

Spallation Neutron Source
Collider Accelerator Department
BROOKHAVEN NATIONAL LABORATORY
Brookhaven Science Associates
Upton, New York 11973



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SOW-SNS-02A

Statement of Work
For
High Energy Beam Transport Dipole Magnets

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STATEMENT OF WORK
FOR
HIGH ENERGY BEAM TRANSPORT (HEBT) DIPOLE MAGNETS

1.0 SCOPE

A total of nine (9) HEBT dipole magnets and associated spare parts will be purchased by Brookhaven National Laboratory (BNL) for installation in the Spallation Neutron Source (SNS) in Oak Ridge National Laboratory (ORNL). Two types or sizes of magnets will be purchased. The magnets will be similar in design and cross-section but will vary in length. The spare parts will consist of one complete magnet assembly (for a total of 10 magnets) and spare coils for both magnet designs as listed below. The following is a list of the required assemblies and components:

ITEM	DRAWING TITLE	PART No.	QUANTITY
1	HEBT C-Dipole 8D533 Assembly (1 st Article)	5101081	1
2	HEBT C-Dipole 8D533 Assembly	5101081	8
3	Coil (8D533)	5101082	2
4	HEBT C-Dipole 8D400 Assembly	5101091	1
5	Coil (8D400)	5101092	2

For the purpose of evaluating the performance of the design and establishing the qualifications of the vendor one (1) first article magnet will be purchased for testing by BNL prior to exercising an option for the balance of the order. The production option will be exercised after the first article has successfully passed inspection and met the SNS design criteria. All production magnets and components are to be shipped directly to the SNS project at ORNL.

Final selection of the vendor will depend on technical competence, cost and schedule. Delivery of production articles prior to the "Delivery Complete" date is encouraged but not mandatory. The RFQ response shall include a schedule for delivering the 1st article unit and the production articles, based on exercising the production option on the date specified in the Program Schedule herein.

The seller shall provide the sub-contractor source of the magnet core steel and the magnet core steel type to be used when responding to the RFQ.

2.0 DEFINITIONS

The following terms and abbreviations are used throughout this Statement of Work and Technical Specification:

DEFINED TERMS

Brookhaven National Laboratory
Oak Ridge National Laboratory
Spallation Neutron Source
Quality Assurance
Request For Quote
Contract
Company or Vendor Awarded a PO
Statement of Work
First Article HEBT Dipole magnet

ABBREVIATIONS

Buyer, BNL
ORNL
SNS
QA
RFQ
PO
seller
SOW
first article

3.0 PURPOSE

The purpose of this SOW is to define the Program Management, Program Schedule, Technical Specifications, and QA requirements applicable to the accompanying RFQ, and in the execution of the subsequent PO. This SOW is not intended to impose unreasonable constraints on the seller. Rather, it is intended to protect the interests of both the seller and BNL in the execution of the PO. This SOW is also intended to assure the buyer that the magnets will be supplied to the buyer with the form, fit and function intended in the accompanying Technical Specification, and in a cost effective and timely manner.

After issuance of the RFQ and prior to awarding the PO for the first articles, all inquiries regarding the RFQ, this SOW and the appended QA Provisions, Technical Specification and Drawings shall be directed to the BNL Division of Contracts and Procurement.

After the award of the PO, all technical questions should be addressed to the cognizant engineer specified by the BNL Division of Contracts and Procurement. Questions regarding Contract Terms and Conditions, Price, and Delivery shall be directed to the BNL Division of Contracts and Procurement.

BNL reserves the right to amend this SOW and the associated specifications and drawings at any time up to one week before the bid due date. Any changes will be mailed, faxed, and/or e-mailed to the prospective bidders before this date.

In the execution of the awarded P.O., the order of precedence is the following: 1) the purchase order with the given Terms and Conditions, 2) the statement of work, 3) the technical specifications, and 4) the drawings.

4.0 CAPABILITY OF PERFORMANCE

BNL will impose the following general requirements to minimize the technical and schedule risk involved:

- 1) BNL will solicit, as a minimum, sellers capable of complying with this procurement's technical specifications.** BNL reserves the right to perform source inspections on mutually agreed terms of any offeror considered responsive to the RFQ, to verify capabilities of potential sellers.
- 2) The seller awarded a contract to fabricate the first article and production magnets must have extensive manufacturing capabilities and experience in production of custom magnets.** Bidders who do not currently have the capability or experience must explain in their quotation how they intend to acquire it in a low risk and timely fashion to support the requirements of the SNS project. Magnetic measurements capability is not a requirement of this procurement; but, vendors with this capability will score higher in the area of technical competence.
- 3) Sellers shall submit any recommendations to improve or simplify the design and to reduce cost.** Justification shall be provided along with the recommendation. Each recommendation shall be considered by BNL for inclusion in the RFQ. If recommendations are incorporated, all bidders shall be provided an amendment to this SOW that includes any incorporated recommendations.

5.0 QA REQUIREMENTS

QA requirements applicable to this contract are specified in the attached BNL-QA-101 and Section 4 of the attached Technical Specifications.

The seller must provide magnets that are in total compliance with the requirements of this contract. A certificate of compliance shall be provided for each magnet, including the first article. The certificates of compliance shall accompany the respective component delivery. All travelers required by the associated specifications must be completed and signed off in accordance with the specifications and attached to the certificate of compliance. Implicit in this certification is that the seller has performed all tests and inspections necessary to assure total compliance. When investigation of a failure or non-conformance indicates that like defects exist or could exist in the items already accepted, the seller shall so advise BNL, designate the necessary corrections and incorporate them after approval by BNL.

All QA systems necessary to comply with the requirements of this SOW, shall be in place by the bid response due date specified in the Program Schedule herein.

6.0 TECHNICAL SPECIFICATION AND DRAWINGS

The following Brookhaven National Laboratory Technical Specifications and drawings apply in responding to the RFQ, and in the execution of the subsequently awarded PO for the first article and production magnet assemblies:

- SNS-0001 Specification for Radiation Resistant Fiberglass/Epoxy Insulated Magnet Coils
- SNS-0013 Specification Ultra Low Carbon Magnet Steel
- SNS-0014 Specification for High Energy Beam Transport Dipole Magnets

- 5101081: HEBT C-Dipole 8D533 Magnet Assembly
- 5101082: Coil
- 5101083: Pole Tip
- 5101084: Strip
- 5101085: Plate, Upper
- 5101086: Plate, Side
- 5101087: Plate, Bottom
- 5101088: Support, Angle
- 5101009: Bus Connector
- 5101010: Spring Retainer
- 5101100: Subassembly, 8D533 Magnet Core

- 5101091: HEBT C-Dipole 8D414 Magnet Assembly
- 5101092: Coil
- 5101096: Pole Tip
- 5101097: Strip
- 5101093: Plate, Upper
- 5101095: Plate, Side
- 5101094: Plate, Bottom
- 5101098: Support, Angle
- 5101101: Core Assembly

Note that both magnets have identical core cross-sections, number of coil turns, and coil conductor size and cross-section. The difference between the magnets is their overall length.

7.0 ACCEPTANCE TEST PROCEDURE

The vendor must perform all tests as required by the associated technical specifications. BNL may conduct, at no expense to the seller, any tests as may be necessary to demonstrate total compliance with of this SOW, the technical specifications, and the drawings.

In addition, BNL requests that sellers who have the capability to perform magnetic measurements as specified in section 4.3.7 of specification SNS-0014 provide a bid for doing the measurements. The ability to perform magnetic measurements is not a requirement of this procurement and BNL reserves the right not to exercise this option with vendors who have the capability to perform the measurements.

8.0 PROGRAM MANAGEMENT REQUIREMENTS

The seller shall furnish a manufacturing plan to BNL within two (2) weeks of the contract award.

The plan should indicate details of the purchasing of all raw materials (e.g. what? who? and when?), and a schedule for manufacturing all the details and assemblies up through packaging and shipping of the final product. The seller may subcontract all or part of the work defined by this SOW. However, the seller is responsible for fulfilling all of the terms and conditions of the P.O. If the seller intends to subcontract work with others, it must be reflected in the plan, and the subcontractor must provide similar information, for review by both the seller and buyer

A strategy to minimize schedule risk shall be implemented and reflected in the manufacturing plan. The strategy shall allow the seller to purchase all materials for the first article and production chambers upon award of a first article contract. This approach will reduce the lead-time between first article and production delivery to help support the schedule requirements of the SNS project.

The P.O. shall include line items for first article and production material. This will facilitate timely reimbursement to the seller for material purchases. Once material is inspected and accepted by the seller, reimbursement by BNL for the material shall be made to the seller. The reimbursement will be based on the material costs provided with the vendor's bid. Upon reimbursement to the seller, the material shall become the property of BNL. However, the material will be the responsibility of the seller, until such time as it has been delivered to and accepted by BNL as part of a magnet assembly, or as raw material in the event of a breach of contract.

It will not be necessary that the buyer approve the manufacturing plan. But, a realistic and comprehensive plan must be prepared by the indicated time. The buyer will review the seller's progress against the plan each month. It will not be necessary that the buyer approve the manufacturing plan. The buyer wants the assurance that the seller has a plan, and is executing the contract according to a plan, even though it may occasionally have to be modified.

9.0 PROGRAM SCHEDULE

The following Program Schedule defines major events of this procurement. The Program Schedule begins with the issuance of the RFQ to prospective sellers, and concludes with the completion of the production lot delivery by the selected seller.

Total elapsed time, and the time span between each event are provided. The elapsed times are given in calendar days. Elapsed days and event spans given are goals, and approximate values. However, if exception to these dates is not taken when responding to the RFQ, they will be contractually firm. All delivery dates and quoted prices are **FOB BNL** for the first article magnet and **FOB SNS Project ORNL** for all other magnets and coils.

Program Schedule Major Event	Span Weeks	Elapsed Days	On or Before
Issue RFQ	0	0	August 4, 2000
Recommendations Due	2	14	August 18, 2000
Issue Amended SOW	1	21	August 25, 2000
Quotation Responses Due	2	35	September 8, 2000
P.O. Awarded (1st Article)	2	49	September 22, 2000
Manufacturing Plan Delivered	4	77	October 20, 2000
First Article Delivered	24	245	April 6, 2001
First Article Tested And Evaluated	6	287	May 18, 2001
Production Option Exercised	2	301	June 1, 2001
Production Delivery 4 each Item 2	24	469	November 16, 2001
Production Delivery 4 each Item 2	8	525	January 11, 2002
Completion of Production Delivery	8	581	March 8, 2002

NOTES:

1. Completion of production delivery includes items 3, 4, and 5 and any fabrication fixtures that are a part of this procurement.
2. Delivery of a magnet or coil is not complete unless and until the associated travelers and QA documentation are properly completed by the vendor and delivered to BNL or ORNL.