



**NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM (NOPP) 2018  
BROAD AGENCY ANNOUNCEMENT**

**INTRODUCTION:**

On behalf of the National Oceanographic Partnership Program (NOPP), the Office of Naval Research (ONR) solicits research proposals under this Broad Agency Announcement (BAA #N00014-17-S-B016). The NOPP was established by Congress via Title II, subtitle E, of Public Law 104-201 to promote the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication by improving knowledge of the ocean. There are over twenty agencies participating in the NOPP. They are identified on the NOPP website: [www.nopp.org](http://www.nopp.org).

In this BAA, NOPP participants have identified three ocean research and technology topics of mutual and emerging interest. Selected projects will be awarded and funded by individual agencies after the NOPP office, ONR and panels of experts conduct an evaluation of the full proposals from each topic. The NOPP office will notify all offerors of their status in writing and provide the 2018 NOPP project announcement on their website. Up to \$18.5 million over five years may be available for this solicitation, subject to appropriation, availability of funds and final approval by the participating NOPP agencies. NOPP partner funding will be dependent on proposal topic availability and individual agency policies, procedures and regulations. There will be no classified work funded under this solicitation.

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

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## I. GENERAL INFORMATION

### A. Agency Name:

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

### B. Research Opportunity Title :

National Oceanographic Partnership Program (NOPP) 2018 Broad Agency Announcement

### C. Program Name: Not Applicable (N/A)

### D. Research Opportunity Number: N00014-17-S-B016

### E. Catalog of Federal Domestic Assistance (CFDA) Number - 12.300

### F. Catalog of Federal Domestic Assistance (CFDA) Title - Basic and Applied Scientific Research

### G. Research Opportunity Description:

1. Topics : This BAA provides research opportunities for the following three topics:

Topic #	Topic Name
1	CubeSat Sensors for Investigating Littoral Ocean & Atmosphere Dynamics (Appendix I)
2	Improved & Routine Production, Stewardship and Application of the Group for High Resolution Sea Surface Temperature (GHRSSST) Data (Appendix II)
3	<i>In-situ</i> Ocean Sensor Research & Technology Development (Appendix III)

Appendices I, II and III provide the detailed research opportunity descriptions for each topic.

2. Work Category & Funding: Work funded under a BAA may include basic research, applied research and some advanced technology development (ATD). Agencies will fund recommended or selected projects in accordance with their own policies, procedures and regulations. ONR funding supporting this BAA is for applied research. Other NOPP-contributing agencies may support other areas of research as described above.
3. ONR specific guidance: With regard to any restrictions on the conduct or outcome of work funded under this BAA, ONR will follow the guidance on and definition of “contracted fundamental research” as provided in the Under Secretary of Defense (Acquisition, Technology and Logistics) Memorandum of 24 May 2010.

As defined therein the definition of “contracted fundamental research,” in a DoD contractual context, includes research performed under grants and contracts that are (a) funded by Research, Development, Test and Evaluation Budget Activity 1 (Basic Research), whether performed by universities or industry or (b) funded by Budget Activity 2 (Applied Research) and performed on campus at a university. The research shall not be considered fundamental in those rare and exceptional circumstances where the applied research effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant.

Pursuant to DoD policy, research performed under grants and contracts that are a) funded by Budget Activity 2 (Applied Research) and NOT performed on-campus at a university or b) funded by Budget Activity 3 (Advanced Technology Development) does not meet the definition of “contracted fundamental research.” In conformance with the USD (AT&L) guidance and National Security Decision Directive 189, ONR will place no restriction on the conduct or reporting of unclassified “contracted fundamental research,” except as otherwise required by statute, regulation or executive order. For certain research projects, it may be possible that although the research being performed by the prime contractor is restricted research, a subcontractor may be conducting “contracted fundamental research.” In those cases, it is the *prime contractor’s responsibility* in the proposal to identify and describe the subcontracted unclassified research and include a statement confirming that the work has been scoped, negotiated, and determined to be fundamental research according to the prime contractor and research performer.

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

FAR Part 35 restricts the use of Broad Agency Announcements (BAAs), such as this, to the acquisition of basic and applied research and that portion of advanced technology development not related to the development of a specific system or hardware

procurement. Contracts and grants and other assistance agreements made under BAAs are for scientific study and experimentation directed towards advancing the state of the art and increasing knowledge or understanding.

**H. Response Dates:**

#	BAA Topic Name	Letters of Intent Due Date	Full Proposal Due Date
1	CubeSat Sensors for Investigating Littoral Ocean & Atmosphere Dynamics	Not applicable	October 16, 2017
2	Improved & Routine Production, Stewardship and Application of the Group for High Resolution Sea Surface Temperature (GHRSSST) Data	Not applicable	October 16, 2017
3	<i>In-situ</i> Ocean Sensor Research & Technology Development	October 16, 2017 (required)	January 29, 2018

**I. Contact Information & Point(s) of Contact (POC) –**

Questions:

1. For Contractual questions please call: (Ms. Russelle Dunson at russelle.dunson@navy.mil)
2. For Technical questions, please email: [noppbaa18@nopp.org](mailto:noppbaa18@nopp.org)

Note: All UNCLASSIFIED technical questions associated with this BAA will be collected by the NOPP office. ONR will work with all of the NOPP partner representatives to answer questions promptly and post answers on the NOPP website [www.nopp.org](http://www.nopp.org). Questions submitted within 2 weeks prior to a deadline may not be answered, and the due date for submission of the full proposal will not be extended.

Note: Comments or questions submitted should be concise and to the point, eliminating any unnecessary verbiage. In addition, the relevant part and paragraph of the Broad Agency Announcement (BAA) should be referenced.

**J. Instrument Type(s):**

It is anticipated that awards will be in the form of grants. However, the NOPP participants reserve the right to award cooperative agreements, contracts, or other transaction agreements to appropriate parties, should the situation warrant use of an instrument other than a grant. When funding project participants that are Federal entities, agencies may fund these efforts separately based on policies and procedures, responses to the announcement and internal award administration.

For ONR, any contract award resulting from this BAA will incorporate the most current FAR, DFARS, NMCARS and ONR clauses. Any assistance instrument awarded under this announcement will be governed by the award terms and conditions that conform to DoD’s implementation of OMB circulars applicable to financial assistance. Terms and conditions of new awards made after December 26, 2014, will include revisions to reflect DoD implementation of

new OMB guidance in 2 CFR Part 200, “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.” The DoD Terms and Conditions is located at <http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal/grants-terms-conditions.aspx>

**K. Other Information:**

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

**II. AWARD INFORMATION**

Up to \$18.5 million over five years may be available for this solicitation, subject to appropriation, availability of funds and final approval by the participating NOPP agencies. Breakout of topic investments may not equal total amount listed here due to the uncertainty associated with receiving funding.

The amount and period of performance of each recommended or selected proposal will vary depending on the research area topic and the technical approach to be pursued by the selected or recommended offeror. The table below provides guidance by topic. It is anticipated that the awards will be made in the form of grants to universities or as stated in Section I, General Information, subsection J (above). The award funding levels will be commensurate with the proposed research and in response to the NOPP funding agency. Each individual award may be fully funded for the entire performance period or incrementally funded with a base of one -year (subject to funding availability, government Program Officer recommendation based on award progress and funding agency award terms).

#	Topic Name	Anticipated Number of Awards	Individual Award Amount Range	Performance Period (years)
1	CubeSat Sensors for Investigating Littoral Ocean & Atmosphere Dynamics	Up to 10	\$150K per year	2
2	Improved & Routine Production, Stewardship and Application of the Group for High Resolution Sea Surface Temperature (GHR SST) Data	Up to 2	\$300-\$700K per year	3-5
3	<i>In-situ</i> Ocean Sensor Research & Technology Development	Up to 22	Up to \$500K per year	3

Topics under this BAA may cover export controlled technologies.

**III. ELIGIBILITY INFORMATION**

Team efforts are required. The teams must be comprised of at least two of the following three sectors:

- Academia,
- Industry (including Non-Governmental Organizations - NGOs), and
- Government (including Tribal, State and Local)

All businesses both small and large are encouraged to submit proposals and compete for funding consideration. However, no portion of this BAA will be set aside for Small Business or other socio-economic participation.

Foreign institutions are eligible to apply for support as a partner under this BAA. However, the National Science Foundation (NSF) rarely provides support to foreign organizations. For proposals to be funded by NSF, NSF will consider proposals for cooperative projects involving U.S. and foreign organizations, provided support is requested only for the U.S. portion of the collaborative effort.

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

Offerors may submit proposals to all topics and there are no restrictions on the number of proposal submissions.

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

Offerors should be aware of recent changes in export control laws. Offerors are responsible for ensuring compliance with all U.S. export control laws and regulations, including the International Traffic in Arms Regulation (ITAR)( 22 CFR Parts 120 - 130) and Export Administration Regulation (EAR) (15 CFR Parts 730 – 774), as applicable. In some cases, developmental items funded by the Department of Defense are now included on the United States Munition List (USML) (22 CFR Part 121) and are therefore subject to ITAR jurisdiction. In other cases, items that were previously included on the USML have been moved to the EAR Commerce Control List (CCL). Offerors should address in their proposals whether ITAR or EAR restrictions apply to the work they are proposing to perform for ONR. The ITAR and EAR are available online at <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>. Additional information regarding the President's Export Control Reform Initiative can be found at <http://export.gov/ecr/index.asp>.

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

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

##### **A. General Application and Submission Information for Letters of Intent and Full Proposals**

1. **Letters of Intent (LOI): LOIs are required for Topic 3 only.** The due date for letters of intent is no later than 3:00 PM (Eastern Time) on Monday, October 16, 2017.

An LOI is to be submitted as a pdf file via electronic mail (email) only to the following email address: [nopp2018baa@navy.mil](mailto:nopp2018baa@navy.mil). Do not submit LOIs via grants.gov. There is an email size limit of 5MB per email.

**NOTE: Do not send:**

- a. Hardcopies of LOIs (including Facsimiles). Only electronic submissions will be accepted and reviewed;**
- b. ZIP files; and**
- c. Password protected files.**

Offerors may submit more than one LOI to the Topic 3 research opportunity. Submit each Topic 3 LOI as a separate email. Please do not combine multiple LOIs into one email. Please use the following email subject line for LOI submission:

Subj: Letter of Intent Submission for NOPP 2018 BAA (Last, first name(s) of PI(s) in parentheses) (If more than one LOI from the same team is being submitted, add LOI one of two, or as needed)

For Topic 3, LOI submission is mandatory to be considered for a full proposal. If an offeror does not submit an LOI before the specified due date and time, he/she is not eligible to submit a full proposal and is not eligible for funding. Government representative notification of the LOI review results will be issued via email notification from the NOPP Program Office which is anticipated approximately 45 days after the LOI submission deadline. LOI submissions will be protected from unauthorized disclosure in accordance with FAR Subpart 15.207 and DOD/DoN regulations.

2. Full Proposals: The due date for receipt of Full Proposals for Topics 1 and 2 is 3:00 p.m. (Eastern Time) on Monday, October 16, 2017. The due date for receipt of Full Proposals for topic 3 is 3:00 p.m. (Eastern Time) on Monday, January 29, 2018.

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

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 announcement.

**B. Ship time Instructions for LOIs and Full Proposals**

Proposals requiring ship time will need to submit a ship time request (STR) form only at the full proposal stage. **Please do not submit a STR form as part of the LOI phase**

Ship time information is requested in the letter of intent (LOI) as described in the instructions in section IV subsection C (below – Content and Format for LOIs). For full proposals, provide the UNOLs STR, select the NOPP as agency in the pulldown menu, add all other appropriate information and manage the requests per the UNOLs process found at:

[https://strs.unols.org/Public/diu\\_login.aspx](https://strs.unols.org/Public/diu_login.aspx). Additional information about the ship time process for UNOLS ships is at the following link:

<https://www.nsf.gov/pubs/2016/nsf16085/nsf16085.pdf> on page 7

All NOPP partners will use the UNOLs system to coordinate ship time including NOAA, ONR and NSF. See the LOI and full proposal section information and instructions for non-UNOLs ships.

### **C. Content and Format for Letters of Intent and Full Proposals**

#### Letters of Intent:

Please limit the submission to two (2) pages of text and the specified cover page using a font no less than 11 points in size. The letter of intent should be divided into the following sections:

1. Cover Page - The cover page must include:
  - a. title, preferably in a large, bold font; include the term “Letter of intent”
  - b. name and address of the principal investigator’s organization and its “type” (e.g., for tribal, profit, nonprofit, educational, small business, minority owned, historically black college or university, minority institution, federal demonstration project participant etc.);
  - c. name of the Broad Agency Announcement (BAA), including the federal fiscal year, under which the letter of intent is submitted;
  - d. total requested funding for the duration of the project;
  - e. duration of the project and proposed start date;
  - f. Principal investigator’s name and contact information (address, telephone number, fax number, e-mail address, etc.);
  - g. co-investigators’ names, institutions and contact information;
  - h. date of submission;
  - i. Statement that the document contains proprietary information (optional).
2. Research Objectives – Please present a summary level statement of work and research objectives. Include the science that the sensor research and development will address as well as the technical objectives.
3. Technical Approach – Provide a description of the technical approach and challenges for the sensor development, test and evaluation.
4. Anticipated Outcome & Impact - Provide a supported description of the anticipated outcomes, impacts and pre/post Technology Readiness Levels (TRLs) of the effort using the definitions supplied in <http://www.acq.osd.mil/chieftechnologist/publications/docs/TRA2011.pdf>
5. Management and partnership approach – Describe roles and responsibilities of partners and overall management of the effort.
6. Ship time needs information – year, desired location, number of days on station, special ship capabilities (e.g., DP, multibeam, APDC, deep submergence vehicles). If non-UNOLs vessels

are proposed, please indicate the ship information, number days on station and ensure that all institutional policies and procedures are followed for use of non-UNOLs vessels.

7. Milestone Schedule – Provide a brief list of the high level milestones and dates.
8. Budget (ship time costs are not included). The budget can have the form of a simple table indicating partners and costs.

#### Full Proposals (Content and Format in Appendix IV)

The proposal format and content identified in Appendix IV are applicable to the submission of full proposals. Appendix IV includes separate instructions for full proposals for grants and full proposals for contracts, cooperative agreements and other transaction agreements.

#### **D. Submission of Late Proposals**

Any letter of intent or full 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. The contracting officer may accept the proposal if 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.

Acceptable evidence to establish the time of 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.

#### **E. Submission of Grant and Cooperative Agreement Proposals through Grants.gov**

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

Detailed instructions entitled “Grants.gov Electronic Application and Submission Information” on how to submit a grant proposal through Grants.gov may be found at the ONR website listed under the ‘Acquisition Department – Contracts & Grants Submitting a Proposal’ link at:  
<http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal/grants-gov.aspx>.

Grant and cooperative agreement proposals shall be submitted through Grants.gov using the mandatory Grants.gov form(s) from the application package template associated with the BAA on the Grants.gov website. The use of the optional forms from the application package template

associated with the BAA is highly encouraged. To be considered for award, applicants must include the ONR Department Code “322NOPP” in Block 4 entitled ‘Federal Identifier’ of the Standard Form (SF) 424 R&R.

By completing Blocks 17 the Grant Applicant is providing the certification on lobbying required by 32 CFR Part 28. Refer to Section VI, ‘Award Administration Information’ entitled “Certifications” for further information.

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

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

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

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

#### Proposal Receipt Notices:

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

The three e-mails are:

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

Number 2 – The applicant will receive an e-mail indicating that the proposal has been validated by Grants.gov within two days of submission (This means that all of the required fields have been

completed). After an institution submits an application, Grants.gov generates a submission receipt via email and also sets the application status to “Received.” This receipt verifies the Application has been successfully delivered to the Grants.gov system. Next, Grants.gov verifies the submission is valid by ensuring it does not contain viruses, the opportunity is still open, and the applicant login and applicant DUNS number match. If the submission is valid, Grants.gov generates a submission validation receipt via email and sets the application status to “Validated.” If the application is not validated, the application status is set to "Rejected." The system sends a rejection email notification to the institution, and the institution must resubmit the application package. Applicants can track the status of their application by logging in to Grants.gov.

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

**F. Address for the Submission of Full Proposals for Contracts**

Submission of a contract will be at the direction of the funding agency. Please note that private industry offerors who do not claim profit may submit via grants.gov.

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

Office of Naval Research  
 Attn: Dr. Reginald Beach Suite 1065  
 ONR Department Code 322  
 875 North Randolph Street Arlington, VA 22203-1995

Electronic Submission: Submit to the Program Officer, Code 322, at: [reginald.beach@navy.mil](mailto:reginald.beach@navy.mil)

**G. Significant Dates and Times**

<b>Anticipated Schedule of Events</b>		
<b>Event</b>	<b>Date (MM/DD/YEAR)</b>	<b>Time (Washington DC Local Time)</b>
Deadline for Receipt of Questions	09/27/2017	3:00 p.m.
Full Proposals Due Date Topics 1&2	10/16/2017	3:00 p.m.
Full Proposal Due Date Topic 3	1/29/2018	
Notification of Selection for Award*	9/27/2018	
Award (start date)*	10/16/2018	

**\*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 it is recommended that any hard-copy proposal be mailed long enough before the deadline established in the solicitation so that it will not be received late and thus be ineligible for award consideration.

## **V. EVALUATION INFORMATION**

### **A. Evaluation Criteria**

Proposals shall be evaluated under two principal selection criteria, of equal importance, as follows:

1. Overall scientific and technical merits of the proposal. [Note: Merit review criteria will follow National Science Foundation policies provided in Appendix V for review and use in preparation of proposals under this BAA];
2. Potential relationship of the proposed research and development to NOPP BAA topic objectives.

Other evaluation criteria used in the technical reviews, which are of lesser importance than the principal selection criteria and of equal importance are:

1. Experience and past performance of critical or key personnel;
2. The technical and cost information which will be analyzed simultaneously during the evaluation process. This includes an assessment in accordance with the program's funding availability.
3. Note: The Government will evaluate options for award purposes by adding the total cost for all options to the total cost for the basic requirement. Evaluation of options will not obligate the Government to exercise the options during contract or grant performance.

### **B. Evaluation Panels**

1. Letters of Intent (relevant for Topic 3 only) – Participating NOPP government representatives will conduct an evaluation of the LOIs.
2. Full Proposals - The cognizant ONR Program Officer, a NOPP panel of subject matter experts and other Government scientific staff will perform the evaluation of technical and cost proposals.

Technical and cost proposals submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR 3.104-4 and 15.207. Cost proposals may also be analyzed by Government business professionals. Restrictive notices notwithstanding, one or more support contractors may be utilized as subject-matter-expert technical consultants. Similarly, support contractors may be utilized to evaluate cost proposals. However, proposal selection and award

decisions are solely the responsibility of Government personnel. Each support contractor's employee having access to technical and cost proposals submitted in response to this BAA will be required to sign a non-disclosure statement prior to receipt of any proposal submissions.

### **C. General Information Regarding the Review and Selection Process for Grants**

1. Letters of Intent – The ONR Program Officer will provide the NOPP Program Office with the results of the LOI reviews by the NOPP government agency representatives. The NOPP Program Office will provide email responses to all Topic 3 offerors with LOI review results. The responses will indicate an encouragement to proceed to the full proposal submission stage or a statement of low likelihood of success of a full proposal.
2. Full Proposals – Upon completion of the panel reviews, participating NOPP agencies will decide which proposals will be recommended for funding and the lead funding agency. The Program Officer from the lead agency or activity will notify the PI(s) for these proposals and provide any additional submission instructions to process the funding action. Investigators may be asked to modify objectives, work plans or budgets, and provide supplemental information. Awards will be issued and administered by the agency responsible for a specific project after receipt and processing of any required agency specific documents. Any proposals selected for funding by NSF will be required to be resubmitted to NSF's FastLane system. Appendix VI provides submission NSF FastLane system instructions.

The ONR Program Officer will coordinate with the NOPP Program Office and send emails to all offerors for all topics with full proposal results. Anonymous panel summaries will be supplied as attachments to the emails. The NOPP Program Office will also coordinate with all agencies and issue a 2018 BAA Program Announcement on their website.

## **VI. AWARD ADMINISTRATION INFORMATION**

### **A. Administration Requirement Information for all NOPP awards**

Awards will be approved, administered, monitored, and closed out in accordance with the issuing agency's award terms and conditions.

All NOPP awardees or contractors will submit an annual NOPP report regardless of which agency funds the project. Section VII H and Appendix VII provide additional guidance and requirements.

### **B. ONR Administrative Requirements –**

1. The North American Industry Classification System (NAICS) code – The NAICS code for this announcement is “541715” with a small business size standard of “1,000 employees”.
2. CCR - Successful Offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to award of any grant, contract,

cooperative agreement, or other transaction agreement. Information on CCR registration is available at <https://www.bpn.gov/ccr/default.aspx>.

3. Subcontracting Plans – Successful contract proposals that exceed \$550,000, submitted by **all** but small business concerns will be required to submit a Small Business Subcontracting Plan in accordance with FAR 52.219-9 prior to award.

### **C. Certifications**

#### Contracts and Section 845 Other Transaction Agreement Proposals

For contracts, in accordance with FAR 4.1201, prospective contractors shall complete and submit electronic annual representations and certifications at <https://orca.bpn.gov>. In addition to completing the Online Representations and Certifications Application (ORCA), proposals must be accompanied with a completed DFARS and contract specific representations and certifications. These "DFARS and Contract Specific Representations and Certifications", i.e., Section K, may be accessed under the Contracts and Grants Section of the ONR Home Page at <http://www.onr.navy.mil/en/Contracts-Grants/submit-proposal/~media/DEBFC3AD40D54FCBA3312A380D3795A7.ashx>. This certification requirement is also applicable for Other Transaction Agreement proposals involving prototypes (Section 845 agreements).

#### 1. Grants, Cooperative Agreements and Normal Other Transaction Agreements (OTAs)

Grant and Cooperative Agreement awards greater than \$100,000, as well as OTAs not under Section 845, require a certification of compliance with a national policy mandate concerning lobbying. Grant, Cooperative Agreement and OTA applicants shall provide this certification by electronic submission of SF424 (R&R) as a part of the electronic proposal submitted via [Grants.gov](https://www.grants.gov) (complete Block 17). The following certification applies to each applicant seeking federal assistance funds exceeding \$100,000:

#### **CERTIFICATION REGARDING LOBBYING ACTIVITIES**

- a) No Federal appropriated funds have been paid or will be paid by or on behalf of the applicant, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the applicant shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

c) The applicant shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

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

2. Grants and Other Assistance Agreements not through Grants.gov:

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

## **VII. OTHER INFORMATION**

### **A. Government Property/Government Furnished Equipment and Facilities**

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

### **B. 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 Offerors must clearly identify such need prominently in its proposal.

Normally, work done under a grant does not require access to classified material. This BAA will not fund classified work.

### **C. Use of Animals and Human Subjects in Research**

If animals are to be utilized in the research effort proposed, the Offeror must complete a DoD Animal Use Protocol with supporting documentation (copies of AALAC accreditation and/or NIH assurance, IACUC approval, research literature database searches, and the two most recent USDA inspection reports) prior to award. For assistance with submission of animal research related documentation, contact the ONR Animal Use Administrator at (703) 696-4046.

NOPP Specific Requirements: In addition to the requirements above, and prior to issuance of awards for recommended proposals, investigators must submit the following documents if experiments or field work involves the use of animals: 1) documentation that facility is AAALAC-approved or has NIH Animal Use Assurance if captive animal facilities are proposed, and 2) copies of NMFS Fisheries scientific research permit if applicable (US Researchers), or 3) United Kingdom and/or Society for Marine Mammalogy animal care guidelines for proposals submitted from Performers in countries with no guidelines of their own. Similarly, for any proposal for research involving human subjects, the Offeror must submit or indicate an intention to submit prior to award: documentation of approval from an Institutional Review Board (IRB); IRB-approved research protocol; IRB-approved informed consent form; proof of completed human research training (e.g., training certificate or institutional verification of training); an application for a DoD-Navy Addendum to the Offeror's DHHS-issued Federal wide Assurance (FWA) or the Offeror's DoD-Navy Addendum. In the event that an exemption criterion under 32 CFR.219.101 (b) is claimed, provide documentation of the determination by the Institutional Review Board (IRB) Chair, IRB vice Chair, designated IRB administrator or official of the human research protection program including the category of exemption and short rationale statement.

This documentation must be submitted to the ONR Human Research Protection Official (HRPO), by way of the ONR Program Officer. Information about assurance applications and forms can be obtained by contacting ONR\_343\_contact@navy.mil. If the research is determined by the IRB to be greater than minimal risk, the Offeror also must provide the name and contact information for the independent medical monitor. For assistance with submission of human subject research related documentation, contact the ONR Human Research Protection Official at (703) 696-4046.

For contracts and orders, the award and execution of the contract, order, or modification to an existing contract or order serves as notification from the Contracting Officer to the Contractor that the HRPO has approved the assurance as appropriate for the research under the Statement of Work and also that the HRPO has reviewed the protocol and accepted the IRB approval or exemption determination for compliance with the DoD Component policies. See, DFARS 252.235-7004.

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

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

#### **E. Recombinant DNA -**

Proposals which call for experiments using recombinant or synthetic nucleic acid molecules must include documentation of compliance with NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines), approval of the Institutional Biosafety Committee (IBC), and copies of the DHHS Approval of the IBC letter. Guidance:

<http://www.onr.navy.mil/About-ONR/compliance-protections/Research-Protections/Animal-Recombinant-DNA.aspx>

## **F. 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.

## **G. Protection of Proprietary and Sensitive Information - Do not put proprietary data or markings in or on the Statement of Work.**

## **H. Project Meetings, Reports and Reviews**

Funding agency specific meetings, reports and reviews will be identified at award. The NOPP office has an annual report requirement for all awarded projects. The report template is provided as Appendix VII.

For ONR awards, 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. Please refer to the individual topic research opportunity descriptions in Appendices I, II and III for additional information on schedule and budgeting for meetings in the milestone chart section.

## **APPENDIX I – RESEARCH TOPIC DESCRIPTION - Topic 1 (Cubesats)**

### **Topic 1. CubeSat Sensors for Investigating Littoral Ocean and Atmosphere Dynamics**

Several of the U.S. Federal Agencies operate open ocean and coastal prediction models either in forecast, hindcast, simulation or analysis mode, for a variety of mission specific purposes ranging

from protection of human life and safety, to design of engineered structures, to assessment of environmental conditions. In general these prediction models consist of a series of science-based routines which contain the basic principles of air-sea interaction, wave generation and evolution, ocean circulation and interaction with terrestrial landforms and inputs and supporting infrastructure unique to the agency missions and prediction scenario.

While *in situ* observing systems provide essential data in the littoral regions to these coastal prediction models, they are by definition sparse relative to the length of coastline and Exclusive Economic Zone, and not easily re-locatable. Satellite remote sensing observations of coastal dynamics are typically limited to 1-2x per day or less per satellite. In addition, the spatial resolution of satellite sensors often cannot resolve the coastline (i.e., the data is a smearing of the land-water boundary), so the data at the coast is not usable (SAR is the exception). Airborne remote sensing can provide high spatial resolution, but is limited temporally and in extent of coverage. Land-based remote sensing (such as HF radar sites), provide long dwell coverage where they are deployed, but have relatively coarse spatial sampling, relative to littoral dynamical processes. As such, scientific investigations, modeling and data assimilation tend to cluster on those areas that already have *in situ* observing systems, and generally suffer from a lack of temporal and spatial coverage. Given that there are 356,000 km of coastline in the world, our ability to study, investigate and model them, even in a piecemeal fashion, is severely limited by our current methods.

The goal of this NOPP solicitation is to seek proposals from academia, private industry and government laboratories to work in partnership to develop a CubeSat-based resource of remotely sensed observations of littoral ocean and atmosphere dynamics that, preferably, can be directly assimilated into or provide boundary conditions for numerical models. These variables and their interactions include many or all of the following: bathymetry, sea surface temperature, sea surface salinity, sea surface height, surface vector winds, directional wave spectra, currents, internal wave activity, river discharge, sea-ice characterization, cloud characterization, wave-current interaction, turbidity or ecology, amongst others.

### **Program Description**

Develop and/or demonstrate innovations in miniaturized sensors for future applications in CubeSat spacecraft missions dedicated to littoral science investigations. These novel technologies will enable CubeSats to expand from laboratory experiments to operational missions. Proposals should focus on designing and/or developing the sensor hardware to the highest level of technical maturity possible within the available funds and resources. Launch of the satellites will mainly be through the standardized CubeSat deployment system, the Poly Picosatellite Orbital Deployer (P-POD). Consideration for launch will be determined as selected projects successfully progress through the milestone reviews described below. One unit (1U), three unit (3U), six unit (6U) and twelve unit (12U) Cubesat free flying mission designs will be considered, as will novel configurations of [trailing or parallel] CubeSats and/or CubeSat constellations. Passive (IR, radiometers, electro-optic, hyperspectral, etc.) and active (scatterometers, synthetic aperture radar, interferometric SAR, altimetry, etc.) methods are all viable candidates. Specific spacecraft bus models or designs have not been chosen, although it can be assumed, for example, that approximately half of a 3U spacecraft or one third of a 6U spacecraft size, weight and power will be used for power management, attitude control, communications and other basic spacecraft functions.

*In general, proposed payloads should:*

- Meet the CubeSat Design Specifications (<http://www.cubesat.org/resources/> )
- Operate on throughput limited communications links
- Survive the Low Earth Orbit (LEO) space environment for at least six months
- Operate with significant power constraints, either very low duty cycle or very low instantaneous power

Measurement capabilities should strive to measure at length scales which resolve littoral dynamics, gradients and fronts at resolutions comparable to littoral oceanographic models (less than or equal to 30m). As this is a sensor development program, to facilitate sensor inter-comparisons, calibration and validation, CubeSat orbits will be equatorial, such that revisit times will nominally be of order 90 minutes. Any single region of interest will be up to 200 km along-track, and up to 50km cross-track, with some portion of coastline being visible within that window. For power and data download considerations, littoral observations requirements would be for: one observation region per orbit (threshold); two or more regions per orbit (goal). If a sensor was proven to provide data of scientific quality, of course more ambitious, non-equatorial orbits, with constellations (to increase revisit times), could be pursued on subsequent launches. But, at this early stage, sensor development, evaluation and utility for science is the primary goal. The following is a list of the desired variables; the expectation is that proposers will choose only a single variable, though this is up to the proposer. It is entirely possible that several proposals could be funded on any single variable, e.g., four proposals might be funded for Sea Surface Temperature, etc. We have purposefully not placed a priority on these variables.

<b>Littoral Variable</b>	<b>Threshold Accuracy</b>	<b>Goal Accuracy</b>
Bathymetry	2x IHO Order 1 in depths less than 100 m, 2x IHO Order 2 in depths greater than 100m	IHO Order 1 in depths less than 100 m, IHO Order 2 in depths greater than 100m
Sea Surface Temperature	1 degree C	0.5 degrees C
Sea Surface Salinity	0.5 PSS	0.2 PSS
Sea Surface Height	10 cm	4 cm
Sea Surface Currents	0.5 m/s	0.25 m/s
Sea Surface Vector Winds	1 m/s; 10 degrees for wspd >5ms; 1m/s; 20 degrees for wspd < 5m/s	1m/s; 10 degrees
Surface Wave Spectra, Height, Period, and Direction	1.0 m Hrms; 2 seconds; 20 degrees	0.5 m Hrms; 1 second; 10 degrees
Cloud Characterization	Specialized imagery at sufficient resolution to enable discernment of environmental phenomena within the visible, infrared, and passive microwave portions of the spectrum	
Sea Ice Characterization	Type, % cover	Type, % cover
Turbidity / Ecology	Max (1NTU, 50%)	Max (0.5NTU, 25%)

Annual solicitations are planned with the possibility of new topics based on an assessment of existing needs, capabilities, and priorities.

## **AWARD INFORMATION**

The CubeSat Sensors for Investigating Littoral Ocean and Atmosphere Dynamics program is a cradle-to-grave program. It is divided into two distinct phases, Phase A and Phase B. Phase A starts once your proposed satellite program is granted acceptance. Over the course of the next two years, there will be six reviews that end with the Flight Selection Review (FSR). All of these reviews are schedule-based and will be organized by the ONR sponsor. The purpose of Phase A is to finalize the satellite design, not only on paper but through extensive board level testing and to deliver a complete program plan, including cost, schedule, and approach to achieving the launch and operation of the satellite in Phase B as described below.

At FSR, performers will be selected to progress into Phase B based on their satellite maturity and program plan developed during Phase A. Phase B consists of completing the program through operations including fabricating the complete satellite and integrating the payload into a standard Cubesat vehicle, acquiring launch services for the satellite into its required orbit, integrating the spacecraft into the launch vehicle, operating the satellite while in orbit, and acquiring, processing and calibrating the sensor data that can be directly assimilated into or provide boundary conditions for numerical models.

NOPP is seeking unclassified, fundamental research proposals for this topic. It is expected that up to 10, two-year awards will be made at up to \$150,000 per year for two years.

### **Phase A. Topic 1 Milestone Schedule Proposal Guidance**

Provide a milestone schedule over the 24 month period of performance that aligns with the following program goals. These meetings will be held at or near a major US city. The dates provided are notional and will be re-established at award.

- |                              |          |
|------------------------------|----------|
| • Award Announcement         | Dec 2017 |
| • Kickoff Meeting            | Jan 2018 |
| • System Concept Review      | Mar 2018 |
| • System Requirements Review | May 2018 |
| • Preliminary Design Review  | Aug 2018 |
| • Critical Design Review     | Dec 2018 |
| • Engineering Design Review  | Aug 2019 |
| • Flight Selection Review    | Jan 2020 |

## **APPENDIX II: RESEARCH TOPIC DESCRIPTION – Topic 2 (GHRSSST)**

### **Topic 2 - Improved and Routine Production, Stewardship, and Application of the Group for High Resolution Sea Surface Temperature (GHRSSST) Data**

Over the last several years the Group for High Resolution SST (GHRSSST; [www.ghrsst.org](http://www.ghrsst.org)) has achieved significant advances in its ability to measure and utilize satellite-derived and *in situ* SST.



## **APPENDIX III - Research Opportunity Description – Topic 3 (Ocean Sensors)**

### **Topic 3: *In-situ* Ocean Sensor Research and Technology Development**

<b>Subtopic #</b>	
<b>3A</b>	<b><i>Power Reduction and/or Miniaturization of In-situ Ocean Sensors and Improved On Board Processing (Arctic/Antarctic to Tropical and full water column)</i></b>
<b>3B</b>	<b><i>Sensor Research &amp; Advanced Technology</i></b>
<b>3B1</b>	<b><i>Soft Matter Electronics and Ocean Sensors</i></b>
<b>3B2</b>	<b><i>In-situ Ocean Sensors for “OMICs”</i></b>
<b>3B3</b>	<b><i>Next Generation Autonomous In-situ Ocean Sensors</i></b>
<b>3C</b>	<b><i>Improving Technology Readiness Levels of Existing &amp; Emerging Autonomous In-situ Ocean Sensors</i></b>

This topic description includes background, details for each topic/subtopics as well as important proposal submission requirements. Please read all sections prior to submitting LOIs or proposals.

#### **Background**

Over the last two decades, ocean science workshops have identified the need to: (1) reduce the power requirements and size of autonomous *in-situ* ocean sensors, (2) research and develop advanced technology *in-situ* ocean sensors, and (3) increase technology readiness levels (TRLs) of existing and emerging *in-situ* ocean sensors. Success in research and development of advanced sensor platforms has changed the paradigm of how the ocean is sampled and observed. These advanced platforms include but are not limited to Lagrangian vehicles, unique animal tags, surface vehicles and drifters, high powered buoys, floats, and cabled systems. Modern ocean observations consist of nested arrays of advanced platforms and ocean sensors which drive the need for additional research and technology maturation.

Recent advances in material science and embedded computing systems have closed many *in-situ* sensor technology gaps and provide an opportunity for participating NOPP partners to fund high impact *in-situ* ocean sensor research and technology development. Following the Ocean Observations 2009 conference ([www.oceanobs09.net](http://www.oceanobs09.net)), an international, community-driven, prioritized list of the Essential Ocean Variables was developed and can be used as a guideline for sensor selection. The variables and informative specification sheets can be found at:

[http://goosocean.org/index.php?option=com\\_content&view=article&id=14&Itemid=114](http://goosocean.org/index.php?option=com_content&view=article&id=14&Itemid=114)

Additional information for United States biological and ecosystem observations is provided in the December 2016 National Ocean Council workshop report titled "Biological and Ecosystem Observations within United States Waters II: A Workshop Report to Inform Priorities for the United States Integrated Ocean Observing System". The link for this report is as follows:

[http://www.iooc.us/wp-content/uploads/biological\\_and\\_ecosystem\\_observations\\_within\\_united\\_states\\_waters2.pdf](http://www.iooc.us/wp-content/uploads/biological_and_ecosystem_observations_within_united_states_waters2.pdf)

Technology Readiness Levels (TRLs) have to be described in this topic following the US Department of Defense (USDOD) definitions on pages 2-13 to 2-14 found at:

<http://www.acq.osd.mil/chieftechologist/publications/docs/TRA2011.pdf>

***Topic 3A: Power Reduction and/or Miniaturization of In-situ Ocean Sensors and Improved On Board Processing (Arctic/Antarctic to Tropical and full water column)***

The goal of this topic is to reduce the power requirements and size of *in-situ* ocean sensors and provide platform-integrated, verified sensors with validated calibration procedures. This effort includes development of a sensor standard/specification that includes sensor performance and environmental parameters (pressure, temperature, shipping vibration, etc.). While the proposed sensor will be integrated onto one platform for this effort, the community must be able to widely apply this sensor to other platforms. This topic can also include improvements in on board processing, including automated techniques, real-time processing, machine learning, storage, and interoperability standards. As such, development of a clear Interface Control Document (ICD) and a training guide for sensor users are included as part of this topic.

Industry members often refer to this effort as low SWaP-C (low **S**ize, **W**eight **a**nd **P**ower along with lower **C**ost). The platform/sensor selection should address an area of science and system performance enhancements such as increased endurance, onboard data product processing, machine learning enabled, etc. SWaP-C performance trade-off analyses such as accuracy and precision should be included in the design/test/revision reviews. It is anticipated that this topic will address sensor in the TRL 6 to 9 range.

***Topic 3B Sensor Research & Advanced Technology***

***Topic 3B1: Ocean Sensors Embedded in Soft Materials and Soft Material Robotics***

Participating NOPP partners are interested in soft matter electronics and/or soft robotics as a new technology application for oceanographic sensor development. As opposed to conventional machines and electronics, soft matter technologies are made of soft and elastically deformable polymers. The technology permits application of stretchable electronics embedded in soft material usually by patterning ultrathin films of metal in the elastomer or dispersing conductive particles within an elastomeric matrix. Soft matter electronics are a candidate for underwater research sensing environments because they're made of incompressible material that can withstand large hydrostatic pressures. There are many ocean science techniques and technologies which may be ripe for soft matter electronics, including: animal tags; conductivity, temperature and depth sensors (CTD); profiling floats; diver equipment, including diver computers, glove/feet warmers, physiological monitoring; and application to the deep sea investigations, where pressure is no longer an issue.

Soft matter sensors could potentially be applied to multi-modal ocean measurements (physical, chemical, biological, optical) and these devices could eliminate the need for pressure chambers and seals. If the sensor required an actuation or movement, then the application would be considered soft robotics. For instance, animal tags might be more easily attached if they incorporated soft robotics to achieve reversible adhesion. Or analysis of sediment characteristics/chemistry might be

achieved with soft robotics capable of digging, burrowing, or clinging; or including sensors embedded in moveable probes, appendages, antennae or tentacles. At this time, participating NOPP partners place a higher priority on soft matter electronic sensors, but are open to soft robotics proposals if the sensor platform requires actuation and it advances ocean science sensing.

While soft matter electronics has many advantages, there are recognized hardware research and development challenges due to the low technology readiness levels in the areas of:

- system integration,
- data transmission,
- data management.

Reliable electrical interfaces between sensors and conventional computing hardware are emerging and require research and development for success in oceanographic environments. Soft electronics interface well with Bluetooth and optics, however, data communications must be extended to underwater applications and maintain a reasonable range and transmission rates. Data heavy nodes are being designed (cameras and electronic skins with embedded sensors) and they require innovation to address oceanographic data management practices. It is recognized that many challenges exist for this emerging field and the application to ocean sensing.

This topic area is focused on research, development and testing soft matter electronic and/or soft robotic applications to sensing underwater environments. The goal is to develop and prove a soft matter electronics and/or soft robotics concept for underwater research and mature the technology.

### ***Topic 3B2: In-situ Ocean Sensors for “OMICs”***

The goal of this topic is to research and advance deployable ocean sensors that collect, characterize and quantify biological components which identify the structure, function, and dynamics of marine organisms. These sensors will enable discovery and research in the fields of ‘omics (e.g. genomics, transcriptomics, proteomics, metabolomics). Advances in microfluidics, materials and computing have created an exciting opportunity for participating NOPP partners to advance the state of technology for ‘omic-related biological sensors. Examples could include deployable sensor combinations that enable morphological (imaging) and DNA identification of plankton; chip technologies that sense microbial identities and activities; and *in-situ* lab-on-a-chip designs that incorporate sequencing to automatically process and analyze samples. It is anticipated that this topic will be constrained to TRL 1 to 4 efforts. It is envisioned that these proposals are high risk/return efforts that will advance *in-situ* ocean sensor “omics” research.

### ***Topic 3B3: Next Generation Autonomous In-situ Ocean Sensors***

The goal of this topic is to advance ocean sensor technology and demonstrate next generation sensing capability for ocean science research (exclusive of soft matter electronics and OMICs). The objective is to fund teams with theoretical and experimental expertise to conduct basic technology research, prove or prototype a novel *in-situ* ocean sensor and demonstrate sensor parameter measurements. This topic is constrained to TRL 1 to 4 efforts. It is envisioned that these proposals

are high risk/return efforts that will validate analytical predictions for the proposed sensing technology.

***Topic 3C: Improving Technology Readiness Levels of Existing & Emerging Autonomous In-situ Ocean Sensors***

A major challenge of ocean sensor technology development is the advancement and maturation of *in-situ* sensors after initial research funding or platform integration is complete. Often sensor reliability and robustness issues do not present themselves until after a period of field deployment. The goal of this topic is to improve technology readiness levels (TRLs), robustness, and reliability of existing and/or emerging autonomous *in-situ* ocean sensors. The areas of interest include, but are not limited to, the following:

- Sensor Stability and Calibration
- Biofouling
- Analysis technique enhancements
- System/subsystem validation, prototyping, operational demonstrate and testing
- Smart sensing - Sensor controls, diagnostics, communications/energy management
- Automation of computing environments – data transformation
- Machine enabled learning, communications across platforms & adaptive sampling
- Specification Development and Quality
- Sensors improvements that address deep sea, midwater, upper ocean and air/sea ocean science
- Regional sensor performance enhancements

This effort involves defining the sensor TRL level changes and/or reliability/robustness improvements and connecting this work to the science that the improvement will enable. For efforts with existing sensor specifications, a revised specification with improved performance and environmental parameters is expected. Because participating NOPP partners are interested in wide use of the sensor improvements, an Interface Control Document (ICD) and a sensor training guide are components of this effort.

***Proposal Submission Requirements for Topic 3***

Responses to BAA should include:

- a description of the science questions that the sensor will help answer
- a description of the current state of the art including a discussion of the current TRL
- a description and quantification of the sensor development instrument and environmental parameters including power requirements, size, weight, hardware/software/computing features, pressure and temperature limits, precision, accuracy, temporal, and spatial resolution anticipated.
- an integration plan or description of the platform that the proposed sensor will be integrated onto as well as the forecasted system level power reductions (where applicable),

- a description of the design, build, calibrate, and test processes along with any software or configuration control processes (where applicable),
- an assessment of the risk areas (subsystem or concepts) for the proposal
- a schedule and cost estimate for the proposal,
- a discussion of the projected cost or cost reduction (where applicable) for the sensor as compared to the conventional measurement.
- a discussion of post development TRL

### **Milestone Schedule**

Provide a milestone schedule that aligns with the project scope. Milestones, reviews and reports will be determined at award by funding agency. The milestones provided below are notional and provide additional guidance for the milestone schedule submission. For ONR, budget 40% of the annual reviews to take place at or near ONR and 60% at team or test site facilities.

- |                             |  |
|-----------------------------|--|
| • Kick Off Meeting          | July 2018                              |
| • Annual Reports or Reviews | Annual – per award                     |
| • Final Report              | At the end of award performance period |

### **APPENDIX IV: Full Proposal Description of Requirements**

This Appendix contains two sets of requirements for Full Proposals. The first section describes full proposal requirements for grants and the second section describes full proposal requirements for Contracts, Cooperative Agreements and Other Transaction Agreements. ONR’s commitment to small business information is supplied at the end of the contracts section.

#### **INSTRUCTIONS FOR GRANTS** (Does not include contracts, cooperative agreements and other transaction agreements)

The offeror **must** use the Grants.gov forms from the application package template associated with the BAA on the Grants.gov web site located at <http://www.grants.gov/>.

The following information must be completed as follows in the SF 424 to ensure that the application is directed to the correct individual for review: Block 4a, Federal Identifier: Enter the previous ONR award number, or N00014 if the application is not a renewal or expansion of an existing award; Block 4b, Agency Routing Number: Enter the three (3) digit Program Office Code (i.e., 332) and the Program Officer’s name, last name first, in brackets (i.e., [Beach. Reginald]).

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

- Paper Size – 8.5 x 11 inch paper
- Margins – 1 inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages - The Technical Volume (Vol. 1) shall not exceed more than 15 pages. The Cover page, proposal checklist, Table of Contents, resumes and current and

pending project and proposal submissions information are excluded from the page limitations. Full proposals exceeding the page limit may not be evaluated. There are no page limitations to the Cost Proposal, Volume 2.

- Copies –The full proposal should be submitted electronically at <http://www.grants.gov/> as delineated below.

## **Full Proposal Content**

### Volume 1: Technical Proposal

- **Cover Page:** This should include the words “Technical Proposal” and the following:

- 1) BAA number N00014-17-S-B016;
- 2) Title of Proposal;
- 3) Identity of prime Offeror and complete list of subcontractors, if applicable;
- 4) Technical contact (name, address, phone/fax, electronic mail address)
- 5) Administrative/business contact (name, address, phone/fax, electronic mail address) and;
- 6) Proposed period of performance (identify both the base period and any options, if included).

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

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

- **Project Schedule and Milestones:** A summary of the schedule of events and milestones. Consider guidance provided in the research opportunity descriptions.

- **Reports:**

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

Technical and Financial Progress Reports  
Final Report

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

- **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization; use of personnel; project/function/subcontractor/subrecipient relationships; government research interfaces; and

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

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

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

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

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

• **Ship time Request (if applicable)** – Provide the UNOLs ship time request (STR), select “NOPP” in agency pulldown menu, add all other appropriate information and manage the request per the UNOLs process. All NOPP partners plan to utilize the UNOLs system to coordinate ship time including NOAA, ONR and NSF. Do not provide UNOLS ship time request costs in your budget. Non-UNOLS ship time should be included in the budget. If non-UNOLS vessels are proposed, please indicate the ship, ship days and assure that all institutional policies and procedures are followed for use of non-UNOLS vessels.

The STR website link is as follows:

[https://strs.unols.org/public/diu\\_login.aspx](https://strs.unols.org/public/diu_login.aspx)

Information about the ship time process for UNOLS ships is at the following link:

<https://www.nsf.gov/pubs/2016/nsf16085/nsf16085.pdf> on page 7

## **VOLUME 2: Cost Proposal**

The offeror must use the Grants.gov forms from the application package template associated with the BAA on Grants.gov web site located at <http://www.grants.gov/>. If options are proposed, the cost proposal must provide the pricing information for the option periods; failure to include the proposed costs for the option periods will result in the options not being included in the award. Assume that performance will start no earlier than three (3) months after the date the cost proposal is submitted. A separate Adobe .pdf document should be included in the application that provides appropriate justification and/or supporting documentation for each element of cost proposed.

### **Part 1:** The itemized budget must include the following

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

duration, the number of travelers, and the estimated cost per trip must be justified based on the organizations historical average cost per trip or other reasonable basis for estimation. Such estimates and the resultant costs claimed must conform to the applicable Federal cost principals. See each research topic description for additional information.

- Subawards – Provide a description of the work to be performed by the subrecipients. For each subaward, a detailed cost proposal is required to be submitted by the subrecipient(s). Fee/profit is unallowable. The subawardee’s or subrecipient’s cost proposal can be provided in a sealed envelope with the recipient’s cost 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. A proposal and supporting documentation must be received and reviewed before the Government can complete its cost analysis of the proposal and enter negotiations.
- Consultants – Provide a breakdown of the consultant’s hours, the hourly rate proposed, any other proposed consultant costs, a copy of the signed Consulting Agreement or other documentation supporting the proposed consultant rate/cost, and a copy of the consultant’s proposed statement of work if it is not already separately identified in the prime contractor’s proposal.
- Materials & Supplies – Provide an itemized list of all proposed materials and supplies including quantities, unit prices, proposed vendors (if known), and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Recipient Acquired Equipment or Facilities – Equipment and/or facilities are normally furnished by the Recipient. If acquisition of equipment and/or facilities is proposed, a justification for the purchase of the items must be provided. Provide an itemized list of all equipment and/or facilities costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). Allowable items normally would be limited to research equipment not already available for the project. General purpose equipment (i.e., equipment not used exclusively for research, scientific or other technical activities, such as personal computers, office equipment and furnishings, etc.) should not be requested unless they will be used primarily or exclusively for the project. For computer/laptop purchases and other general purpose equipment, if proposed, include a statement indicating how each item of equipment will be integrated into the program or used as an integral part of the research effort.
- Other Direct Costs – Provide an itemized list of all other proposed other direct costs such as Graduate Assistant tuition, laboratory fees, report and publication costs, and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).  
NOTE: If the grant proposal is for a conference, workshop, or symposium, the proposal should include the following statement: “Government funding will not be used for food or beverages.”
- Fee/Profit – Fee/profit is unallowable.

Projects which include participation by a Federal entity should include a separate budget detailing the Federal entity’s proposed costs in the full partnership proposal. Federal entities will be funded separately via an Economy Act Order.

- **Ship time Request (if applicable)** – Provide the UNOLs ship time request (STR), select “NOPP” in the agency pulldown menu, add all other appropriate information and manage the request per the UNOLs process. All NOPP partners plan to utilize the UNOLs system to coordinate ship time including NOAA, ONR and NSF. Do not provide UNOLs ship time request costs in your budget. Non-UNOLs ship time should be included in the budget. If non-UNOLs vessels are proposed, please indicate the ship, ship days and assure that all institutional policies and procedures are followed for use of non-UNOLs vessels.
  - The STR website link is as follows:  
[https://strs.unols.org/public/diu\\_login.aspx](https://strs.unols.org/public/diu_login.aspx)
  - Information about the ship time process for UNOLs ships is at the following link:  
<https://www.nsf.gov/pubs/2016/nsf16085/nsf16085.pdf> on page 7

• **Table of Partners and Costs:** The cost proposal should lead with a table summarizing by fiscal year and for each academic institution, business, not-for-profit agency, and government agency requesting funds: the Principal Investigator(s), the name of the institution and its nature, and funds requested for each fiscal year of the proposed effort. Information is required in the following example format:

**TABLE OF PARTNERSHIPS:**

<b>Principal Investigator(s)*</b>	<b>Institution*</b>	<b>FY10 funds Requested</b>	<b>FY11 funds Requested</b>	<b>FY12 funds Requested</b>	<i>... Additional years as required</i>
R. Johnson (lead PI)	Random University (Academic)	\$125,314	\$127,216	\$131,614	
J. Jones & S. Smith	Vandaley Industries (Business)	\$110,615	\$37,212	\$64,312	
L. Simmons	The Ocean	\$25,000	\$25,000	\$0	

	Mammal Conservancy (Non-profit)				
T. Ritter	DEQ of Texas (State Gov)	\$10,000	\$10,000	\$10,000	

OTHER THAN FEDERAL GOVERNMENT SUBTOTAL:		\$260,929	\$189,428	\$195,926	
T. Wilson	NOAA Laboratory for Oceans (Government)	\$57,612	\$61,214	\$50,000	
FEDERAL GOVERNMENT PARTICIPANT TOTAL:		\$57,612	\$61,214	\$50,000	
PROJECT TOTAL:		\$318,541	\$250,642	\$245,926	

\*Participant names are fictitious and are used simply for illustrative purposes.

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

**G. Significant Dates and Times**

Anticipated Schedule of Events		
Event	Date (MM/DD/YEAR)	Time (Washington DC Local Time)
Deadline for Receipt of Questions	09/27/2017	3:00 p.m.
Full Proposals Due Date Topics 1&2	10/16/2017	3:00 p.m.
Full Proposal Due Date Topic 3	1/29/2018	
Notification of Selection for Award*	9/27/2018	
Award (start date)*	1/7/2019	

**\*These dates, based on the date of this announcement are estimates of the last possible action associated with this BAA.**

**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 it is recommended that any hard-copy proposal be mailed long enough before the deadline established in the solicitation so that it will not be received late and thus be ineligible for award consideration.

**II FULL PROPOSAL REQUIREMENTS: INSTRUCTIONS FOR CONTRACT, COOPERATIVE AGREEMENTS AND OTHER TRANSACTION AGREEMENTS**  
(Does not include Grants)

Proposal Package:

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

- (1) Proposal Checklist (.pdf)
- (2) Technical Proposal Template (.pdf)
- (3) Cost Proposal Spreadsheet (Excel)
- (4) Adequacy Checklist for Pre Award Audit (SF 1408) (as applicable)
- (5) Stand-alone non-proprietary Statement of Work (SOW) in Word

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

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

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

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

For proposed subcontracts or inter-organizational 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.

The electronic copy must be submitted in a secure, pdf-compatible format, except for the electronic file of the Cost Proposal Spreadsheet which must be submitted in a Microsoft Excel 2010 compatible format and the Statement of Work Template which must be submitted in Microsoft

Word format. All attachments to any required proposal documents must be submitted in a secure, pdf-compatible format.

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

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

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

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

- a. Paper Size – 8.5 x 11 inch paper
- b. Margins – 1 inch
- c. Spacing – single-spaced
- d. Font – Times New Roman, 12 point
- e. Number of Pages – Volume 1 is limited to no more than 15 pages. Limitations within sections of the proposal, if any, are indicated in the individual descriptions shown below. The cover page, proposal checklist, table of contents, resumes and current and pending project and proposal submissions information are excluded from the page limitations. Full Proposals exceeding the page limit may not be evaluated. There are no page limitations to Volume 2.
- f. Copies – one (1) original, and one electronic copy on a CD-ROM or DVD, (in Microsoft Word or Excel 97 compatible or .PDF format).

### **Full Proposal Content - Volume 1: Technical Proposal**

- a. **Cover Page:** This should include the words “Technical Proposal” and the following:
  - 1) BAA number N00014-17-S-B016;
  - 2) Title of Proposal;
  - 3) Identity of prime Offeror and complete list of subcontractors, if applicable;
  - 4) Technical contact (name, address, phone/fax, electronic mail address)

- 5) Administrative/business contact (name, address, phone/fax, electronic mail address) and;
- 6) Proposed period of performance (identify both the base period and any options, if included).
- 7) Signature of the Authorized Representative

- **Proposal Checklist:** To assist Offerors in the development and submission of their proposals in response to this BAA, a Proposal Checklist for Contracts, Grants, Cooperative Agreements and Other Transactions has been uploaded as an attachment. Offerors should print and complete the checklist to ensure that all required actions have been taken and information included prior to proposal submission. Inclusion of the completed checklist as the first page of your Volume I, Technical Proposal will assist in proposal evaluation and may shorten the time it takes to make an award.
- **Table of Contents:** An alphabetical/numerical listing of the sections within the proposal, including corresponding page numbers.
- **Statement of Work:** A Statement of Work (SOW) clearly detailing the scope and objectives of the effort and the technical approach. It is anticipated that the proposed SOW will be incorporated as an attachment to the resultant award instrument. To this end, such proposals must include a severable, self-standing SOW without any proprietary restrictions, which can be attached to the contract or agreement award. Include a detailed listing of the technical tasks/subtasks organized by year and a section which lists all proposed deliverables. When options are contemplated, the SOW must clearly identify separate optional tasks.

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

- **Technical Approach and Justification:** The major portion of the proposal should consist of a clear description of the technical approach being proposed. This discussion should provide the technical foundation/justification for pursuing this particular approach/direction and why one could expect it to enable the objectives of the proposal to be met.
- **Ship time Request (if applicable)** – Provide the UNOLs ship time request (STR, select “NOPP” in agency pull-down menu) with appropriate information and manage the request per the UNOLs process. All NOPP partners plan to utilize the UNOLs system to coordinate ship time including NOAA, ONR and NSF. Do not provide UNOLs ship time request costs in your budget. Non-UNOLs ship time should be included in the budget. If non-UNOLs vessels are proposed, please indicate the ship, ship days and assure that all institutional policies and procedures are followed for use of non-UNOLs vessels.

The STR website link is as follows:

[https://strs.unols.org/public/diu\\_login.aspx](https://strs.unols.org/public/diu_login.aspx)

Information about the ship time process for UNOLS ships is at the following link:  
<https://www.nsf.gov/pubs/2016/nsf16085/nsf16085.pdf> on page 7

- **Project Schedule and Milestones:** A summary of the schedule of events and milestones. Consider guidance provided in the research opportunity descriptions.
- **Assertion of Data Rights:** For a contract award an Offeror may provide with its proposal, assertions to restrict use, release or disclosure of data and/or computer software that will be provided in the course of contract performance. The rules governing these assertions are prescribed in Defense Federal Acquisition Regulation Supplement (DFARS) clauses 252.227-7013, .7014, and -7017. These clauses may be accessed at the following web address:

<http://farsite.hill.af.mil;VFDFARA.HTM>

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

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

- **Deliverables/Reports:** A detailed list of reports and any proposed hardware, software or prototypes, inclusive of the timeframe in which they will be delivered. Please read the research opportunity descriptions for the proposal topic.

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

Technical and Financial Progress Reports  
Presentation Materials  
Final Report

- **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization; use of personnel; project/function/subcontractor relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors (if any) will be involved. Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment/Hardware/Software/ Information required, by version and/or configuration.

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

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

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

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

### **ONR Commitment to Small Business- (For Contract Awards Only)**

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

Businesses unfamiliar with doing business with the government and that require assistance may contact the state-specific Department of Defense (DoD) Procurement Technical Assistance Center (PTAC). DoD PTACs serve as a resource for businesses pursuing and performing under contracts with DoD, other federal agencies, state and local governments and with government prime contractors. Assistance provided by the PTACs is usually free of charge. PTAC support includes registration in systems such as SAM, identification of contract opportunities, understanding requirements and preparing and submitting proposals. The PTACs have a

presence in each state, Puerto Rico and Guam. To locate a local PTAC visit:  
<http://www.dla.mil/SmallBusiness/Pages/ProcurementTechnicalAssistanceCenters.aspx> or  
<http://www.aptac-us.org/new/> .

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

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

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

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

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

As a baseline, Offerors shall, to the best extent possible, propose realistic goals to ensure small business participation in accordance with the current or most recent fiscal year subcontracting goals found on the DoD Office of Small Business Program website at:  
<http://www.acq.osd.mil/osbp/>. If proposed goals are below the statutory requirements, then the offeror shall include in the Plan a viable written explanation as to why small businesses are unable to be utilized and what attempts were taken to ensure that small business were given the opportunity to participate in the effort to the maximum extent practicable.

## 2) Small Business Participation Statement –

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

This assertion will be reviewed to ensure that it supports this policy by providing meaningful subcontracting opportunities. The statement should be submitted as an attachment to the

“Proposal Checklist” and will not be included in the page count.

### 3) Subcontracting Resources -

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

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

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

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

A contractor awarded a contract exceeding \$150,000 that is likely to result in the award of any subcontracts;

A subcontractor or supplier, at any tier, under a contract exceeding \$150,000, that has a subcontracting opportunity exceeding \$15,000.

The notices must describe—

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

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

**Full Proposal Content: VOLUME 2: Cost Proposal**

The following information is provided to assist contractors in preparing and submitting an adequate and compliant cost proposal. The purpose of the submission of cost or pricing data is to enable Government personnel to perform cost or price analysis and ultimately negotiate a fair and reasonable cost. Offerors are reminded that the responsibility for providing adequate supporting data and attachments lies solely with the offeror. Further, the offeror must also bear the burden of proof in establishing reasonableness of proposed costs; therefore, it is in the contractor's best interest to submit a fully supportable and well-prepared cost proposal. The basis and rationale for all proposed costs should be provided as part of the proposal so that Government personnel can place reliance on the information as current, complete and accurate. Further, FAR 15.403-4 sets forth those circumstances in which Offerors are required to submit certified cost or pricing data.

Although not required and provided for informational purposes only, using the cost proposal format spreadsheet (spreadsheet.xls) that is an attachment to this document and the accompanying instructions (spreadsheetinstructions.doc) as the basis for the cost proposal may significantly decrease the time required to review and award proposals submitted in response to this announcement.

Options: Any proposed options that are identified in either Volume 1 or 2, but are not fully priced out, 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 pricing purposes, assume that performance will start no earlier than six (6) months after submission of the proposal.

The proposal should include a statement that the company has (or has not) done business with the Government before. If the company has done business with the Government before, the statement should include the date that the accounting system was determined to be adequate. If this will be the company's first Government contract, please download the Defense Contract Audit Agency's (DCAA) "Information for Contractors" pamphlet, which can be found at [www.dcaa.mil](http://www.dcaa.mil) and become familiar with the Federal Acquisition Regulation (FAR) Part 31.205 to ensure that a successful accounting system review can be completed prior to contract award.

DoD's Procurement Technical Assistance Centers (PTACs) provide a wide range of services including assistance with developing a cost-accounting system as well as preparing for an audit. The Defense Logistics Agency (DLA) administers the DoD Procurement Technical Assistance Program (PTAP). Procurement Technical Assistance Centers are located in basically every state of the union and provide assistance to businesses seeking to successfully compete in federal, state and local government contracting. A listing of PTACs by state may be accessed at: <http://www.dla.mil/db/procurem.htm>.

The Cost Proposal shall consist of a cover page and two parts: Part 1 will provide a detailed cost breakdown of all costs by cost category by offeror's fiscal year and Part 2 will provide a cost breakdown by task/sub-task corresponding to the task numbers in the proposed Statement of Work.

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

- BAA number
- Title of Proposal
- Identity of prime Offeror and complete list of subcontractors, if applicable
- Technical contact (name, address, phone/fax, electronic mail address)
- Administrative/business contact (name, address, phone/fax, electronic mail address)
- Proposed period of performance (identify both the base period and any proposed options)

**Part 1:** Detailed breakdown of all costs by cost category by calendar or Contractor fiscal year:

- **Direct Labor** – Individual labor categories or persons, with associated labor hours and unburdened direct labor rates. Provide escalation rates for out years.
- **Indirect Costs** – Fringe Benefits, Overhead, G&A, COM, etc. and their applicable allocation bases. If composite rates are used, provide the calculations used in deriving the composite rates.
- **Travel** – The proposed travel cost should include the following for each trip: the purpose of the trip, origin and destination, approximate duration, the number of travelers, and the estimated cost per trip must be justified based on the organization’s historical average cost per trip or other reasonable basis for estimation. Such estimates and the resultant costs claimed must conform to the applicable Federal cost principles. See each research topic description for additional information.
- **Subcontracts/Interorganizational Transfers** – A cost proposal as detailed as the Offeror’s cost proposal will be required to be submitted by all proposed subcontractors and for all interorganizational transfers. For subcontracts or interorganizational transfers over \$100,000, the subcontract proposal 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. A proposal and supporting documentation must be received and reviewed before the Government can complete its cost analysis of the proposal and enter negotiations. The prime contractor should perform and provide a cost/price analysis of each subcontractor’s cost proposal.\* Offerors are required to obtain competition to the maximum extent practicable when selecting subcontractors or interorganizational transfers; if the offeror has obtained competitive quotes, copies should be provided. If the Offeror has selected other than the low bid for inclusion in their proposal or intends to award the subcontract/interorganizational transfer on a sole-source basis, the offeror should provide rationale for their decision. Certified cost or pricing data may be required for subcontractor proposals over \$650,000.

\***Note:** Federal Acquisition Regulation provision 52.215-22 is incorporated into this solicitation by reference. The offeror is to exclude excessive pass-through charges from subcontractors. The offeror must identify in its proposal the percentage of effort

it intends to perform and the percentage to be performed by each of its proposed subcontractors. If more than 70 percent of the total effort will be performed through subcontractors, the offeror must include the additional information required by the above-cited clause.

- Consultant – Provide a breakdown of the consultant’s hours, the hourly rate proposed, any other proposed consultant costs, a copy of the signed Consulting Agreement or other documentation supporting the proposed consultant rate/cost, and a copy of the consultant’s proposed statement of work if it is not already separately identified in the prime contractor’s proposal.
- Materials & Supplies - Provide an itemized list of all proposed materials and supplies for each year including quantities, unit prices, proposed vendors (if known), and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). If the total cost for materials and supplies exceeds \$100,000 per year, then select a sample of the items proposed and provide catalog price lists/quotes/prior purchase orders to support the price for the items in the sample. All items with a unit price over \$10,000, regardless of the total cost for materials and supplies, must be supported with a copy of catalog price lists/quotes/prior purchase orders.
- Ship time Request (if applicable) – Provide the UNOLs ship time request (STR), select “NOPP” in agency pulldown menu, add all other appropriate information and manage the request per the UNOLs process. All NOPP partners plan to utilize the UNOLs system to coordinate ship time including NOAA, ONR and NSF. Do not provide UNOLS ship time request costs in your budget. Non-UNOLS ship time should be included in the budget. If non-UNOLs vessels are proposed, please indicate the ship, ship days and assure that all institutional policies and procedures are followed for use of non-UNOLs vessels.

The STR website link is as follows:

[https://strs.unols.org/public/diu\\_login.aspx](https://strs.unols.org/public/diu_login.aspx)

Information about the ship time process for UNOLS ships is at the following link:

<https://www.nsf.gov/pubs/2016/nsf16085/nsf16085.pdf> on page 7

- Contractor Acquired Equipment or Facilities – Equipment and/or facilities are normally furnished by the Contractor. If acquisition of equipment and/or facilities is proposed, a justification for the purchase of the items must be provided including: 1) a very specific description of any equipment/hardware that it needs to acquire to perform the work, 2) whether or not each particular piece of equipment/hardware will be included as part of a deliverable item under the resulting award, and 3) the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). The description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. The purchase on a direct reimbursement basis of equipment that is not included in a deliverable item will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror’s proposals.
- Other Directs Costs – Provide an itemized list of all other proposed other direct costs

- and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Fee/Profit (Contract Proposals Only) – Profit or fee is not allowed on direct costs for facilities or in cost-sharing contracts.

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

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

## **APPENDIX V: NATIONAL SCIENCE FOUNDATION MERIT REVIEW CRITERIA**

All NSF proposals are evaluated through use of two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities. The two merit review criteria are listed below. Both criteria are to be given full consideration during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

1. Intellectual Merit (Criterion 1): The Intellectual Merit criterion encompasses the potential to advance knowledge; and
2. Broader Impacts: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to:
  - a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
  - b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

### **Postdoctoral Mentoring Activities**

Each proposal that requests funding to support postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals. Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

PIs should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to the above-described merit review criteria.

## **APPENDIX VI: NSF Guidelines for FASTLANE submission**

After the full proposals are evaluated by the NOPP Panel, an authorized NOPP partner will contact the PI to submit their proposal via the FASTLANE system. The following are the FASTLANE submission criteria:

### **Data Management Plans**

Proposals recommended for NSF funding will be required to submit a data management plan for review prior to entry into FASTLANE. The PI should coordinate submission of the data management plan with the assigned NSF Program Director.

### **Proposal Margin and Spacing Requirements**

The proposal must conform to the following requirements:

a. Use one of the following typefaces identified below:

- Arial8, Courier New, or Palatino Linotype at a font size of 10 points or larger;
- Times New Roman at a font size of 11 points or larger; or
- Computer Modern family of fonts at a font size of 11 points or larger.

A font size of less than 10 points may be used for mathematical formulas or equations, figures, table or diagram captions and when using a Symbol font to insert Greek letters or special characters. PIs are cautioned, however, that the text must still be readable.

b. No more than six lines of text within a vertical space of one inch.

c. Margins, in all directions, must be at least an inch.

These requirements apply to all uploaded sections of a proposal, including supplementary documentation.

### **Page Formatting**

Proposers are strongly encouraged to use only a standard, single-column format for the text.

The guidelines specified above establish the minimum type size requirements; however, PIs are advised that readability is of paramount importance and should take precedence in selection of an appropriate font for use in the proposal. **Small type size makes it difficult for reviewers to read the proposal; consequently, the use of small type not in compliance with the above guidelines may be grounds for NSF to return the proposal without review.** Adherence to type size and line spacing requirements also is necessary to ensure that no proposer will have an unfair advantage, by using smaller type or line spacing to provide more text in the proposal.

## **APPENDIX VII: NOPP Annual Report Template**

### **Project Title**

PI Name

Mailing Address including Zip+4

Phone: (xxx) xxx-xxxx      Fax: (xxx) xxx-xxxx      Email: xxx@wherever.edu

Co-PI(s) Name(s)

Mailing Address including Zip+4

Phone: (xxx) xxx-xxxx      Fax: (xxx) xxx-xxxx      Email: xxx@wherever.edu

Award Number: Grant of Contract or Document Number

Reporting Term: October 1, 2015 to September 30, 2016

Project Website

### **LONG-TERM GOALS**

In a few sentences, please identify the top-level goals of this effort.

### **OBJECTIVES**

In a few sentences, please identify the scientific or technological objectives of this effort.

### **APPROACH AND WORK PLAN**

In separate short paragraphs, please describe:

1. Your proposed scientific and/or technical approach, including data quality requirements as applicable
2. The key individuals participating in this work at your or other organizations and their roles
3. Your work plans for the upcoming year (if applicable).

### **WORK COMPLETED**

In a paragraph, please describe the tasks or technical accomplishments completed.

### **RESULTS**

As concisely as possible, please describe any meaningful scientific and/or technical results achieved during FY15, making significance clear. This should be a short summary of significant results and conclusions. If including figures/tables, please include a caption in the report text and not embedded within the graphic. This is necessary to meet accessibility requirements.

### **IMPACT AND APPLICATIONS *(Please note N/A for sections not applicable)***

Please describe the potential future impact and application of the effort with regard to the following four factors.

1. **National Security**

In a few sentences, please describe the potential future impact on National Security or Homeland Defense.

2. **Economic Development**

In a few sentences, please describe the potential future impact on Economic Development. For example, new product lines, businesses, practices, increase efficiency, new manufacturing techniques, etc.

### **3. Quality of Life**

In a few sentences, please describe the potential future impact on Quality of Life. For example, public health, ecosystem health, coastal resource management, etc.

### **4. Science Education and Communication**

In a few sentences, please describe the potential future impact on Science Education and Communication.

## **TRANSMISSIONS *(Please note N/A in sections that are not applicable)***

Please describe how the results (hardware, software, knowledge) are being incorporated into other work or programs or otherwise carried further. Please describe any transmissions directly related to any of the following four factors.

### **1. National Security**

In a few sentences, please describe any transmissions related to National Security or Homeland Defense.

### **2. Economic Development**

In a few sentences, please describe the transmissions related to Economic Development. For example, new product lines, businesses, practices, increased efficiency, new manufacturing techniques, etc.

### **3. Quality of Life**

In a few sentences, please describe the transmissions related to Quality of Life. For example, public health, ecosystem health, coastal resource management, etc.

### **4. Science Education and Communication**

In a few sentences, please describe the transmissions related to Science Education and Communication.

## **RELATED PROJECTS**

Please identify closely related projects and briefly describe the nature of each relationship. Include project website links as appropriate/available.

## **REFERENCES *(Delete this section if not applicable)***

Please list references associated with this effort.

## **PUBLICATIONS *(Delete this section if not applicable)***

Please list any books, chapters, or significant papers that have been submitted, are in press, or published. Do not include papers in preparation or development.

## **PATENTS *(Delete this section if not applicable)***

Please list all patent applications/awards for the project that have not previously been reported in past yearly reports.

**OUTREACH MATERIALS** (*Delete this section if not applicable*)

Please provide any photos, videos, or similar materials that highlight your project (attachments are fine). The NOPP Office may use your submissions in outreach materials to highlight the significant research coordinated by the program. Please provide photo captions/credits where needed.