_details.cfm?ident_number=2640&StartRow=1&PaginatorPageNumber=1&doc%5Fid=MIL%2DS%2D901D&status%5Fall=ON&search%5Fmethod=BASIC
MIL-STD-167-1	http://www.assistdocs.com/search/document_details.cfm?ident_number=35544&StartRow=1&PaginatorPageNumber=1&doc%5Fid=MIL%2DSTD%2D167%2D1&status%5Fall=ON&search%5Fmethod=BASIC
MIL-STD-461 (RE101,RE102,RS101,RS103)	http://www.assistdocs.com/search/document_details.cfm?ident_number=35789&StartRow=1&PaginatorPageNumber=1&doc%5Fid=MIL%2DSTD%2D461&status%5Fall=ON&search%5Fmethod=BASIC
MIL-STD-1366E	http://www.assistdocs.com/search/document_details.cfm?ident_number=35789&StartRow=1&PaginatorPageNumber=1&doc%5Fid=MIL%2DSTD%2D461&status%5Fall=ON&search%5Fmethod=BASIC

APPENDIX C: Acronym List 1

.dxf	Drawing Exchange Format
.pdf	Portable Document Format
3D	Three Dimensional
BAA	Broad Agency Announcement
BOP	Balance of Plant
CAD	Computer Aided Design
CCR	Central Contractor Registration
CD	Compact Disk
CONOPS	Concept of Operations
COTS	Commercial off the Shelf
DFARS	Defense Federal Acquisition Regulation
DoD	Department of Defense
DoN	Department of the Navy
DUNS	Data Universal Numbering System
EAR	Export Administration Regulations
FAR	Federal Acquisition Regulation
FEDBIZOPPS	Federal Business Opportunities
FFRDC	Federally Funded Research & Development Centers
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GPR	Government Purpose Rights
HBCU	Historically Black Colleges and Universities
HPCMP	High Performance Computing Program
hrs	hours
HUBZONE	Historically Underutilized Business Zone
IDIQ	Indefinite Delivery Indefinite Quantity
IGES	Initial Graphics Exchange Specification
IP	Intellectual Property
ITAR	International Traffic in Arms Regulations
kg	kilogram
kWh	Kilowatt Hour
l	liter
LDUUV INP	Large Displacement Unmanned Underwater Vehicle Innovative Naval Prototype
MI	Minority Institutions
NAICS	North American Industry Classification System
NAVSEA	Naval Sea Systems Command
NRE	Non-Recurring Engineering
ONR	Office of Naval Research
ORCA	Online Representations and Certifications Application
P&ID	Piping & Instrumentation Diagram
PHA	Preliminary Hazard Analysis
PHSA	Preliminary Hazard/Safety Analysis
PKI	Public Key Infrastructure

APPENDIX C: Acronym List 1 Continued

POC	Point of Contact
RFP	Request for Proposals
ROM	Rough Order of Magnitude
S&T	Science & Technology
S.G.	Specific Gravity
SETA	Scientific, Engineering, and Technical Assistance
SOP	Standard Operating Procedures
SOW	Statement of Work
STEP	Standardized Exchange of Product
TAS	Treasury Account Symbol
TRL	Technology Readiness Level
USB	Universal Serial Bus
UUV	Unmanned Underwater Vehicle