Procurement & Property Management Division

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Managed by Brookhaven Science Associates
for the U.S. Department of Energy

www.bnl.gov

TO: Interested Offerors

SUBJECT: REQUEST FOR PROPOSAL (RFP) NO. 457842; *LONGITUDINALLY SEGMENTED FORWARD HADRONIC CALORIMETER (LFHCAL) STEEL ABSORBER MODULES*

Brookhaven Science Associates, LLC (BSA), under a Prime Contract for the operation of Brookhaven National Laboratory (BNL) with the U.S. Department of Energy (DOE), herewith solicits your proposal for the manufacturing and testing of the longitudinally segmented forward hadronic calorimeter (LFHCAL) steel absorber modules.

1.0 INTRODUCTION

Brookhaven Science Associates, LLC (BSA), under a Prime Contract for the operation of Brookhaven National Laboratory (BNL) with the U.S. Department of Energy (DOE), herewith solicits your proposal for 850 8M modules (including five (5) 8M modules for pre-production) and an optional 216 8M modules and 72 4M modules for the Absorber Structure for the Longitudinally segmented Forward Hadronic Calorimeter (LFHCAL) of the Electron-Ion Collider (EIC) General Purpose detector.

The EIC Project will design, build, and install the accelerator hardware for a new electron storage ring, an electron injector, and modifications to the hadron ring required to produce an electron-ion collider and its infrastructure. It will include one interaction region, with an allowance for a second, and one detector. The facility is designed to meet requirements to ensure high reliability and availability for the user program.

The detector in IP-6 will provide an almost 4π coverage in tracking, particle identification, electromagnetic and hadronic calorimetry. The hadronic calorimeter in the forward (hadron-going) endcap is of a particular importance, to measure highly energetic particle jets with a sufficient energy resolution, isolate the jet neutral components (neutrons and KL particles), complement tracking and electromagnetic calorimetry in particle flow algorithms, and be an integral part of the detector solenoid flux return path.

The LFHCAL is an Iron-Scintillator (Fe/Sc) sampling sandwich calorimeter, where 16 mm thick steel plates are alternated with 4 mm thick scintillator plates (for a total of 60 layers each) with a depth of around 1.32 meters. All absorber layers will be made of a magnetic carbon steel because they are part of the EIC detector solenoid magnetic flux return. The full LFHCAL is comprised of 1138 modules; 1066 are of the 8M layout and 72 are of the 4M layout. The 8M modules have a transverse size of about 200 mm (width) by 100 mm (height) and the 4M modules are one half of an 8M module in transverse size (100 mm x 100 mm). In addition, there are two insert modules (insert left and insert right) which have a combined transverse size of 600 mm x 600 mm with a conical opening to allow for the beampipe to pass through. The steel pieces are electron-beam welded to one module and the full weldment is nickel plated to prevent corrosion.

2.0 SCOPE OF WORK (SOW)

The Offeror shall furnish all labor, services, materials and equipment in accordance with the draft contract, Enclosure 1, including the Statement of Work and referenced Specifications attached thereto.

3.0 GENERAL INFORMATION AND INSTRUCTIONS

3.1 Schedule

BSA has established the following schedule for achieving evaluation, selection, approval, and award.

MILESTONE	DATE
Issuance of the RFP	7/16/2026
Questions Due	7/30/2026
Proposal due	8/16/2026
Award (estimated)	9/30/2026

3.1.1 Proposals shall remain firm for 120 days after due date to allow time for review, selection, and award in case of delays.

3.2 Form of Proposal and Manner of Submission

3.2.1 A complete written proposal must be received by BSA no later than the due date noted herein. Award is estimated to be made on or about the date as noted herein. Proposals, including their withdrawal or modification, received after the closing date shall be considered late. Except as otherwise specifically provided in this solicitation, such responses may be considered for award if the PPM Manager or designee determines that the award is in BSA's best interest. Proposals will be opened in private.

3.2.2 The Offeror will be required to submit a technical proposal (Volume 1) and a Business Proposal (Volume 2), including Enclosure (3), Proposal Pricing sheet. One copy of the technical proposal and one copy of the price proposal are to be submitted electronically via email. The technical and Business proposals shall be submitted as separate volumes. Both volumes of the proposal are to be submitted in English only. The proposal and all supporting documentation which the Offeror believes will fully describe the proposed capability should be submitted and clearly identified. The email subject shall read BSA RFP 457842 and addressed to:

Mark Bryan
Contracts Specialist
Brookhaven National Laboratory
Telephone: 631-344-5660
Email: mbryan@bnl.gov

3.2.3 Proposals must be complete in all respects. Failure to respond to or follow the instructions regarding the organization, content, layout, or format of the proposal may result in the Offeror's proposal being deemed non-responsive. Proposals that are incomplete or partial in any material respect affecting the responsiveness of the proposal may not be considered. BSA reserves the right to postpone the date of submission, and to amend this request as it considers necessary. Proposals may be withdrawn by email request, at the address noted above, received prior to the time fixed for receipt of the proposal. Modifications to proposals previously submitted must be resubmitted via email in accordance with 3.2.2 above and

received prior to the time fixed for receipt.

3.3 Explanation of Proposal Documents

Should an Offeror find any discrepancies in, or omissions from, any of the documents, or be in doubt as to the meaning of any document, it should immediately advise BSA by email to mbryan@bnl.gov, no later than five business days prior to the proposal due date in order to allow time for responses to be received by all prospective Offerors. Oral explanations or instructions given before the award of a contract are discouraged and will not be binding. Any information given to a prospective Offeror concerning this solicitation will be furnished to all other prospective Offerors as an amendment to the solicitation if that information is deemed necessary by BSA to submit proposals or if the lack of it would be prejudicial to other prospective Offerors.

4.0 CONTENTS OF PROPOSAL

4.1 General Information

The proposal shall be concise and clear in every instance and restricted to relevant information only. The response shall clearly and fully demonstrate the Offeror's capability, knowledge, and experience with regard to the technical requirements described herein. Stating that the Offeror understands and will comply with the technical requirements is not sufficient, nor is a simple affirmative restatement of the requirements. Similarly, phrases such as "standard procedures will be employed," or "well-known techniques will be used," without explanatory detail will be considered inadequate.

4.1.1 Disclosure of Proposals

Proposals provided to BSA in response to this RFP will not be disclosed by BSA except to appropriate BSA personnel and BSA contractor consultants involved in reviewing responses to this RFP, and/or U.S. Government personnel.

Offerors that include data in their proposals that they do not want disclosed to the public by BSA, or that they are requesting be used solely for evaluation and review purposes shall include the following legends without modification on their proposals. Note that additional restrictive markings may make the proposal non-responsive.

(1) Mark the title page with the following legend:
"This proposal includes data that shall not be disclosed except to appropriate BSA personnel, its subcontractor consultants involved in reviewing responses to the RFP, and/or U.S. Government personnel, and shall not be disclosed, in whole or in part, for any purpose other than to evaluate or review this proposal for procurement-related purposes. If, however, a contract is awarded to this Offeror as a result of/or in connection with the submission of this data, BSA shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit BSA's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]";

(2) Mark each sheet of data it wishes to restrict with the following legend:
"Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal."

(3) Mark any data subject to disclosure restrictions in yellow highlighting.

Failure to follow each of the three (3) steps provided above may result in disclosure of information contained in the response to this RFP.

Notice is hereby provided that BSA may disclose offeror proposals to U.S. Government personnel for review. In such case, BSA will furnish the proposal to the Government with any confidentiality legends included by the Offeror, but BSA is not responsible for any subsequent disclosure by the U.S. Government.

4.2 Technical Proposal – Volume 1

Provide an e-mail copy of the technical portion of your proposal and any amendments thereto. Do not include the Business Proposal in this volume. Volume 1 shall contain technical information only and shall be legible, clear, coherent, and individually tabbed (by section) in accordance with the sections noted below. Each proposal will be evaluated and point-scored in accordance with the associated categories and their points as noted herein. Offerors must provide specific detailed descriptions and capabilities for the main and sub-categories which support how the Offeror plans to perform the SOW.

4.2.1 Tab 1 – General Overall Summary

The Offeror shall discuss, in general terms, how it plans to accomplish the requirements of the SOW. This submission will not be evaluated or scored as part of the evaluation criteria.

Note: Offerors who do not have the capability or experience to accomplish any facet of the SOW must mention it here, briefly describing a course of action. Detail is to be provided in the appropriate section of the proposal.

4.2.2 Tab 2 – Compliance with Specifications and Statement of Work (0 points)

The Offeror shall provide a list for each section of the Specifications and Statement of Work that clearly shows the offerors acceptance.

A. The Offeror shall list each Specification section by number and explain how they will comply with all requirements.

B. The Offeror shall list each SOW section by number and explain how they will comply with all requirements. Detailed explanation of how compliance is to be achieved is required; a list of sections indicating compliance only is insufficient.

Any exceptions shall be clearly documented, and the Offeror shall provide a detailed explanation why the exception is being taken and what alternative recommendations are. While the compliance in this tab will not be point-scored, they will be used to evaluate the bidders understanding and compliance with the technical requirements and can influence the scoring on the following tabs.

4.2.3 Tab 3 – Design and Technical Capabilities (50 points)

A. **Design overview:** Provide a brief description of the manufacturing process, including the steel production, machining of all parts, assembly setup of steel plates and electron-welding, the nickel-plating process, and shipping.

B. **Material Composition:** Describe how the material composition and magnetic permeability will be tested for conformance with Specifications for each AISI 1020 carbon steel heat.

C. **Dimensions and tolerances of parts:** Describe how requirements for tolerances on all machined parts will be met (according to Technical Drawings).

D. **Assembly setup and electron-welding:** Describe how the assembly setup and electron-welding will meet dimensions and tolerances for the assembled modules.

E. **Nickel-plating and shipping:** Describe how the nickel-plating will meet the required thickness and how the handling and shipping will avoid steel corrosion prior to nickel-plating.

Evaluation method for Tab 3

The Offeror's proposal will be evaluated on the completeness and adequacy of the overall conceptual design of the system and components with respect to compliance with the Specifications, technical soundness and feasibility of the design.

4.2.4 Tab 4 – Prior experience and past performance producing comparable absorber structures (25 points)

A. Experience and past performance with comparable products:

- Identify how many years you have been manufacturing, with an emphasis on prior experience with comparable steel production and assemblies. In addition, indicate the number of years of experience of your proposed key subcontractors and indicate your experience (years, number, and complexity of projects) working with all subcontractors you intend to include in your proposal.
- Provide a list of at least 3 projects of similar quality and quantity you manufactured and delivered in the past ten (10) years, including the contact information of the owners of these orders. For these projects please also provide:
  - A comparison of specified and achieved parameters (e.g. dimensions, tolerances, electron-welding, etc.).
  - A comparison of specified and achieved scheduled milestones and delivery dates.
  - Identify which subcontractor(s) supplied which key component(s) on these prior projects and which of these subcontractors are included in the current proposal.
- Provide a minimum of three customer references of comparable (in quality and quantity) orders for steel assemblies, including the name of the organization, contacts, phone numbers, and e-mail addresses.

B. Key project personnel: Supply the resumes/vitae of all key project personnel such as the Project Manager and Lead Engineer for all major components. This shall also include key personnel of subcontractors.

- The vitae should focus on pertinent experience in the design and manufacturing of assemblies with electron-welding. In particular, for all key personnel, their engineering tools and their years of experience utilizing them must be identified. Demonstrate the organizational capability to supplement key personnel skill sets if required by the project.

Evaluation method for Tab 4

A. The Offeror's proposal will be evaluated as to how recent, frequent, and how successful the past production has been, including (but not limited to) technical and schedule performance.

B. The Offeror's proposal will be evaluated as to the range and depth of the key project personnel, resources available, their experience and how it relates to this project.

4.2.5 Tab 5 – Manufacturing Capabilities (including key subcontractors) (15 points)

A. Program management, manufacturing, and installation plan

- Describe how you plan to manage this project. Expand on your organizational chart, lines of responsibility, work breakdown structure, scheduling, and meetings.
- Provide a manufacturing plan that identifies the type of resources, including a list of key subcontractors, required to support the project. This plan should include, but not be limited to, a project milestone schedule consistent with the schedule in the SOW. Discuss how you will achieve and support the design and manufacturing plan submitted and discuss schedule risks and opportunities to improve the schedule. Identify long lead-time items and describe their makeup. Provide a basis for your estimate of schedule contingency.

B. Production facility description

- Describe your available production facilities and capabilities, including but not limited to:
    - **a.** Clear identification of all production facilities, including sub-contractors. Provide information about how and where manufacturing will take place, and a description (with photos) of the manufacturing facility with applicable equipment.

Evaluation method for Tab 5

A. The Offeror's organization and plan will be evaluated as to whether it can realistically meet the schedule, and the production can be carried out effectively. The manufacturing method will be evaluated against techniques known to be successful.

B. The Offeror's facilities will be evaluated as to whether they support the proposed production plan.

4.2.6 Tab 6 – Quality Assurance (10 points)

The Offeror shall provide objective evidence that a quality assurance program has been developed and implemented within their organization. This includes the submittal of an approved QA program/manual and a list of implementing procedures which describes the QA program and a current organizational chart showing the link between Quality personnel and management.

A. Tab (6A) – Current quality system

Describe the current quality system, provide a copy of the latest quality manual, and:

- Identify if it is ISO 9001 certified/registered and provide a copy of the certificate. In addition, provide the ISO registrar's website address, along

with the name, title, telephone number and email address of a person to contact.

- If not ISO 9001 certified/ registered but the company meets the requirements of ISO 9001, explain in detail how.
- If not ISO 9001 certified or compliant, explain in detail the quality system in place.

B. Tab (6B) – Management's involvement in QA program
Describe management's involvement in the Quality Assurance Program, including:

- Management review of audit results, corrective and preventative action data, and analysis of failure modes.
- Organizational chart showing Quality Assurance group and their link to management.

C. Tab (6C) – Manufacturing system/procedures
Describe the procedure for releasing work to the shop floor and provide a completed shop traveler that was used in a recent, similar project.

D. Tab (6D) – Supplier quality assurance
Describe the Quality Assurance group's role in the procurement process. Explain how applicable customer QA requirements are flowed down to your suppliers and sub-tier suppliers.

E. Tab (6E) – Configuration control
Describe the configuration control system, including these major elements:

- Master file, where all released drawings are stored.
- Change control procedure for approval, incorporation and release of design changes.
- System for creation and control of parts lists and bills of material.
- Process for controlling shop floor travelers, and manufacturing and test procedures.

F. Tab (6F) – Calibration system
Describe the calibration system for measuring and test equipment, including: equipment identification, calibration procedures, traceability of standards to national standards, calibration intervals, and recall system.

G. Tab 6 (G) – Procedures for controlling nonconforming material
Describe the procedure for controlling nonconforming material, including: identification/ tagging, segregation from the production area, documenting and reporting, Material Review Board (MRB) process, inspection and test after rework/repair, and corrective/preventive action.

Evaluation method for Tab 6
The Offeror will be evaluated as to how adequate, well-documented, and well-implemented the current quality procedures and processes are, and how they meet the quality requirements defined in the SOW.

4.3 Business Proposal - Volume 2

Provide one (1) e-mail copy of the business portion of your proposal, including price, and any amendments thereto. Do not include the Technical Proposal in this volume. Volume 2 should be prepared simply and economically, be legible, clear, coherent, and individually tabbed in accordance with the sections noted below.

4.3.1 Tab A: Corporate Profile and Financial Capability

Provide a corporate profile of your organization. Include your three (3) most recent audited financial statements/yearly reports. Such reports for any parent organization shall also be included. If a joint venture is proposed, the above is required of all parties.

Also, to support DOE reporting requirements, BSA requires all its vendors/contractors to be registered in the U. S. Government supplier database entitled System for Award Management (SAM). It is suggested that registration be performed online at www.sam.gov prior to the submission date of this RFP. If you, in fact, have done so, provide a definitive statement herein that your firm has registered in the U. S. Government supplier database entitled System for Award Management (SAM) at www.sam.gov.

4.3.2 Tab B: Draft Contract with Terms and Conditions

The Draft Contract with Terms and Conditions is provided in Enclosure (1). The Offeror shall clearly note its acceptance in full. The successful Offeror will be required to execute a Contract in accordance with the provisions of the Draft Contract. Any exceptions shall be noted accordingly, however, the Offeror shall not construe noted exceptions, if any, to be accepted by BSA.

4.3.3 Tab C: Price / Milestone Schedule

The Offeror shall provide pricing and milestone information in strict accordance with this RFP. Any exceptions should be noted accordingly.

The Offeror shall provide separate pricing on AMS-Form-043 Pricing Sheet.

Note: Only pricing in U.S. dollars will be accepted.

4.3.4 Tab D: Delivery

The Offeror shall clearly note its acceptance in full of the proposed delivery schedule as set forth in the Enclosure 1, Draft Contract. Any exceptions shall be noted accordingly, however, the Offeror shall not construe noted exceptions, if any, to be accepted by BSA.

4.3.5 Tab E: Payment Terms and Freight (if applicable)

Freight terms shall be *(for North American shipments insert:)* FOB Oak Ridge National Laboratory, Oak Ridge, Tennessee, Freight Prepaid, *(for foreign shipments insert:)* "DAP" Delivered At Place, Oak Ridge National Laboratory, Oak Ridge, Tennessee, Net 10 from acceptance, in accordance with an agreed-to milestone schedule.

[When applicable]
(For foreign procurements the prospective Offeror will be responsible for notifying Interfreight Harmonized Logistics Inc., located at 221 Sheridan Blvd, Inwood, New York. For foreign shipments that will be transported via ocean freight the 10-2 REQUIREMENTS Form located at

https://www.bnl.gov/shipping/files/pdf/10-2-security-filing-bnl-interfreight.pdf must be completed by the Offeror 72 hours before departure of the vessel. The form can either be faxed to Interfreight Harmonized Logistics, Inc. at 516-371-6880 or emailed to tom@interfreight.net. A copy should also be emailed to warehouseoperations@BNL.gov Once the form is submitted to customs an acceptance number will be given. No freight will be loaded on a vessel without this acceptance number.)

The Offeror shall review and clearly note its acceptance in full. Any exceptions shall be noted accordingly

4.3.6 Tab F: Offeror Representations and Certifications

The Offeror shall complete and return the following forms if their entity is NOT registered in SAM.gov for awards:

AMS Form 050, Annual Representations and Certifications, Rev1.0 – (Enclosure 2)

4.3.7 Tab G: Government Property

Government Property Currently Possessed
The Offeror shall provide a description of any contemplated use of Government property that is currently in the possession of the Offeror. Provide the name and point of contact of the cognizant Government Contracting Officer. Any proposed use of Government-owned equipment/facilities will be evaluated to negate any competitive advantage. If there is no Government property, the Offeror shall so note.

5.0 PROCUREMENT TYPE, EVALUATION METHODOLOGY AND CRITERIA

5.1 Type of Procurement

This is a "Best Value" procurement. BSA intends to award a contract resulting from this solicitation to the responsive, responsible Offeror whose proposal represents the best value after evaluation in accordance with the factors, subfactors, and price as noted in this solicitation. The utilization of this procedure is expected to provide the greatest overall benefit to BSA. Best Value employs a trade-off process that permits award to other than the lowest priced offeror or to the highest technically rated offeror. The trade-off process associated with Best Value involves a comparative weighing of the evaluation factors and sub-factors identified in the RFP. Specifically, the trade-off process involves selecting the most advantageous offer based on an integrated assessment of both technical factors and price. Price will not be rated or scored but will be a significant factor in the Best Value analysis.

An award may be made without discussion or negotiation of proposals received; therefore, proposals should be submitted on the most favorable terms which can be submitted in response to this request. BSA reserves the right to conduct pre-selection site visits to assess the Offerors' capabilities, to hold fact-finding discussions, and/or to negotiate with one, or all of the Offerors, on any aspect of this solicitation prior to making an award; or to make an award without further discussion or negotiation at any time during this process. BSA may request such supplementary information as determined sufficient, in the opinion of BSA, to assure that an Offeror's technical competence, business and technical organization, facilities, and financial resources are adequate to successfully perform the contemplated work. BSA reserves the right to reject any or all proposals, or to accept any proposal. BSA reserves the right to award all, none,

any part or combination of the work solicited, and in any event will not be responsible for the Offeror's cost of proposal preparation or any other cost incurred in connection with this RFP.

5.2 Methodology

It is the practice of BSA, in making an overall evaluation of proposals received, to establish a Source Selection Board (SSB) that will evaluate the proposals so as to give due consideration to performance and price. The final evaluation assessment is derived from the composite reviews. As explained in 5.1 above, this procedure is intended to result in selection of the most advantageous proposal, considering price in determining the Best Value trade-off.

5.2.1 Proposals will be initially evaluated on responsiveness to the RFP requirements in all aspects. The technical proposals will be point-scored by technical members of the SSB in accordance with the criteria set forth in Section 5.3 herein.

5.2.2 If a selection cannot be made and discussions are required, the SSB will then recommend to the Source Selection Official (SSO) which proposals are within the competitive range based on results of scoring and analysis of the technical evaluation criteria, along with the proposed prices. The competitive range determination will then be made by the SSO. Those proposals with a reasonable chance of being selected for award, including those that are acceptable as submitted or that could reasonably be made so after clarifications and correction of deficiencies, will be considered in the "competitive" range. Fact-finding discussions and/or site visits may be held with those Offerors in the competitive range. Best and final offers may be solicited at the conclusion of fact finding.

The tradeoff process permits tradeoffs among price and non-price factors (i.e. Technical Factors) and allows BSA to accept other than the lowest priced proposal, or other than the highest technically rated offeror. Under a tradeoff process, the perceived technical benefits of the higher priced proposal shall merit the additional cost in order to receive award. In conducting the tradeoff analysis for this procurement, the Technical Factors, when combined, are more important than price. Offerors are advised, however, that as the range of the overall Technical scores among Offerors narrows, the more important price will become in making the award decision. An independent estimate, historical pricing data, and competitive pricing will be used in the consideration and analysis of price.

5.3 Technical Evaluation Criteria

Each proposal will be evaluated based on how well it meets or exceeds the requirements of this RFP. The proposals will be evaluated in accordance with the following evaluation criteria, listed in order of importance, and more fully explained in Section 4 above:

1. <u>Design and Technical Capabilities</u>
2. <u>Prior experience and past performance producing comparable absorber structures</u>
3. <u>Manufacturing Capabilities (including key subcontractors)</u>
4. <u>Quality Assurance</u>

Each Offeror's strengths, weaknesses, and deficiencies will be addressed accordingly in each resultant technical evaluation.

To be considered technically responsive to the RFP, each Offeror must score a total of 60 percent of the points of the proposal overall. Any proposal that fails to achieve this parameter shall be deemed technically non-responsive and will be excluded from further evaluation.

5.4 Final Selection Process

After completion of discussions, if necessary, with Offerors in the final competitive range and receipt of Best and Final offers, if required, the SSB will recommend to the SSO which Offeror the SSB has determined to represent the "Best Value" to BSA based on the evaluation of technical capabilities of the Offerors and the prices being offered. The SSO will subsequently use all Source Evaluation analysis and evaluations as guidelines in making the final selection.

5.5 Basis of Award

Award of the resulting contract(s) will be based on the SSO's evaluation of the SSB's recommendation. The SSO will select the Offeror or Offerors whose proposal represents the overall Best Value to BSA/the best combination of technical evaluation results and price.

6.0 PERFORMANCE AND FINANCIAL RESPONSIBILITY

It is understood that any contract resulting from this request shall be on the basis that the Offeror who undertakes the work represents and guarantees that it possesses the necessary skills, means of performance, and financial resources to complete the effort. Inability to perform, including loss of key personnel or facilities, will not excuse default.

7.0 CLOSURE

BSA believes the information contained herein is sufficient to permit you to prepare a complete and definitive proposal; however, should there be any questions, please contact the undersigned. All questions must be submitted in writing via e-mail; replies to questions will be provided in writing and, if considered to be of general interest, will be transmitted to all other offerors.
If for any reason you are unable to submit a proposal, kindly reply in writing and return this letter with all the attachments.

Enclosure 1 – BSA Draft Contract
Enclosure 2 – AMS Form 050, Annual Representations and Certifications
Enclosure 3 – AMS Form 043, Proposal Pricing Sheet

Sincerely,

Mark Bryan
mbryan@bnl.gov
631-344-5660