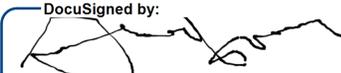


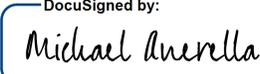


Superconducting Magnet Division
BROOKHAVEN SCIENCE ASSOCIATES
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Statement of Work

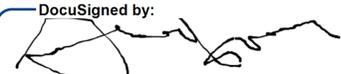
Acquisition of EIC Superconducting Wire (Type 1) for Direct Wind cable
Revision B 02/07/23

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Revisions:

- A Initial Release 01/30/23
- B Revised Document Revision in Section 5.1 02/07/23

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1 SCOPE

This Statement of Work (SOW) is the basis for procurement of Type 1 wire for EIC Direct Wind type cable. This document outlines the Contractor's responsibilities and obligations as set forth herein.

2 APPLICABLE DOCUMENTS

2.1 SMD-EIC-RD2004 Procurement Specification, Nb-Ti Wire for EIC Interaction Region Magnet Direct Wind Cable – Revision as noted in 5.1

2.2 In the event of a conflict between any of the procurement documents, the Contractor shall immediately notify the BSA Contractual Representative who shall in each instance determine which document takes precedence and notify the Contractor accordingly. Failure to notify BSA of a document conflict shall not relieve the Contractor's responsibility to ensure full compliance to all requirements.

3 GENERAL REQUIREMENTS

3.1 Contractor Responsibilities

3.1.1 The Contractor shall be responsible for supplying all materials, including (but not limited to) the construction of all tools, jigs, fixtures, and test equipment required to complete the contract.

3.1.2 Inspection: The Contractor shall be responsible for performing inspections and test throughout the process and maintaining records in compliance with this SOW.

3.1.3 BSA reserves the right to designate selected manufacturing, inspection, and/or test operations as "witness" points. The Contractor shall provide BSA with ten (10) working days' notice in advance of reaching such witness points during the manufacturing and test cycle. Contractor shall comply with any BSA required hold or witness points in the manufacturing process.

3.1.4 Wire shall be produced in an Initial Quantity & a Follow-On Quantity. Production of the follow-on quantity shall not commence until authorization has been received from BSA.

- Initial Quantity: 10,000 Meters
- Follow-On Quantity: 200,000 Meters

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4 MANAGEMENT

4.1 Program Plan

Within two (2) weeks after award of Contract, the Contractor will deliver a detailed program plan which includes the following:

- a. Management Structure - the management for the project will be identified by name and contact information.
- b. Point of Contact – a project representative from the Contractor will be identified to be the primary contact with BSA for this project.
- c. Schedule - a milestone schedule defining the material order, manufacturing, inspection, and assembly phases to allow for regularly scheduled progress monitoring. Identification of critical manufacturing operations, as well as inspection, test and hold checkpoints will be part of the schedule. In addition, the milestone schedule shall include the following significant milestones identifying proposed dates of accomplishment.

	Significant Milestones	Months ARO
1	Contract Execution	0
2	First Program Progress Teleconference	0.5
3	Submittal Of Manufacturing/Inspection/Test Plan	1
4	Start Of Initial Quantity Production	2
5	Completion Of Initial Quantity Production	4
6	Initial Quantity End Item Documentation Submittal to BSA	4.25
7	Approval To Ship – Initial Quantity	4.5
8	Initial Quantity Shipment	4.75
9	Acceptance Of Initial Quantity @ BSA & Approval to Proceed with Follow-On Quantity	7
10	Completion Of Follow-On Quantity	19
11	End Item Documentation Submittal – Follow-On Quantity	19.25
12	Approval To Ship – Follow-On Quantity	19.5
13	Follow-On Quantity Shipment	20

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4.2 Progress Teleconference

Within two (2) weeks after award of Contract, monthly program technical and progress teleconferences and/or meetings between the Contractor and BSA will be held at a mutually scheduled time during all phases of manufacturing, inspection, and assembly. The discussions will include the Contractor's progress, technical and contractual questions, presentations of analysis or testing results, design reviews, value engineering, trouble shooting, material status, tooling status, resources, and manufacturing issues.

4.3 Performance Reporting

Throughout the life of the Contract, the Contractor will supply a written report by the fifth of every month to the BSA Technical Representative clearly detailing progress through the prior month with respect to the program. This will include milestone charts, detailed progress, open items, problems, recommended solutions, and risk mitigation.

5 TECHNICAL REQUIREMENTS

5.1 All work shall be IAW SMD-EIC-RD2004 Revision B. Material being acquired on this SOW is that which is described in the specification as 'Type 1'

5.2 BSA Supplied Information

5.2.1 Unit Lengths:

5.2.1.1 Initial Quantity: Unit Length of 1250 Meters

5.2.1.2 Follow-On Quantity:

- At least 6 @ Unit Length of 2300 Meters
- Remainder @ Unit Length of 1600 Meters

5.2.2 Spool Type: specified by vendor, approved by BNL in advance of use

5.2.3 Spool Max Weight: specified by vendor, approved by BNL in advance

5.3 Packaging and Shipping:

5.3.1 Contractor shall be responsible for all packaging, crating, and preparation for shipment. The packing shall be sufficient to ensure safe delivery of the items to BNL and meet the requirements of the selected shipper.

5.3.2 BSA's representative shall be notified five (5) days prior to shipment of the item. This notification shall be in the form of an e-mail message. The BSA representative will provide all shipping details upon request.

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6 QUALITY ASSURANCE

6.1 Supplier's Quality System and Quality Requirements

The Supplier shall have and maintain an effective quality system that is certified/registered to the ISO 9001 standard: (latest revision as of the date of issuing the procurement documentation).

6.2 Assessment by Buyer

The Supplier's quality system is subject to assessments by the Buyer's Representative(s) for conformance with the requirements of the PO. Supplier or Distributor shall allow BSA representatives, BSA customers, and regulatory agencies right of entry into the Supplier's facilities to determine and verify product, processes, records, personnel, material, procedures, and systems.

6.3 Responsibility for Subcontractors

It is the responsibility of the Supplier to impose applicable requirements from this document upon their subcontractors. Additionally, the Buyer reserves the right to disapprove, in writing, any subcontractor.

6.4 Responsibility for Conformance

The Supplier is responsible to provide items that conform to the requirements of the PO regardless of any assessments, surveillances, inspections and/or tests by the Buyer or its representatives at either the Supplier' or Buyer's facility. The Buyer reserves the right to request failure analysis and corrective action for non-conforming articles or items submitted or supplied to the Buyer. The Supplier is responsible for notifying the Buyer of any recalls or alerts associated with this PO.

6.5 Measuring and Test Equipment (M&TE) Calibration

The Supplier shall calibrate any M&TE used in the fulfillment of the PO requirements against certified standards that are traceable to the National Institute of Standards and Technology (NIST), or some other recognized national or international standard, or physical constant. The Supplier shall notify the Buyer of any condition found during the calibration, servicing or repair of measuring and test equipment that can affect the end item requirements

6.6 Process Sheets, Travelers, etc.

The Supplier shall maintain a system of process sheets, shop travelers, or equivalent means to define the sequence of manufacturing, inspection, installation and test activities to be performed. Flow sheets, or equivalent, shall be provided for sign-off by designated inspection personnel at specified inspection and test points, including, as required, re-inspection and re-test points, to assure completion as well as proper sequencing of required operations.

6.7 Manufacturing/Inspection/Test Plan

Thirty (30) calendar days prior to performance of work, the Supplier shall submit for the Buyer's approval a Manufacturing/Inspection/ Test Plan for the item(s) to be produced. Once approved, changes/ revisions must be approved by the Buyer prior to implementation. The Plan shall satisfy one or more of the following as selected:

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- Identification of critical manufacturing operations, as well as inspection and test checkpoints.
- The Plan may be a single document, or may make use of existing “travelers,” or other suitable planning and control documents.

6.8 Test and Inspection Procedures

Test and inspection procedures required to demonstrate satisfactory completion of requirements shall be prepared by the Supplier and submitted to the Buyer for approval thirty (30) calendar days prior to use of such procedures. Once approved, changes/revisions must be approved in writing by the Buyer prior to implementation.

6.9 Special Processes

Processes (e.g., welding, brazing, bonding, plating, chemical machining, chemical coating, chemical cleaning, precision cleaning, heat treating, or waste processing) that either cannot be verified non-destructively or require a unique (special) non-destructive test / inspection (e.g., radiographic inspection, ultrasonic testing, pressure leak testing) shall be performed in accordance with detailed written procedures. These procedures shall specifically describe the exact manner in which the processes are to be performed. Additionally, the following requirements apply as selected:

- Copies of special process procedures shall be made available on request for review by the Buyer’s representative.
- At least sixty (60) calendar days prior to use on items deliverable to the Buyer, the Supplier shall submit to the Buyer copies of all applicable process procedures for review and approval. Revisions or changes to Buyer-approved special process procedures must be submitted to the Buyer for review and approval prior to implementation.

6.10 Qualification of Procedures, Facilities, Equipment and Personnel

The Supplier shall, prior to use, qualify the procedures / specifications, facilities, equipment and personnel that will be used for the performance of special processes. Only those personnel who have been qualified to perform a specific special process shall be used to perform that process. Records of such qualification shall be available to the Buyer’s representative upon request.

6.11 End-Item Documentation Package

The Supplier shall provide a documentation package for each shipment of the item(s) supplied, which consists of objective evidence of compliance with PO requirements. This documentation package shall be complete, legible, indexed, and traceable to the item supplied. The package shall be compiled and supplied to BSA. The BSA Technical Representative shall review and provide written approval of the package prior to shipment. All required documentation provided by the Contractor shall be provided in electronic copy. The package, which shall consist of all documentation identified in this SOW, including the following:

- a. Certificate of Conformance (C of C): With each shipment, per the procurement documentation, the Supplier shall submit a Certificate of Conformance (C of C). In case of drop shipment, a copy of the certificate shall be submitted to the Buyer at the time of shipment. The certificate shall include the title of and be signed by an

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authorized representative of the company, and shall constitute a representation by the Supplier that:

- i. Materials used are those which have been specified by the Buyer, and that the items delivered were produced from materials for which the Supplier has on file, reports of chemical or physical analysis, or any other equivalent evidence of conformance of such items to applicable specifications.
 - ii. Processes used in the fabrication of items delivered were in compliance with applicable specifications included as part of the PO/contract, or Buyer-approved procedures or specifications.
 - iii. The items as delivered comply with all applicable drawings, specifications, deviations/waivers and other requirements of the procurement documentation.
 - b. Copies of reports of all required or necessary inspections, examinations and tests, properly validated by the Supplier's authorized personnel.
 - c. Copies of nonconformance reports dispositioned as "rework / repair" or "use-as-is", and all BSA approved deviation/waivers.
 - d. Copies of material test certificates for materials, showing physical and chemical properties.
 - e. Chemical and Physical Test Report
One copy of the actual chemical and physical test report(s) for each heat, batch or lot shall accompany each shipment. Test reports shall list the actual parameters tested, the acceptable limits for each parameter, and shall contain the actual readings taken during test.
- 6.12 Failure Reporting, Analysis and Corrective Action
The Supplier shall maintain a failure reporting, analysis and corrective action system that shall, as a minimum, evaluate, analyze and correct failures occurring during qualification, first article and end-item acceptance testing and inspection. The results of all failure evaluations and analyses shall be documented and available for review by the Buyer.
- 6.13 Notification of Change to Design, Methods, or Processes
The Supplier shall immediately notify the Buyer of any changes in fabrication methods, materials, work locations, equipment used, or processing from those used by the Supplier at time of Supplier's quotation or offer to the Buyer, which resulted in the PO. This shall be done prior to the change being made. Supplier must receive written approval from BSA Procurement Representative prior to the change being made. BSA reserves the right to require such analysis and testing to ensure that changes will not have a deleterious effect on delivered items.
- 6.14 Material Traceability
Materials used must be identified by material type, applicable specification and revision number, and be traceable to their lot and/or heat number(s). Traceability records shall be available for review by the Buyer's representative.

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- 6.15 Records: The Contractor shall retain objective evidence, including records, of the inspections and tests performed in the execution of this SOW. These records shall be made available to BSA for review upon request. These records shall be maintained for a minimum of one (1) year, unless otherwise specified.
- 6.16 Responsibility for Inspections and Tests: Unless otherwise specified in the contract or purchase order, the Contractor shall be responsible for the performance of all inspections and tests specified herein. Acceptance or approval of material during the course of manufacture shall not be construed as a guarantee of its acceptance in the finished product. BSA reserves the right to re-perform any of the inspections and/or tests set forth in this document where deemed necessary to assure that supplies and services conform to prescribed requirements at no cost to the contractor.

7 DELIVERABLES

- 7.1 Spools IAW this SOW
- 7.2 End Item Documentation Package IAW Section 6.11