

Defense Logistics Agency (DLA)
23.1 Small Business Innovation Research (SBIR)
Proposal Submission Instructions

INTRODUCTION

The Defense Logistics Agency's (DLA) mission has three lines of effort the DLA Small Business Innovation Program (SBIP) supports. They include supporting the **NUCLEAR ENTERPRISE** by maintaining nuclear systems readiness, qualifying alternate sources of supply, improving the quality of consumable parts, and increasing materiel availability. **FORCE READINESS & LETHALITY** through Improvements to life cycle performance through technological advancement, innovation, and reengineering, mitigate single points-of-failure that threaten the readiness of weapons systems used by our Warfighters. **SUPPLY CHAIN INNOVATION & ASSURANCE** through improved lead times, reduced lifecycle costs, maintaining a secure and resilient supply chain, providing opportunities for the small business industrial base to enhance supply chain operations with technological innovations. Lastly supply chain assurance securing the microelectronics supply chain, development of a domestic supply chain for rare earth elements, the adoptions of industrial base best practices associated with counterfeit risk reduction.

Proposers responding to a topic in this BAA must follow all general instructions provided in the Department of Defense (DoD) SBIR Program BAA. DLA requirements in addition to or deviating from the DoD Program BAA are provided in the instructions below.

Specific questions pertaining to the administration of the DLA Program and these proposal preparation instructions should be directed to:

Defense Logistics Agency
Small Business Innovation Program (SBIP) Office DLA/J68
Email: DLASBIR2@DLA.mil

PHASE I PROPOSAL GUIDELINES

The Defense SBIR/STTR Innovation Portal (DSIP) is the official portal for DoD SBIR/STTR proposal submission. Proposers are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Detailed instructions regarding registration and proposal submission via DSIP are provided in the DoD SBIR Program BAA. <https://www.dodsbirsttr.mil/submissions/login>

Technical Volume (Volume 2)

DLA's objective for the Phase I effort is to determine the merit and technical feasibility of the concept. The technical volume is not to exceed twenty pages and must follow the formatting requirements provided in the DoD SBIR Program BAA. Any pages submitted beyond the 20-page limit within the Technical Volume (Volume 2) will not be evaluated. If including a letter(s) of support, they should be included in Volume 5, and they will not count towards the 20-page Volume limit. Any technical data/information that should be in the Volume 2 but is contained in other Volumes will not be considered.

Content of the Technical Volume

Refer to the instructions provided in the DoD Program BAA.

Cost Volume (Volume 3)

A list of topics currently eligible for proposal submission is included in these instructions, followed by full topic descriptions. These are the only topics for which proposals will be

accepted at this time. Refer to the topic for cost and duration structure. Proposers must utilize the excel cost volume provided during proposal submission on DSIP.

Please review the updated Percentage of Work (POW) calculation details included in section 5.3 of the DoD Program BAA. DLA will not accept any deviation to the POW requirements

Company Commercialization Report (CCR) (Volume 4)

Completion of the CCR as Volume 4 of the proposal submission in DSIP is required. The Company Commercialization Report (CCR) allows companies to report funding outcomes resulting from prior SBIR and STTR awards. SBIR and STTR awardees are required by SBA to update and maintain their organization's CCR on SBIR.gov. Commercialization information is required upon completion of the last deliverable under the funding agreement. Thereafter, SBIR and STTR awardees are requested to voluntarily update the information in the database annually for a minimum period of 5 years.

If the proposing firm has prior DoD and/or non-DoD Phase I and/or Phase II SBIR/STTR awards, regardless of whether the project has any commercialization to date, a PDF of the CCR must be downloaded from SBIR.gov and uploaded to the Firm Forms section of DSIP by the Firm Admin. Firm Forms are completed by the DSIP Firm Admin and are applied across all proposals the firm submits. The DSIP CCR requirement is fulfilled by completing the following:

1. Log into the firm account at <https://www.sbir.gov/>.
2. Navigate to My Dashboard > My Documents to view or print the information currently contained in the Company Registry Commercialization Report.
3. Create or update the commercialization record, from the company dashboard, by scrolling to the "My Commercialization" section, and clicking the create/update Commercialization tab under "Current Report Version". Please refer to the "Instructions" and "Guide" documents contained in this section of the Dashboard for more detail on completing and updating the CCR. **Ensure the report is certified and submitted.**
4. Click the "Company Commercialization Report" PDF under the My Documents section of the dashboard to download a PDF of the CCR.
5. Upload the PDF of the CCR (downloaded from SBIR.gov in previous step) to the Company Commercialization Report in the Firm Forms section of DSIP. This upload action must be completed by the Firm Admin.

This version of the CCR, uploaded to DSIP from SBIR.gov, is inserted into all proposal submissions as Volume 4. More detailed Instructions are contained the DoD BAA Section 5.3. Phase I proposal Instructions section e. Volume 4.

Supporting Documents (Volume 5)

- Contractor Certification Regarding Provision of Prohibited Video Surveillance and Telecommunications Services and Equipment (required),
- Foreign Ownership or Control Disclosure (Proposers must review Attachment 2 in the DoD SBIR BAA: Foreign Ownership or Control Disclosure to determine applicability),
- Additional Cost information (optional),
- Letters of Support (optional),
- Any other supporting documents (optional),
- A qualified letter of support is from a relevant commercial or Government Agency procuring organization(s) working with DLA, articulating their pull for the technology (i.e., what DLA need(s) the technology supports and why it is important to fund it), and

possible commitment to provide additional funding and/or insert the technology in their acquisition/sustainment program.

- Letters of support shall not be contingent upon award of a subcontract.

The standard formal deliverables for a Phase I are the:

- Plan of Action and Milestones (POAM) with sufficient detail for monthly project tracking.
- Initial Project Summary: one-page, unclassified, non-sensitive, and non-proprietary summation of the project problem statement and intended benefits (must be suitable for public viewing).
- Monthly Status Report. A format will be provided at the PAC.
- The TPOC and PM will determine a meeting schedule at the PAC. Phase I awardees can expect Monthly (or more frequent) Project Reviews.
- Draft Final Report including major accomplishments, business case analysis, commercialization strategy, transition plan with timeline, and proposed path forward for Phase II.
- Final Report including major accomplishments, business case analysis, commercialization strategy and transition plan with timeline, and proposed path forward for Phase II.
- Final Project Summary (one-page, unclassified, non-sensitive and non-proprietary summation of project results, high resolution photos or graphics intended for public viewing)
- Applicable Patent documentation
- Other Deliverables as defined in the Phase I Proposal
- Phase II Proposal is optional at the Phase I Awardee's discretion (as Applicable)

DIRECT TO PHASE II PROPOSAL GUIDELINES

15 U.S.C. §638 (cc), as amended by NDAA FY2012, Sec. 5106, and further amended by NDAA FY2019, Sec. 854, PILOT TO ALLOW PHASE FLEXIBILITY allows the Department of Defense to make an award to a Small Business Concern (SBC) under Phase II of the SBIR Program with respect to a project, without regard to whether the small business concern received an award under Phase I of an SBIR Program with respect to such project.

DLA is conducting a "Direct to Phase II" (DP2) implementation of this authority for this SBIR Announcement for topics DLA231-D06, DLA231-D07, and DLA231-D08 ONLY. This pilot does not guarantee DLA will offer any future Direct to Phase II opportunities.

PROJECT DURATION and COST:

Direct to PHASE II: – Not to exceed \$1,800,000, unless restricted by the specific topic author/sponsor as noted in the topic writeup.

PERIOD OF PERFORMANCE: The Direct to Phase II period of performance is not to exceed 24 months total.

Direct to Phase II proposals must follow the steps outlined in the following statements.

1. Offerors must provide documentation that satisfies the Phase I feasibility requirement*.
 - This documentation will comprise the first twenty pages of Volume 2 (Technical Volume) of the Direct to Phase II proposal
2. Offerors must submit a complete Phase II proposal using the DLA Phase II proposal instructions below.

* NOTE: Offerors are required to provide information demonstrating that the scientific and technical merit and feasibility. DLA will not evaluate any Phase II proposal if it determines that the offeror has failed to

demonstrate the establishment of technical merit and feasibility.

PROPOSAL SUBMISSION

Submit the complete proposal electronically at <https://www.dodsbirsttr.mil/submissions/login>

Complete proposals must include all of the following:

- a. Volume 1: DoD Proposal Cover Sheet, Produced in the DSIP System by your company profile.
- b. Volume 2: Technical proposal
 - Part 1: Phase I Justification (20 Pages Maximum)
 - Part 2: Phase II Technical Proposal (40 Pages Maximum)
- c. Volume 3: Cost Volume (Excel spreadsheet upload)
- d. Volume 4: Company Commercialization Report
- e. Volume 5: Additional Documents (Optional)
- f. Volume 6 FWA Training Certificate is required for proposal submission

Phase II proposals require a comprehensive, detailed submission of the proposed effort. DLA SBIR Direct to Phase II periods of performance are 24 months. Commercial and military potential of the technology under development is extremely important. Successful proposals will emphasize applicability to specific DOD programs of record as well as dual- use applications and commercial exploitation of resulting technologies,

Direct to Phase II PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS

PROPOSAL FORMAT

- A. **Cover Sheet.** This is completed using the DSIP Portal on the Submission Site. This is a compilation of company data as well as specific information regarding the proposed project. Include a brief description of the problem or opportunity, objectives, effort, and anticipated results. Summarize the expected benefits, as well as any government or private sector applications of the proposed research. OSD and SBA will post the Project Summary of selected proposals with unlimited distribution. Therefore, the summary should not contain any classified or proprietary information.
- B. **Technical Volume (60 pages maximum)**
 - Phase I Justification (20 Pages Maximum). Offerors are required to provide information demonstrating the establishment of the scientific and technical merit and feasibility.
 - Phase II Technical Objectives and Approach (40 Pages Maximum). List the specific technical objectives of the Phase II research and describe the planned technical approaches used to meet these objectives.
 - Phase II Work Plan. Provide an explicit, detailed description of the Phase II approach. The plan should indicate how and where the firm will conduct the work, a schedule of major events, and the final product to be developed. The Phase II effort should attempt to accomplish the technical feasibility demonstrated in the justification, including potential commercialization results. Phase II is the principal research and development effort and is expected to produce a well-defined deliverable product or process.
 - Related Work. Describe significant activities directly related to the proposed effort, including those conducted by the Principal Investigator, the proposing firm, consultants, or others. Report how the activities interface with the proposed project and discuss any planned coordination with outside sources. The proposers must demonstrate an awareness of the state- of-the-art in the technology and

associated science.

- Relationship with Future Research or Research and Development. State the anticipated results of the proposed approach if the project is successful. Discuss the significance of the Phase II effort in providing a foundation for a Phase III research or research and development effort.
- Technology Transition and Commercialization Strategy. Describe your company's strategy for converting the proposed SBIR research, resulting from your proposed Phase II contract, into a product or non-R&D service with widespread commercial use -- including private sector and/or military markets. Note that the commercialization strategy is separate from the Commercialization Report described in Section 4.L below. The strategy addresses how you propose to commercialize this research, while the Company Commercialization Report covers what you have done to commercialize the results of past Phase II awards. Historically, a well- conceived commercialization strategy is an excellent indicator of ultimate Phase III success. The commercialization strategy must address the following questions:
 - What DoD Program and/or private sector requirement does the technology propose to support?
 - What customer base will the technology support, and what is the estimated market size?
 - What is the estimated cost and timeline to bring the technology to market to include projected funding amount and associated sources?
 - What marketing strategy, activities, timeline, and resources will be used to enhance commercialization efforts??
 - Who are your competitors, and describe the value proposition and competitive advantage over the competition?
- Key Personnel. Identify key personnel, including the Principal Investigator, who will be involved in the Phase II effort. List directly related education and experience and relevant publications (if any) of key personnel. Include a concise resume of the Principal Investigator(s).
- Facilities/Equipment. Describe available instrumentation and physical facilities necessary to carry out the Phase II effort. Justify the purchase of any items or equipment (as detailed in the cost proposal) including Government Furnished Equipment (GFE). All requirements for government furnished equipment or other assets, as well as associated costs, must be determined and agreed to during Phase II contract negotiations. State whether or not the proposed work facilities will be performed meet environmental laws and regulations of federal, state (name) and local governments. This includes, but is not limited to, the following groupings: airborne emissions, waterborne effluents, external radiation levels, outdoor noise, solid and bulk waste disposal, and handling and storage of toxic and hazardous materials.
- Consultants. Involvement of university, academic institution, or other consultants in the project may be appropriate. If the firm intends to involve these type of consultants, describe these costs in detail in the Cost Volume.

C. Cost Volume. Download, complete, and upload the spreadsheet, located in the Volume 3 section of the proposal submission in DSIP. Some items in the cost volume template may not apply to the proposed project. Provide enough information to allow the DLA evaluators to assess the proposer's plans to use the requested funds if DLA were to award the contract.

- List all key personnel by name as well as number of hours dedicated to the project as direct labor.
- Special Tooling, Test Equipment, and Materials Costs:

- Special tooling, test equipment, and materials costs may be included under Phase II. The inclusion of equipment and material will be carefully reviewed relative to need and appropriateness for the work proposed; and
- The purchase of special tooling and test equipment must, in the opinion of the Contracting Officer, be advantageous to the Government and relate it directly to the specific effort.
- Cost for travel funds must be justified and related to the needs of the project.

D. Company Commercialization Report (CCR). Completion of the CCR as Volume 4 of the proposal submission in DSIP is required. Please refer to the DoD SBIR Program BAA for full details on this requirement. Information contained in the CCR will not be considered by DLA during proposal evaluations.

METHOD OF SELECTION AND EVALUATION CRITERIA

Evaluation Criteria. DLA will review all proposals for overall merit based on the evaluation criteria published in the DoD SBIR Program BAA

CONTRACTUAL CONSIDERATIONS

- A. Awards. The number of Direct to Phase II awards will depend upon the quality the Phase II proposals and the availability of funds. Each Phase II proposal selected for award under a negotiated contract requires a signature by both parties before work begins. DLA awards Phase II contracts to Small Businesses based on results of the agency priorities, scientific, technical, and commercial merit of the Phase II proposal.
- B. Reports. For incrementally funded Direct to Phase II projects an interim, midterm written report maybe required (at the discretion of the awarding agency).
- C. Payment Schedule. DLA Phase II Awards are Firm Fixed Price / Level of Effort contracts. Base monthly invoices on the labor hours recorded **PLUS** the monthly costs associated with the project.
- D. Markings of Proprietary Information. In accordance with DoD SBIR Program BAA, section 5.3. DLA does not accept classified proposals. All Final Reports are marked with CUI // SBIZ// FEDONLY, and the Initial Project Summary as well as the Final Project Summary should reference compliance with FOR PUBLIC RELEASE.
- E. Copyrights, Patents and Technical Data Rights. DLA handles all Copyrights, Patents, and Technical Data Rights in accordance with the guidelines in the DoD SBIR Program BAA.

DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE (TABA)

The DLA SBIR Program does not participate in the Technical and Business Assistance (formally the Discretionary Technical Assistance Program). Contractors should not submit proposals that include Technical and Business Assistance.

PHASE II PROPOSAL GUIDELINES

Per SBA SBIR Phase II Proposal guidance, **all** Phase I awardees are permitted to submit a Phase II proposal for evaluation and potential award selection, without formal invitation. Details on the due date, format, content, and submission requirements of the Phase II proposal will be provided by the DLA SBIP

PMO on/around the midway point of the Phase I period of performance. Only firms who receive a Phase I award may submit a Phase II proposal.

DLA will evaluate and select Phase II proposals using the same criteria as Phase I evaluation. Funding decisions are based upon the results of work performed under a Phase I award, the Scientific & Technical Merit, Feasibility, and Commercial Potential of the Phase II proposal; Phase I final reports may be reviewed as part of the Phase II evaluation process. The Phase II proposal should include a concise summary of the Phase I effort including the specific technical problem or opportunity addressed and its importance, the objective of the Phase I effort, the type of research conducted, findings or results of this research, and technical feasibility of the proposed technology.

Due to limited funding, DLA reserves the right to limit awards under any topic and only proposals considered to be of superior quality will be funded.

Phase II Proposals should anticipate a combination of any or all the following deliverables:

- Plan of Action and Milestones (POAM) with sufficient detail for monthly project tracking
- Initial Project Summary: one-page, unclassified, non-sensitive, and non-proprietary summation of the project problem statement and intended benefits (must be suitable for public viewing)
- Monthly Status Report. A format will be provided at the PAC.
- Meeting schedule to be determined by the Technical Point of Contact (TPOC) and PM at the PAC
- Phase II awardees expect Monthly (minimum) Project Reviews (format provided at the PAC)
- Draft Final Report including major accomplishments, commercialization strategy and transition plan and timeline.
- Final Report including major accomplishments, commercialization strategy, transition plan, and timeline.
- Final Project Summary (one-page, unclassified, non-sensitive and non-proprietary summation of project results, non-proprietary high-resolution photos, or graphics intended for public viewing)
- Applicable Patent documentation.
- Other Deliverables as defined in the Phase II Proposal.

DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE (TABA)

DLA is not authorizing TABA at this time.

EVALUATION AND SELECTION

Use of Support Contractors in the Evaluation Process

Only Government personnel with active non-disclosure agreements will officially evaluate proposals.

Non-Government technical consultants (consultants) to the Government may review and provide support in proposal evaluations during source selection.

Consultants may have access to the offeror's proposals, may be utilized to review proposals, and may provide comments and recommendations to the Government's decision makers. Consultants will not establish final assessments of risk and will not rate or rank offerors' proposals. They are also expressly prohibited from competing for DLA SBIR awards in the SBIR topics they review and/or on which they provide comments to the Government.

All consultants are required to comply with procurement integrity laws. Consultants will not have access to proposals or pages of proposals that are properly labeled by the offerors as "FEDONLY." Pursuant to FAR 9.505-4, DLA contracts with these organizations include a clause which requires them to

- (1) Protect the offerors' information from unauthorized use or disclosure for as long as it remains proprietary and
- (2) Refrain from using the information for any purpose other than that for which it was furnished. In addition, DLA requires the employees of those support contractors that provide technical analysis to the SBIR/STTR Program to execute non-disclosure agreements. These agreements will remain on file with the DLA SBIP PMO.

Non-Government consultants will be authorized access to only those portions of the proposal data and discussions that are necessary to enable them to perform their respective duties. In accomplishing their duties related to the source selection process, employees of the organizations may require access to proprietary information contained in the offerors' proposals.

All proposals will be evaluated in accordance with the evaluation criteria listed in the DoD SBIR Program BAA. DLA will evaluate and select Phase I and Phase II proposals using scientific review criteria based upon technical merit and other criteria as discussed in this Announcement document.

- DLA reserves the right to award none, one, or more than one contract under any topic.
- DLA is not responsible for any money expended by the offeror before award of any contract.
- Due to limited funding, DLA reserves the right to limit awards under any topic
- Only proposals considered to be "Highly Acceptable" as determined by DLA will be funded.

Phase I proposals will be evaluated based on the criteria outlined below, including potential benefit to the DLA. Selections will be based on best value to the Government considering the following factors which are listed in descending order of importance:

- a) The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward topic or subtopic solution.
- b) The qualifications of the proposed principal/key investigators, supporting staff, and consultants. Qualifications include not only the ability to perform the research and development but also the ability to commercialize the results.
- c) The potential for commercial (Government or private sector) application and the benefits expected to accrue from its commercialization.

Please note that potential benefit to the DLA will be considered throughout all the evaluation criteria and in the best value trade-off analysis. When combined, the stated evaluation criteria are significantly more important than cost or price.

It cannot be assumed that reviewers are acquainted with the firm or key individuals or any referenced experiments. Technical reviewers will base their conclusions only on information contained in the proposal. Relevant supporting data such as journal articles, literature, including Government publications, etc., should be listed in the proposal and will count toward the applicable page limit.

The SBIP PMO will distribute selection and non-selection email notices to all firms who submit a SBIR/STTR proposal to DLA. The email will be distributed to the "Corporate Official" and "Principal

Investigator” listed on the proposal coversheet. DLA cannot be responsible for notification to a company that provides incorrect information or changes such information after proposal submission. DLA will distribute the selection and non-selection notifications to all offerors within 90 days of the BAA close date.

DLA will provide written feedback to unsuccessful offerors regarding their proposals on the non-selection notification. Only firms that receive a non-selection notification are eligible for written feedback.

Refer to the DoD SBIR Program BAA for procedures to protest the Announcement.

As further prescribed in FAR 33.106(b), FAR 52.233-3, Protests after Award should be submitted to: DCSO Small Business Innovation Program SBIP.DCSO@dla.mil. This is the DLA Contracting Team workflow email address.

AWARD AND CONTRACT INFORMATION

Typically, the contract period of performance for Phase I should be up to twelve (12) months and the award should not exceed \$100,000. However, each topic may have a different threshold. The DLA Contracting Office utilizes a Firm Fixed Price (FFP) Contract for DLA Phase I Projects

The expected budget for Phase II should not exceed \$1M unless approved by the DLA Program Manager, and the duration should not exceed 24 Months. Proposals in excess of \$1M will not be considered without written PM approval. The DLA Contracting Office utilizes a Firm Fixed Price Level of Effort (FFP/LOE) Contract for DLA Phase II Projects.

Proposals not conforming to the terms of this Announcement will not be considered. DLA reserves the right to limit awards under any topic, and only those proposals of superior scientific and technical quality as determined by DLA will be funded.

DLA reserves the right to withdraw from negotiations at any time prior to contract award.

Post Award, DLA may terminate any award at any time for any reason to include matters of national security (foreign persons, foreign influence or ownership, inability to clear the firm or personnel for security clearances, or other related issues).

Please read the entire DoD Announcement and DLA instructions carefully prior to submitting your proposal. Please go to <https://www.sbir.gov/about/about-sbir#sbir-policy-directive> to read the SBIR/STTR Policy Directive issued by the Small Business Administration.

USE OF FOREIGN NATIONALS (also known as Foreign Persons), GREEN CARD HOLDERS AND DUAL CITIZENS

If proposing to use foreign nationals (also known as foreign persons), they must be green card holders, and/or dual citizens. (No Student or Temporary Visa holders will be approved). The offeror must identify the personnel they expect to be involved on this project, the type of visa or work permit under which they are performing, country of origin and level of involvement.

You will be asked to provide additional information during negotiations to verify the foreign citizen’s eligibility to participate on a SBIR contract. Supplemental information provided in response to this paragraph will be protected in accordance with the Privacy Act (5 U.S.C. 552a), if applicable, and the Freedom of Information Act (5 U.S.C. 552(b)(6)).

Proposals submitted to export control-restricted topics and/or those with foreign nationals, dual citizens, or green card holders listed will be subject to security review during the contract negotiation process (if selected for award).

DLA reserves the right to vet all uncleared individuals involved in the project, regardless of citizenship, who will have access to Controlled Unclassified Information (CUI) such as export controlled information. If the security review disqualifies a person from participating in the proposed work, the contractor may propose a suitable replacement.

In the event a proposed person and/or firm is found ineligible by the government to perform proposed work, the contracting officer will advise the offeror of any disqualifications but is not required to disclose the underlying rationale.

V. EXPORT CONTROL RESTRICTIONS

The technology within most DLA topics is restricted under export control regulations including the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations (EAR). ITAR controls the export and import of listed defense-related material, technical data and services that provide the United States with a critical military advantage. EAR controls military, dual-use and commercial items not listed on the United States Munitions List or any other export control lists. EAR regulates export-controlled items based on user, country, and purpose. The offeror must ensure that their firm complies with all applicable export control regulations. Please refer to the following URLs for additional information: <https://www.pmddtc.state.gov/> and <https://www.bis.doc.gov/index.php/regulations/export-administration-regulations-ear>.

Most DLA SBIR topics are subject to ITAR and/or EAR. If the topic write-up indicates that the topic is subject to International Traffic in Arms Regulation (ITAR) and/or Export Administration Regulation (EAR), your company may be required to submit a Technology Control Plan (TCP) during the contracting negotiation process.

CLAUSE H-08 PUBLIC RELEASE OF INFORMATION (Publication Approval)

Clause H-08 pertaining to the public release of information is incorporated into all DLA SBIR contracts and subcontracts without exception. Any information relative to the work performed by the contractor under DLA SBIR contracts must be submitted to DLA for review and approval prior to its release to the public. This mandatory clause also includes the subcontractor who shall provide their submission through the prime contractor for DLA's review for approval.

FLOW-DOWN OF CLAUSES TO SUBCONTRACTORS

The clauses to which the prime contractor and subcontractors are required to comply include but are not limited to the following clauses:

- 1) DLA clause H-08 (Public Release of Information),
- 2) DFARS 252.204-7000 (Disclosure of Information),
- 3) DFARS clause 252.204-7012 (Safeguarding Covered Defense Information and Cyber Incident Reporting), and
- 4) DFARS clause 252.204-7020 (NIST SP 800-171 DoD Assessment Requirements). Your proposal submission confirms that any proposed subcontract is in accordance with the clauses cited above and any other clauses identified by DLA in any resulting contract.
- 5) DFARS Clause 252.223-7999 Ensuring Adequate COVID-19 Safety Protocols for Federal Contractors

OWNERSHIP ELIGIBILITY

Prior to award, DLA may request business/corporate documentation to assess ownership eligibility as related to the requirements of SBIR Program Eligibility. These documents include, but may not be limited to, the Business License; Articles of Incorporation or Organization; By-Laws/Operating Agreement; Stock Certificates (Voting Stock); Board Meeting Minutes for the previous year; and a list of all board members and officers.

If requested by DLA, the contractor shall provide all necessary documentation for evaluation prior to SBIR award. Failure to submit the requested documentation in a timely manner as indicated by DLA may result in the offeror's ineligibility for further consideration for award.

ADDITIONAL INFORMATION

Classified Proposals

Classified proposals **ARE NOT** accepted under the DLA SBIR Program. The inclusion of classified data in an unclassified proposal is grounds for the Agency to determine the proposal as non-responsive and the proposal not to be evaluated.

Contractors currently working under a classified contract must use the security classification guidance provided under that contract to verify new SBIR proposals are unclassified prior to submission.

Phase I contracts are not typically awarded for classified work. However, in some instances, work being performed on DLA SBIR/STTR contracts will require security clearances. If a DLA SBIR/STTR contract develops into or identifies classified work, the offeror must have a facility clearance, appropriate personnel clearances to perform the classified work and coordinate the DD254 with the Contract Officer and the service owning the classified data.

For more information on facility and personnel clearance procedures and requirements, please visit the Defense Counterintelligence and Security Agency Web site at: <https://www.dcsa.mil>.

Use of Acronyms

Acronyms should be spelled out the first time they are used within the technical volume (Volume 2), the technical abstract, and the anticipated benefits/potential commercial applications of the research or development sections. This will help avoid confusion when proposals are evaluated by technical reviewers.

Communication

All communication from the DLA SBIR/STTR PMO will originate from the DLASBIR2@DLA.mil email address. Please white list this address in your company's spam filters to ensure timely receipt of communications from our office.

All attachments sent via email require encryption. The firm will have to purchase ECA certificates to send and receive encrypted email if they do not have a CAC or PIV issued. The cost is approximately \$100 per year per user. This will be a CMMC requirement for all future contracts.

ORGANIZATIONAL CONFLICTS OF INTEREST (OCI)

The basic OCI rules for Contractors which support development and oversight of SBIR topics are covered in FAR 9.5 as follows (the Offeror is responsible for compliance):

- (1) the Contractor's objectivity and judgment are not biased because of its present or planned interests which relate to work under this contract.

- (2) the Contractor does not obtain unfair competitive advantage by virtue of its access to non-public information regarding the Government's program plans and actual or anticipated resources; and
- (3) the Contractor does not obtain unfair competitive advantage by virtue of its access to proprietary information belonging to others.

All applicable rules under the FAR Section 9.5 apply.

If you, or another employee in your company, developed or assisted in the development of any SBIR requirement or topic, please be advised that your company may have an OCI. Your company could be precluded from an award under this BAA if your proposal contains anything directly relating to the development of the requirement or topic. Before submitting your proposal, please examine any potential OCI issues that may exist with your company to include subcontractors and understand that if any exist, your company may be required to submit an acceptable OCI mitigation plan prior to award.

PHASE III GUIDELINES & INSTRUCTIONS

Phase III is any proposal that “Derives From”, “Extends” or completes a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and or Phase II projects.

There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal Submission. Phase III proposals are emailed directly to DLASBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content, and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply. More specific Instructions may be available when a firm submits a Phase III proposal.

DLA SBIR 23.1 Topic Index

- DLA231-001 Engaging the Manufacturing Industrial Base in Support of DLA's Critical Supply Chains
- DLA231-002 Optimizing Magnesium Recovery Technology to Efficiently Reclaim Magnesium and Provide Desired Purity Levels for Future Weapons Production Requirements.
- DLA231-004 Low Cost Rapid-setting Cement for Time-Sensitive Airport Runway Crater Repairs
- DLA231-005 Designing, Optimizing and Qualifying Boron Fiber and Carbon Fiber Hybrid Composites

Topics below are accepting Direct to Phase II proposals only

- DLA231-D06 Battery Management System Cybersecurity Verification System
- DLA231-D07 Innovation in High Temperature Resistant Thermal Protection System (TPS) Materials, Manufacturing, and Resilient Supply Chains for Hypersonics TPS and Related Defense Applications
- DLA231-D08 Tungsten 3% Rhenium wire manufacturing

DLA231-001 TITLE: Engaging the Manufacturing Industrial Base in Support of DLA's Critical Supply Chains

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Nuclear, Sustainment

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: Expand the Small Business Manufacturer (SBM) base to address the Agency's need to develop qualified sources of supply to improve DLA product availability, provide competition for reduced lead time and cost, as well as address lifecycle performance issues. Through participation in DLA SBIR, SBMs will have an opportunity to collaborate with DLA Weapons System Program Managers (WSPMs) and our customer Engineering Support Activities (ESAs) to develop innovative solutions to DLA's most critical supply chain requirements. In the end, the SBM benefits from the experience by qualifying as a source of supply as well as from the business relationships and experience to further expand their product lines and readiness to fulfill DLA procurement requirements.

DESCRIPTION: Competitive applicants will have reviewed the parts list provided on DLA Small Business Innovation Program (SBIP) website, (Reference 4) as well as the technical data in the cFolders of DLA DiBBs, (Reference 3). Proposals can evolve in one of four ways depending on the availability of technical data and NSNs for reverse engineering as follows. Information on competitive status, RPPOB, and tech data availability will be provided on the DLA SBIP website, (Reference 4).

- a. Fully Competitive (AMC/AMSC-1G) NSNs where a full technical data package is available in cFolders. The SBM proposal should reflect timeline, statement of work and costs associated with the manufacturing and qualification of a representative article.
- b. Other than (AMC/AMSC-1G) NSNs where a full Technical Data Package (TDP) is available in cFolders. These items may also require a qualification of a Representative Article. The SBM proposal should reflect timeline, statement of work, and costs associated with producing a Source Approval Request (SAR) and (if applicable) qualification of a Representative Article. Contact the TPOC if necessary. The scope and procedures associated with development of a SAR package are provided in Reference 1.
- c. Repair Parts Purchase or Borrow (RPPOB) or Surplus may be an option for other than 1G NSNs where partial or no technical data is available in cFolders. NSNs, if available, may be procured or borrowed through this program for the purposes of reverse engineering. The instructions for RPPOB can be found on the websites, Reference 5. The SBM proposal should reflect timeline, statement of work and costs associated with the procuring the part and reverse engineering of the NSN. Depending on complexity, producing both the TDP and SAR package may be included in Phase I.
- d. Reverse Engineering (RE) without RPPOB or Surplus available is when the NSN will be provided as Government Furnished Material (GFM) if available from the ESA or one of our Service customers post award. In this case, contact the TPOC to discuss the availability of the NSN prior to starting the proposal. Typically, a competitive SBM will have relevant experience in producing a similar item which will enable them to propose without a representative article. The SBM proposal should reflect timeline, statement of work and costs associated with the reverse

engineering of the NSN and depending on complexity producing a TDP and SAR package in Phase I.

Participating small businesses must have an organic manufacturing capability and a Commercial and Government Entity (CAGE) code and be Enhanced Joint Certification Program (JCP) certified in order to access technical data and subsequent procurements. YOU MUST INCLUDE proof of Enhanced JCP certification or evidence of an Enhanced JCP certification request in your proposal in accordance with guidance in reference 2.

Specific parts may require minor deviations in the process dependent on the Engineering Support Activity (ESA) preferences and requirements. Those deviations will be addressed post award.

PROJECT DURATION and COST:

PHASE I: Not to exceed a duration of 12 months and cost of \$100,000. The project schedule should plan to complete the TDP and SAR in the first six months.

PHASE II: Not to exceed a duration of 24 months and cost of \$1,000,000. The Phase II proposal is optional for the Phase I awardee. Phase II selections are based on Phase I performance, Small Business Manufacturer innovation and engineering capability and the availability of appropriate requirements. Typically the goal of Phase II is to expand the number of NSNs and/or to build capability to expand capacity to better fulfill DLA requirements.

Participating small businesses must have an organic manufacturing capability and a Commercial and Government Entity (CAGE) code and be Joint Certification Program (JCP) certified in order to access technical data if available.

Refer to “link 2” below for further information on JCP certification. DLA has enhanced its Joint Certification Program (JCP) registration and validation procedures. Selected National Stock Numbers (NSNs) will require additional permissions to access the associated technical data. In the event a vendor cannot access the technical data for a NSN in DLA cFolders, the vendor must submit a onetime request to jcpvalidation@dla.mil for technical data access consideration. If a vendor has inquiries after having submitted required information to the JCP office, these inquiries are to be directed to DLAJ344DataCustodian@dla.mil. Additionally, small businesses will need to create a DLA’s Internet Bid Board System (DIBBS) account to view all data and requirements in C Folders.

Refer to “links 3 and 4” below for further information on DIBBS and C Folders. All available documents and drawings are located in the C Folder location “SBIR231A”. If the data is incomplete, or not available, the effort will require reverse engineering.

PHASE I: The goal of phase I is for the Small Business Manufacturer to qualify as a source of supply for the DLA NSN(s) to improve DLA NSN availability, provide competition for reduced lead time and cost, and address lifecycle performance issues. In this phase, manufacturers will request TDP/SAR approval from the applicable Engineering Support Activity (ESA), as required, for the NSN(s). At the Post Award Conference, the awardee will have the opportunity to collaborate with program, weapon system, and/or engineering experts on the technical execution and statement of work provided in their proposal. All Phase I Proposals should demonstrate an understanding of the NSN(s) and the general challenges involved in their manufacture. Proposals that fail to demonstrate knowledge of the part will be rejected. Enhanced JCP Certification is required to access Government Drawings and Data.

PHASE II: The Phase II proposal is optional for the Phase I awardee. Phase II selections are based on Phase I performance, Small Business Manufacturer innovation, engineering and manufacturing capability and the availability of appropriate requirements and funding. Typically the goal of Phase II is to expand the number of NSNs and/or to build capability to expand capacity to better fulfill DLA requirements. Enhanced JCP Certification is required for all Phase II proposals.

The Phase II proposal is optional for the Phase I awardee. Phase II selections are based on Phase I performance, SBM engineering capability and innovation, the technical maturity of the proposed technology, as applicability to the requirement, and availability of funding.

PHASE III DUAL USE APPLICATIONS: Technology transition via successful demonstration of a new process technology. This demonstration should show near-term application to one or more Department of Defense systems, subsystems, or components. This demonstration should also verify the potential for enhancement of quality, reliability, performance, fuel economy and/or reduction of unit cost or total ownership cost of the proposed subject.

Phase III is any proposal that “Derives From”, “Extends” or “Completes” a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and or Phase II projects. There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal Submission. Phase III proposals are emailed directly to DLA SBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content, and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply. Enhanced JCP Certification is required for all Phase III proposals.

COMMERCIALIZATION: The SBM will pursue commercialization of the various technologies and processes developed in prior phases through participation in future DLA procurement actions on items identified but not limited to this BAA.

REFERENCES:

1. DLA Aviation SAR Package instructions. DLA Small Business Resources:
<http://www.dla.mil/Aviation/Business/IndustryResources/SBO.aspx>
2. JCP Certification: <https://www.dla.mil/Logistics-Operations/Services/JCP/>
3. Access the web address for DIBBS at <https://www.dibbs.bsm.dla.mil>, then select the “Tech Data” Tab and Log into c-Folders. This requires an additional password. Filter for solicitation “SBIR213C”
4. DLA Small Business Innovation Programs web site:
<http://www.dla.mil/SmallBusiness/SmallBusinessInnovationPrograms>
5. DLA Aviation Repair Parts Purchase or Borrow (RPPOB) Program:
<https://www.dla.mil/Aviation/Offers/Services/AviationEngineering/Engineering/ValueEng.aspx>

KEYWORDS: Nuclear Enterprise Support (NESO), Source Approval, Reverse Engineering

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DLA231-002 TITLE: Optimizing Magnesium Recovery Technology to Efficiently Reclaim Magnesium and Provide Desired Purity Levels for Future Weapons Production Requirements.

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Advanced Materials

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: The Defense Logistics Agency (DLA) seeks to provide responsive, best value supplies consistently to our customers. DLA continually investigates diverse recycling technologies which would lead to the highest level of innovation with a future impact on both commercial technology and government applications. As such, advanced technology demonstrations for affordability and advanced industrial practices to demonstrate the combination of improved discrete-parts recycling and improved business methods are of interest. All these areas of recycling technologies provide potential avenues toward achieving breakthrough advances. Proposed efforts funded under this topic may encompass any specific recycling technology at any level resulting in a unit cost reduction of metal recovery.

Crane Army Ammunition Activity (CAAA) is a leader in the demilitarization, storage, and manufacturing of conventional munitions. CAAA is always looking for new and innovative methods to demilitarize and produce conventional weapons while keeping safety and the environment at the forefront of these operations. CAAA recognizes the importance that earth metals play in the security and independence of the United States. As such, CAAA strives to reclaim these metals from munitions and reuse in the manufacturing of new world class munitions.

DESCRIPTION: CAAA is looking for domestic capability to develop an efficient method to reclaim magnesium and generate a usable product that satisfies required purity level while also being in a form that lends itself for efficient shipping, storage, and production. Currently, there are munitions containing 14 different formulations that contain magnesium, equating to over 1.06 million pounds of magnesium in the Army demilitarization account. The top 6 items account for 755,207 pounds of magnesium molecular formula items (71%). Of these 755,207 pounds, 279,786 pounds are located at CAAA. Demilitarizing these top 6 items not only provide badly needed magnesium but will also reduce the items to be demilitarized by over 12 million units, with over 6 million of these at CAAA. At the current rate of \$31.11/lb. of magnesium, reclaiming 90% of the 755,207 pounds could save over \$21 million for Joint Munitions Command (JMC).

Tasks involved would include evaluating the formulations to determine feasibility of reclaiming magnesium from each unique formula. Develop an efficient process that has minimal melt loss while providing the desired purity levels (up to 98% magnesium, depending on required form of material) and the required quantity. Process should also be cost effective and environmentally friendly to operate with very minimal waste generated. CAAA will provide the feedstock material from the demilitarization account.

This system would provide much needed resources to help maintain the United States security and assist in maintaining the United States independence from foreign entities.

PHASE I: Not to exceed a duration of 12 months and cost of \$100,000.

- a. Determine if each formulations containing magnesium lends to being processed for magnesium reclamation.
- b. Determine the technical and production feasibility of the concept.
- c. Provide a plan to demonstrate the concept with implementation timing.
- d. Also, determine the most efficient process/method to dispose of generated waste of this process, with emphasis on zero landfill options.

PHASE II: Not to exceed a duration of 24 months and cost of \$1,800,000.

- a. Develop a laboratory scale prototype that demonstrates the desired system capabilities for production quantities and magnesium purity levels with acceptable metal cleanliness.
- b. The prototype must satisfy CAAA safety requirements. CAAA will provide testing parameters to ensure all requirements are met and monitored.
- c. The successful candidate will demonstrate all system processes and testing. Validation to include, but not limited to'
 - i. The agreed to production quantities,
 - ii. Data analysis,
 - iii. Magnesium analysis, or simulations.

PHASE III DUAL USE APPLICATIONS: A Public-Private Partnership (P3) will be established to demilitarize items and reclaim magnesium at CAAA. DoD as the primary customer will utilize the recovered magnesium in various applications.

The Anticipated requirement is approximately 150,000 Lbs. of recovered Magnesium per year.

REFERENCES:

1. https://ndiastorage.blob.core.usgovcloudapi.net/ndia/2007/global_demil/SessionIIIB/1555Ochs.pdf
2. https://hero.epa.gov/hero/index.cfm/reference/details/reference_id/7683605

KEYWORDS: magnesium, reclamation, demilitarization, recycle

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DLA231-004 TITLE: Low Cost Rapid-setting Cement for Time-Sensitive Airport Runway Crater Repairs

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Mission Readiness / Disaster Preparedness

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: Develop a low cost rapid-setting-all-weather materials that can be applied to craters, making damaged runways operational in less than 24 hours from the start of repair, requiring minimal logistical support, power, and requirements under extreme conditions.

DESCRIPTION: The Defense Logistics Agency (DLA) is looking to increase domestic capability to manufacture low cost rapid-setting-all-weather materials that can be applied to craters to make damaged runways operational in less than 24 hours from the start of the repair. DLA is looking to execute an SBIR program to attempt to analyze a way forward in supporting the manufacturing of low cost rapid-setting-all-weather materials that have sufficient flexibility to repair everything from potholes to full-size craters. Level of manpower skills required to make repairs should be equal or less than those presently used. The solution must be able to sustain heavy aircraft traffic in elevated temperatures, heavy rains, and other extreme weather conditions. Resulting debris must not be siphoned by moving tires, strong winds and jet blasts. Performance of solution must be validated and tested by heavy transport aircrafts (>840,000 lbs.) and high thermal effect (>930 degree Celsius).

PHASE I: Not to exceed a duration of 12 months and cost of \$100,000.

The research and development goals of Phase I are to provide eligible Small Business firms the opportunity to successfully demonstrate the viability of a low cost rapid-setting-all-weather materials once the project is awarded. The main effort will be to conduct preliminary studies to propose details of design and manufacture of low cost rapid-setting-all-weather cement, showing feasibility and benefit to the Department of Defense (DoD). A plan to demonstrate the manufacture of low-cost-rapid-setting-all-weather cement must also address implementation approaches for near term insertion into DoD. Relationships with potential customers such as the DLA Troop Support Class IV Construction and Equipment Major Subordinate Command will be included in the Phase I effort to aid in component identification, guide design efforts, and support the impact and insertion analyses. The deliverables for this project will include a final report describing the results from these analyses.

PHASE II: Not to exceed a duration of 24 months and cost of \$1,800,000.

Based on the results of PHASE I, the research and development goals of PHASE II will demonstrate commercial viability by successfully producing a low cost rapid-setting-all-weather cement. Tasks to be accomplished include material design and formulation, development of wire drawing schedules to manage manufacturing processes, and meet the specifications and standards, provided by the industrial base. Sufficient validation trials will be conducted to support analyses of manufacturing at commercial scale, including cost, cycle time and commercial benefit of the innovation. Remaining technical gaps will be identified. Innovative processes should be developed with the intent to readily transition to production in support of DoD needs. A partnership with a current or potential DoD supplier, Original Equipment Manufacturer, or other suitable partners is highly desirable.

PHASE III DUAL USE APPLICATIONS: Dual Use Applications: At this time, no specific funding is associated with PHASE III. Progress documented from PHASE I and PHASE II should result in a vendor's qualification as an approved source for low cost rapid-setting-all-weather cement manufacturing for civil or commercial applications, enabling participation in future procurements.

COMMERCIALIZATION: The vendor will pursue commercialization of low cost rapid-setting-all-weather cement developed in prior phases, as well as potential commercial sales of any parts or other items.

REFERENCES:

1. ERDC Publication Notifications - New Releases (army.mil)
<https://www.erdc.usace.army.mil/Media/Publication-Notices/Tag/163141/rapid-setting-materials/>

KEYWORDS: Rapid-setting Cement for Time-Sensitive Airport Runway Crater Repairs

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DLA231-005 TITLE: Designing, Optimizing and Qualifying Boron Fiber and Carbon Fiber Hybrid Composites.

OUUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Advanced Materials

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: The Defense Logistics Agency (DLA) seeks to provide responsive, best value supplies consistently to our customers. DLA continually investigates diverse technologies for manufacturing which would lead to the highest level of innovation in the discrete-parts support of fielded weapon systems (many of which were designed in the 1960's, 1970's and 1980's) with a future impact on both commercial technology and government applications. As such, advanced technology demonstrations for affordability and advanced industrial practices to demonstrate the combination of improved discrete-parts manufacturing and improved business methods are of interest. All these areas of manufacturing technologies provide potential avenues toward achieving breakthrough advances. Proposed efforts funded under this topic may encompass any specific discrete-parts or materials manufacturing or processing technology at any level resulting in a unit cost reduction.

Research and Development efforts selected under this topic shall demonstrate and involve a degree of risk where the technical feasibility of the proposed work has not been fully established. Further, proposed efforts must be judged to be at a Technology Readiness Level (TRL) 6 or less, but greater than TRL 3 to receive funding consideration.

Phase I - TRL 3. (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept)
Phase II - TRL 6. (System/Subsystem Model or Prototype Demonstration in a Relevant Environment)

DESCRIPTION: DLA R&D is looking to develop domestic capability to create a hybrid composite using boron fiber and PAN-based carbon fibers. Boron fibers have been used as reinforcements in structural military applications for two decades, including in F-15 tail fins, spar caps for the MQ-1C Gray Eagle and MQ-9 Reaper, rotor blade and tail structures for the SH-60 and telescopes for Electro-Optical Imaging Systems. Boron fibers have a high compressive strength, and carbon fibers have a high elastic modulus but low compressive strength. By combining the two into a single composite, it potentially creates composites with strengths from both materials. Designing, qualifying, and optimizing such domestic composites to meet military requirements would help lower reliance on foreign materials. R&D tasks include qualifying domestically manufactured or sourced fibers and resulting composites to meet military requirements, and optimize composite design for efficiency.

PHASE I: Not to exceed a duration of 12 months and cost of \$295,000.

Design, optimize, and qualify boron fiber/high modulus carbon fiber hybrid composites to be used for military applications. Qualification would include, but is not limited to, prototype quantities, data analysis and laboratory tests. Optimization would determine ideal ratios of carbon fibers to boron fibers in composite coupons that can meet desired property specifications used in military applications. Qualified designs would meet property specifications used in military applications.

PHASE II: Not to exceed a duration of 24 months and cost of \$1,800,000.

Further refine boron fiber/high modulus carbon fiber hybrid composites to fit defense needs. Identify specific composite products to be produced and qualified to meet defense product specifications. Begin commercialization and identify customers who would be using these products in production. Production of identified composites would be consistent at a greater scale.

PHASE III DUAL USE APPLICATIONS: Phase III – 24 months

Commercialization of composite materials identified in previous phases for use in military end-products. Fully qualified material should be ready for production at this point. Customers have been identified and are ready to purchase the final composite material. Qualified composite materials will have been tested and meet all required specifications for military use.

REFERENCES:

1. Boron Fiber, The Original High Performance Fiber – <https://www.compositesworld.com/articles/boron-fiber-the-original-high-performance-fiber>
2. Pavlov et al, Simulation of Boron and Carbon Fiber Composite Characteristics of the Elasticity, MATEC Web of Conferences 129 (2017) – https://www.matec-conferences.org/articles/mateconf_icmtmte2017_02009.pdf

KEYWORDS: Carbon fiber boron hybrid composite

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OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Integrated Sensing and Cyber

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: Battery Management System (BMS) cybersecurity verification technologies and equipment for ensuring Li-ion battery pack BMS cybersecurity during manufacture.

DESCRIPTION: Lithium-ion battery technologies, both low-voltage and high-voltage, are a critical technology to enhance energy storage to improve warfighting performance across the Army, Marines, and Navy as they provide increased silent watch time, significantly extended cycle life, and faster recharge time. These batteries are integrating into existing platforms (Stryker, Abrams, JLTV, HMMWV), the Next Generation Combat Vehicle (NGCV) Program, and other Weapon Systems. Lithium-ion battery packs for Defense Logistics Agency procurement, such as the Lithium-ion 6T (MIL-PRF-32565C) or aviation batteries (MIL-PRF-29595B), require a Battery Management System (BMS), which is a complex embedded hardware and software system that controls the charge & discharge of the pack to ensure safety and performance requirements are met. The BMS coordinates a number of inputs, such as cell voltages, pack voltage, current, and temperatures, and controls a number of outputs including the battery heaters and contactors. BMS safety protections include Overcharge, Over-discharge, Overcurrent, Short circuit, Over-temperature, and Low temperature charge protection.

Existing literature on cybersecurity for conventional commercially used BMS defines a number of possible methods of compromise, including hardware & software Trojans, i.e. malicious circuit & firmware modifications, and defines a number of possible resulting outcomes including loss of vehicle power, degraded performance/life of the battery (negatively affecting cost of ownership), and safety system violations resulting in battery abuse conditions or unexpected battery shutdowns (contactors opening). Therefore, there is a need to develop innovative technologies which allow for the verification of Li-ion battery pack BMS cybersecurity at the time of manufacture, including Cyber-physical aspects, in order to prevent damage as well as to protect and restore systems, to ensure its availability, integrity, and authenticity. Technologies developed shall consider distributed BMS architecture where there is a master-level controller and multiple module-level controllers. Technology developed shall also ensure that batteries remain in and transition to and from the proper battery states under the proper conditions, such as Dormant, Initialize, Operational, Standby, Maintenance, Protected, and Battle override. Technology developed should be generally applicable to all Lithium-ion BMSs, including low-voltage and high-voltage BMS. Additionally, technologies developed shall also consider equalization as well as dependency on the battery's current state, including its State of Charge (SOC) and State of Health (SOH). The BMS includes advanced algorithms to accurately compute SOC, SOH, Time Remaining, and Power Capability. Given the complex & often proprietary nature of these advanced algorithms, being able to assess reported values over a wide range of simulated conditions applied to the BMS is desired to allow for verifying the integrity of the data provided as this information is used in system-level controls. Therefore, there is a need for a fast, repeatable, & precise means of assessing the accuracy & integrity of BMS SOC & SOH algorithms through Hardware-in-the-Loop (HIL) Simulation, over the entire battery cycle life and against specific vehicle platform operational profiles. Moreover, after BMS firmware &

hardware changes, algorithms must be reassessed to ensure necessary accuracy & data integrity are still met. The proposed solution shall include a BMS Cybersecurity Verification System capable of testing the BMS in a manufacturing line prior to insertion into a battery pack using HIL simulation with embedded system hardware & software verification.

PHASE I: Direct To Phase II must provide a proof of concept.

The successful proposal must provide product specification/marketing sheets and information documenting the vendor's solution is based on existing Battery Management System (BMS). As well as Manufacturing Validation/Test Equipment and multi-channel BMS Hardware-in-the-Loop (HIL) Validation/Testing Equipment. Preferably with documented use in a manufacturing environment. This type of equipment is the necessary basis for this BMS cybersecurity testing capability, including cyber physical aspects.

PHASE II: Not to exceed a duration of 24 months and cost of \$1,000,000

Develop and integrate prototype hardware and software solutions into manufacturing equipment using existing designs and technologies. The BMS Cybersecurity Verification System shall be capable of integration into a high-volume 6T production process of at least 500 packs/month. The BMS Cybersecurity Verification System shall address both hardware- and software-based methods of compromise and will verify performance characteristics, range, resolution, and error of BMS measured parameters. The Verification System shall also be capable of being updated to address emerging methods of compromise. Cybersecurity solutions shall also consider the Cybersecurity Test and Evaluation Process (see references), Defense-in-Depth information assurance, as well as FIPS authentication, digital signature, & standards and include the ability to detect malware and test code validity.

Deliverables shall include electrical drawings and technical specifications; software; interface documents; M&S and test results; one BMS Cybersecurity Verification System prototype capable of meeting the high-volume manufacturing requirements; and one scaled-down version of the BMS Cybersecurity Verification System capable of testing up to one BMS at a time in a laboratory test environment. The BMS Cybersecurity Verification System shall be designed to interface with at least one BMS design from a Li-ion 6T pack product. Integration of the technology developed and demonstration on an existing Li-ion 6T manufacturing process and production line capable of at least 200 packs/month is expected in this phase. Testing of the BMS Cybersecurity Verification System design shall include mock manufacturing runs using small production batches of Li-ion 6T BMSs prior to installation into Li-ion 6T batteries. The BMS Cybersecurity Verification System shall be capable of integration into a high-volume Li-ion 6T manufacturing process and production line. A bill of materials and volume part costs for the Phase II designs should also be developed. This phase also needs to address the challenges identified in the above description and meet the requirements of Phase I for the underlying technology.

PHASE III DUAL USE APPLICATIONS: This phase will begin installation and integration of the solutions developed in Phase II into military Li-ion 6T and commercial Li-ion pack production processes and into low- to high-volume manufacturing lines as well as into Li-ion 6T and commercial Li-ion battery chargers and BMS. The scalability of the technology to high-volume production of up to 2000 packs/month should also be demonstrated based upon throughput and rate capabilities of the BMS Cybersecurity Verification System. Compatibility and integration with other military Lithium-ion format batteries is expected.

REFERENCES:

1. CHEAH, Madeline, and Richard STOCKER. "Cybersecurity of Battery Management Systems."
2. Kumbhar, Sourabh, et al. "Cybersecurity for battery management systems in cyber-physical environments." 2018 IEEE Transportation Electrification Conference and Expo (ITEC). IEEE, 2018.

3. Khalid, Asadullah, et al. "Facts approach to address cybersecurity issues in electric vehicle battery systems." 2019 IEEE Technology & Engineering Management Conference (TEMSCON). IEEE, 2019.
4. Kim, Taesic, et al. "An overview of cyber-physical security of battery management systems and adoption of blockchain technology." IEEE Journal of Emerging and Selected Topics in Power Electronics (2020).
5. Rahman, Syed, et al. "A Study of EV BMS Cyber Security Based on Neural Network SOC Prediction." 2018 IEEE/PES Transmission and Distribution Conference and Exposition (T&D). IEEE, 2018.
6. Dey, Satadru, and Munmun Khanra. "Cybersecurity of Plug-in Electric Vehicles: Cyber Attack Detection During Charging." IEEE Transactions on Industrial Electronics (2020).
7. Sripad, Shashank, et al. "Vulnerabilities of electric vehicle battery packs to cyberattacks." arXiv preprint arXiv:1711.04822 (2017).
8. Ebner, Arno, Fiorentino Valerio Conte, and Franz Pirker. "Rapid validation of battery management system with a dymola hardware-in-the-loop simulation energy storage test bench." World Electric Vehicle Journal 1.1 (2007): 205-207.
9. Zhang, Yongzhi, et al. "Lithium-ion battery pack state of charge and state of energy estimation algorithms using a hardware-in-the-loop validation." IEEE Transactions on Power Electronics 32.6 (2016): 4421-4431.
10. Barreras, Jorge Varela, et al. "An advanced HIL simulation battery model for battery management system testing." IEEE Transactions on Industry Applications 52.6 (2016): 5086-5099.
11. Dai, Haifeng, et al. "Cell-BMS validation with a hardware-in-the-loop simulation of lithium-ion battery cells for electric vehicles." International Journal of Electrical Power & Energy Systems 52 (2013): 174-184.
12. "Cybersecurity Test and Evaluation Process", www.dau.edu, June 2018.
13. "Federal Information Processing Standards (FIPS)", <https://www.nist.gov>.
14. "Performance Specification: Battery, Rechargeable, Sealed, 6T Lithium-ion", MIL-PRF-32565C, <https://assist.dla.mil>.
15. "Performance Specification: Batteries, Lithium, Rechargeable, Aircraft" MIL-PRF-29595B, <https://assist.dla.mil>.

KEYWORDS: Cybersecurity, manufacturing, Battery Management Systems, BMS, Lithium-ion, 6T, batteries, electric vehicle, firmware

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DLA231-D07 TITLE: Innovation in High Temperature Resistant Thermal Protection System (TPS) Materials, Manufacturing, and Resilient Supply Chains for Hypersonics TPS and Related Defense Applications

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Hypersonics

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: High temperature resistant Thermal Protection System (TPS) materials and structures, including their means of supply, are critical to the success of new hypersonic weapons and related U.S. defense modernization priorities. Key to their success is increased domestic production capacity, affordability, and supply chain resiliency. Hypersonics TPS applications of particular interest include boost glide vehicle acelage, leading edge, nosetip, and control surfaces as well as similar materials and supply chains of importance to the production rocket motors and other re-entry systems. Supply chain resiliency concerns include foreign reliance, single point of failure supply, obsolescence, long-lead times, and low manufacturing yields).

The Defense Logistics Agency (DLA) seeks to provide responsive, best value supplies of related materials consistently to our Department of Defense (DoD) customers and other DoD stakeholders. DLA continually investigates diverse technologies for new or improved materials, more efficient means of their production, and more competitive domestic supply chains which would lead to the higher levels of innovation in current and future weapon systems combined with benefits to other commercial and government technology applications.

Advanced technology demonstrations for increasing production capacity, affordability and supply chain resiliency for high temperature resistant TPS and related materials and processing are of high interest to DoD. These areas of materials and manufacturing technologies provide potential opportunities toward achieving breakthrough advances for national defense. Proposed efforts funded under this topic may encompass diverse TPS materials and processing at any level that will result in increasing production capacity, affordability, and supply chain resiliency.

Research and Development (R&D) efforts selected under this topic shall demonstrate and involve a degree of risk where the technical feasibility of the proposed work has not been fully established. Further, proposed efforts must be judged to be at a Technology and/or Manufacturing Readiness Level (TRL/MRL) 6 or less, but greater than TRL/MRL 3 to receive funding consideration.
TRL 3. (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept)
TRL 6. (System/Subsystem Model or Prototype Demonstration in a Relevant Environment)

DESCRIPTION: DLA R&D is looking for domestic capabilities and capacity that demonstrates new or improved high temperature resistant TPS materials, processing, and supply chains that increase domestic defense industrial base production capacity, affordability, and supply chain resiliency for hypersonic systems and other defense programs that depend on similar materials (e.g., other conventional weapons, strategic programs, and space systems).

R&D tasks include identifying, developing, and demonstrating new and/or improved high temperature resistant TPS materials and production processes that support this topic area's objectives for increasing production capacity, affordability, and supply chain resiliency. Related areas of interest include materials, processing and fabrication of TPS components and structures as well as their various constituent materials and processes (e.g., fiber reinforcements and their precursors, woven textiles and complex preforms, matrix precursors and prepreg, rapid densification, heat treating, additive manufacturing, production automation of weaving and prepreg application, and oxidation resistant coatings).

PHASE I: Direct To Phase II must provide a proof of concept.

The successful proposal will submit documentation demonstrating the project proposal is at the (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept level (TRL 3). Develop applicable and feasible process demonstration for the approach described, and demonstrate a degree of commercial viability.

PHASE II: Not to exceed a duration of 24 months and cost of \$1,800,000.

The expectation is to develop a solution to the System/Subsystem Model or Prototype Demonstration in a Relevant Environment level, (TRL 6).

Validate the feasibility of the innovative process by demonstrating its use in the production, testing, and integration of items, and/or materials and processes, for DLA and key DoD stakeholders. Validation would include, but is not be limited to, prototype quantities, data analysis, laboratory tests, system simulations, operation in test-beds, or operation in a demonstration system. A partnership with a current or potential supplier to DoD or other suitable partner is highly desirable. Identify commercial benefit or application opportunities of the innovation. Innovative processes should be developed with the intent to readily transition to production in support of DoD and its supply chains

PHASE III DUAL USE APPLICATIONS: TPS technology transition via successful demonstration of a new material, processing or fabrication technology. This demonstration should show near-term TPS application to one or more DoD systems, subsystems, components, or their related material supply chains. This demonstration should also verify the potential for enhancement of increased TPS production capacity, affordability, and supply chain resiliency.

Private Sector Commercial Potential: TPS materials and manufacturing improvements, including development of domestic manufacturing capabilities, increased capacity, and affordability, have a direct applicability to diverse defense system technologies. Material manufacturing technologies, processes, and systems have wide applicability to the defense industry including air, ground, sea, space, and related defense technologies. Competitive material manufacturing improvements should have leverage into private sector industries as well as civilian sector relevance. Advancements in high temperature resistant materials, processing, and supply chain resiliency will benefit the defense industrial base and key weapon system development, production, and sustainability, as well as afford spin-off opportunities to civilian and other commercial sectors that depend on associated technologies and their innovations.

REFERENCES:

1. Affordable Hypersonic Missiles for Long-Range Precision Strike
<https://www.jhuapl.edu/content/techdigest/pdf/V20-N03/20-03-White.pdf>
2. Increasing Production Is Important for Hypersonics, Defense Official Says:
<https://www.defense.gov/News/News-Stories/Article/Article/2927403/increasing-production-is-important-for-hypersonics-defense-official-says/>

KEYWORDS: Hypersonics, Thermal Protection Systems (TPS), aeroshell, leading edge, control surfaces, nose tips, high temperature resistant materials (e.g., carbon/carbon, ceramics, ablative phenolics,

composites, metals and alloys); materials and processing (e.g., fiber reinforcement, matrix precursors, woven textiles and preforms, prepreg, rapid densification, heat treating, additive manufacturing, manufacturing automation, and oxidation resistant coatings); and structures fabrication.

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DLA231-D08 TITLE: Tungsten 3% Rhenium wire manufacturing

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Advanced Materials

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: Develop tungsten 3% rhenium wire manufacturing capability using existing feedstock owned by DLA.

DESCRIPTION: The Defense Logistics Agency (DLA) is looking for a domestic capability to manufacture tungsten 3% rhenium wire. Global Tungsten and Powders (GTP), a subsidiary of the Plansee Group, discontinued the manufacture of its tungsten and rhenium wire products in February 2013. Specifically, tungsten 3% rhenium wire is used in multiple vacuum electronic devices (VEDs) that support Department of Defense requirements. Traveling wave tubes (TWTs) make up the largest population of VEDs that use tungsten 3% rhenium wire. TWTs are used as RF amplifiers in radar, electronic warfare, communications, and other military systems. A Title III program was initiated in late 2013 with the goal of establishing a new US source to replace GTP as a tungsten 3% rhenium wire supplier. As of the end of fiscal year 2021, this program has been unsuccessful achieving the end goal of creating split free tungsten rhenium wire in the sizes required to meet all DoD applications. During the time the program was in operation GTP manufactured tungsten rhenium wire ingots to be used as feedstock for the tungsten rhenium wire manufacturing process. The Defense Logistics Agency owns a significant amount of this feedstock. DLA is looking to execute an SBIR program to attempt to analyze a way forward in supporting the manufacturing of tungsten 3% rhenium wire in the United States.

PHASE I: Direct To Phase II must provide a proof of concept.

The successful proposal will submit documentation demonstrating the project proposal is at the (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept level (TRL 3). Develop applicable and feasible process demonstration for the approach described, and demonstrate a degree of commercial viability.

PHASE II: Not to exceed a duration of 24 months and cost of \$1,800,000.

Based on the previously work done by the industry, the research and development goals of PHASE II will demonstrate commercial viability by successfully producing multiple diameters of tungsten 3% rhenium wire. Tasks to be accomplished include process design, development of ingot processing and wire drawing schedules to manage the manufacturing process and meet the wire specifications provided by the VED industrial base. These processes will be used to produce the target wire sizes. Sufficient validation trials will be conducted to support analyses of manufacturing at commercial scale, including cost, cycle time and commercial benefit of the innovation. Remaining technical and manufacturing gaps will be identified. Manufactured wire shall be used for eddy current testing. Innovative processes should be developed with the intent to readily transition to production in support of DoD needs. A partnership with a current or potential DoD supplier, OEM, or other suitable partner is highly desirable.

PHASE III DUAL USE APPLICATIONS: At this time, no specific funding is associated with PHASE III. Progress documented from a direct PHASE II should result in a vendor's qualification as an approved

source for tungsten 3% rhenium wire manufacturing for civil or commercial applications, enabling participation in future procurements.

COMMERCIALIZATION: The vendor will pursue commercialization of the tungsten 3% rhenium wire developed in prior phases, as well as potential commercial sales of any parts or other items.

REFERENCES:

1. <https://www.dodmantech.com/>
2. 2015 Strategic and Critical Materials Report on Stockpile Requirements
3. National Defense Authorization Act For Fiscal Year 2014

KEYWORDS: tungsten 3% rhenium wire

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