BSA's Contractual Representative	Overall Value Amount	Contract Type	Contract Number
L. Gonzales	**TBD**	**Firm Fixed Price**	**471924**

BROOKHAVEN NATIONAL LABORATORY
Brookhaven Science Associates
P.O. Box 5000
UPTON, L.I., N.Y. 11973-5000

Name and Address of Contractor (TBD)

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CONTRACT

This Contract (the "Contract") is between the party named above (the "Contractor"), and Brookhaven Science Associates, LLC ("BSA"), the latter acting under a Prime Contract with the United States of America (the "Government") represented by the United States Department of Energy ("DOE").

I. SCOPE OF WORK

The Contractor shall provide four sets of Safe High Voltage (SHV) cable assemblies plus additional replacement cable connectors and parts for the high voltage distribution of the DUNE (Deep Underground Neutrino Experiment) vertical drift (VD) far detector (FD).

All work shall be conducted in strict accordance with the following exhibits attached hereto:

- Exhibit A – Statement of Work (SOW) entitled, "DUNE FD-VD CRP/FC Bias SHV warm cables", dated May 13, 2026
- Exhibit B – Technical Drawings entitled, "Warm CRP/FC Bias Cables, 14m", "Warm CRP/FC Bias Cables, 18m", "Warm CRP/FC Bias Cables, 26m", and "Warm CRP/FC Bias Cables, 30m"
- Exhibit C – BNL-QA-101

A. **Reports/Deliverables:** The Contractor shall provide the following deliverable(s) to BSA's Technical Representative:

Design Part #	Description	Quantity	Due
DFDVD-HV-WSHV-14	DUNE VD warm CRP/FC bias SHV cable, 14m long	170	6 months after award of contract
DFDVD-HV-WSHV-18	DUNE VD warm CRP/FC bias SHV cable, 18m long	120	6 months after award of contract
DFDVD-HV-WSHV-26	DUNE VD warm CRP/FC bias SHV cable, 26m long	180	6 months after award of contract
DFDVD-HV-WSHV-30	DUNE VD warm CRP/FC bias SHV cable, 30m long	140	6 months after award of contract

Description	Quantity	Due
Crimp type 5kV SHV plug connectors for RG58 cable	10	6 months after award of contract
Crimp ferrules for the SHV plug connector	20	6 months after award of contract
Quality Control Certification		6 months after award of contract

II. PERIOD OF PERFORMANCE

This Contract shall be effective as of the date executed by both parties. It shall remain in effect through 6 months after award of contract.

III. FIRM FIXED PRICE AND PAYMENT

A. **Firm Fixed Price:** In full consideration of the Contractor's performance hereunder, BSA shall pay the Contractor the firm fixed price of __TBD_ U.S. Dollars ($0.00). The said sum shall constitute full compensation for all services and materials furnished hereunder.

B. **Payment:** Payment will be made upon receipt and approval of properly certified invoices and upon receipt and approval of deliveries of DUNE VD warm CRP/FC bias SHV cables at the unit prices listed below.

Design Part #	Description	Quantity	Unit Price	Cumulative Total
DFDVD-HV-WSHV-14	DUNE VD warm CRP/FC bias SHV cable, 14m long	170	TBD	TBD
DFDVD-HV-WSHV-18	DUNE VD warm CRP/FC bias SHV cable, 18m long	120	TBD	TBD
DFDVD-HV-WSHV-26	DUNE VD warm CRP/FC bias SHV cable, 26m long	180	TBD	TBD
DFDVD-HV-WSHV-30	DUNE VD warm CRP/FC bias SHV cable, 30m long	140	TBD	TBD

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Payment terms are Net XX (f*or large businesses enter 30, for small businesses enter 10)*.

Invoices shall be directed to BSA's Accounts Payable Department via electronic or regular mail.

Electronic invoice submittal is preferred by BSA. The Contractor shall make every effort to have systems in place that allow for electronic invoice transmittal. Invoices shall be submitted in PDF format, via email, to apinvoices@bnl.gov.

Hard copy invoices, if applicable, shall be directed to BSA's Accounts Payable Department, Contracts Division, Bldg. No. 400D.

The Contractor shall indicate the final invoice by clearly marking such invoice as "FINAL." A copy of the final invoice must be submitted to BSA's Contractual Representative.

C. **Freight**: Freight terms shall be *(for North American shipments insert:)* FOB BSA National Laboratory, 98 Rochester Street, Upton, Long Island, New York. Freight Prepaid, *(for foreign shipments insert:)* "DAP" Delivered At Place, BSA National Laboratory, 98 Rochester Street, Upton, Long Island, New York, unless otherwise mutually agreed upon and identified in resulting contract.

D. **Labelling, Packing, and Notification Requirements:**
The Contractor shall notify the Contract Specialist identified in IV below at least two (2) weeks prior to the anticipated shipment date to obtain BSA shipping instructions.

IV. AUTHORIZED REPRESENTATIVES

A. **BSA's Technical Representative:** _____, telephone no. _____, _____(email), is BSA's Technical Representative, and shall act as liaison between BSA and the Contractor in technical matters only.

B. **BSA's Contractual Representative:** _____, telephone no. _____, _____ (email), is BSA's Contractual Representative. Any change or modification in the terms and conditions of this Contract shall require the written approval of BSA's Contractual Representative or designee.

C. **Contractor's Technical Representative**: _____, telephone no. _____, _____(email), is the Contractor's authorized Technical Representative, and shall act as point of contact between BSA and the Contractor in technical matters only.

D. **Contractor's Contractual Representative:** _____, telephone no. _____, _____(email), is the Contractor's authorized Contractual Representative and shall act as liaison between BSA and the Contractor.

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V. ADDITIONAL TERMS

The provisions of Brookhaven Science Associates, LLC, General Terms and Conditions for Commercial Items and Services, (Rev 24.0, April 2026) are incorporated herein and made a part hereof.

This Contract is issued pursuant to Brookhaven Science Associates General and/or Supplemental Terms and Conditions listed above, which are incorporated herein by reference. The complete text of these terms and conditions can be viewed at PPM | Terms and Conditions. Should the Contractor have any questions and/or not have access to these terms and conditions, contact the Buyer or Contracts Specialist immediately.

The following documents attached hereto and made a part hereof, contain additional provisions of this Contract:

- Exhibit A – Statement of Work (SOW) entitled, "DUNE FD-VD CRP/FC Bias SHV warm cables", dated May 13, 2026
- Exhibit B – Technical Drawings entitled, "Warm CRP/FC Bias Cables, 14m", "Warm CRP/FC Bias Cables, 18m", "Warm CRP/FC Bias Cables, 26m" and "Warm CRP/FC Bias Cables, 30m"
- Exhibit C – BNL-QA-101

This Contract does not bind nor purport to bind the Government of the United States.

ACCEPTED:

CONTRACTOR	**BROOKHAVEN SCIENCE ASSOCIATES, LLC.**
By: _____	**By:** _____
Name: _____	**Name:**_____
Title: _____	**Title:**_____
Date: _____	**Date:** _____

The Contractor shall sign and return one (1) copy of this Contract to the attention of Lisa Gonzales, Procurement and Property Management Division, at lgonzales@bnl.gov.

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Brookhaven National Laboratory

Exhibit A

Building 535B
P.O. Box 5000
Upton, NY 11973-5000
Phone 631.344.5184
Email: yubo@bnl.gov
managed by Brookhaven Science Associates
for the U.S. Department of Energy

Date: July 31, 2026

Title:

Statement of Work for the DUNE FD-VD CRP/FC Bias SHV warm cables

Overview:

Brookhaven National Laboratory (BNL) requires the purchase and delivery of four sets of Safe High Voltage (SHV) cable assemblies, plus some additional replacement cable connectors and parts for the high voltage distribution of the DUNE (Deep Underground Neutrino Experiment) vertical drift far detector. The cable used in the assemblies must have UL 3871 certification. Each cable assembly shall have two crimp type 5kV SHV straight plugs at both ends. The cable assemblies must pass Hi-Pot tests of 10kV-DC. Additional requirements are included in the following section.

Scope of Work:

The Contractor shall provide all personnel, labor, equipment, materials and supplies to fabricate and conduct Quality Control (QC) on these 4 sets of cable assemblies as specified below, in accordance with the geometries and specifications defined by the attached mechanical drawings.

Design Part #	Description	Quantity Required
DFDVD-HV-WSHV-14	DUNE VD warm CRP/FC bias SHV cable, 14m long	170
DFDVD-HV-WSHV-18	DUNE VD warm CRP/FC bias SHV cable, 18m long	120
DFDVD-HV-WSHV-26	DUNE VD warm CRP/FC bias SHV cable, 26m long	180
DFDVD-HV-WSHV-30	DUNE VD warm CRP/FC bias SHV cable, 30m long	140

Additional performance requirements for the cable assemblies are listed below:

Requirement Description	**Criteria**
No high voltage breakdown at 10kVdc	No breakdown in 1 minute
No leakage current at 10kVdc	<0.5nA@10kV per meter of cable
Good conductivity on center conductors and the shield	<50 mOhm per meter of cable
Tensile strength of the connectors	>25N

The contractor shall perform Pull and Break tests on a minimum of 2 randomly selected cables from each part # and document the break load on these cables. A document certifying all cables have been tested to meet the performance requirements above, and the break loads on the sample cables shall accompany the cable shipment.

The contractor shall also ship the following spare parts together with the cable assemblies listed above.

Description	Quantity Required

Crimp type 5kV SHV plug connectors for RG58 cable	10
Crimp ferrules for the SHV plug connector	20

Delivery Schedule:

All goods must be delivered within 6 months after receipt of order.

Export Control Statement:

This information is controlled by the U.S. Department of Commerce Export Administration Regulations 15 CFR Parts 730-774 as EAR99 Technology.

Project Task(s):

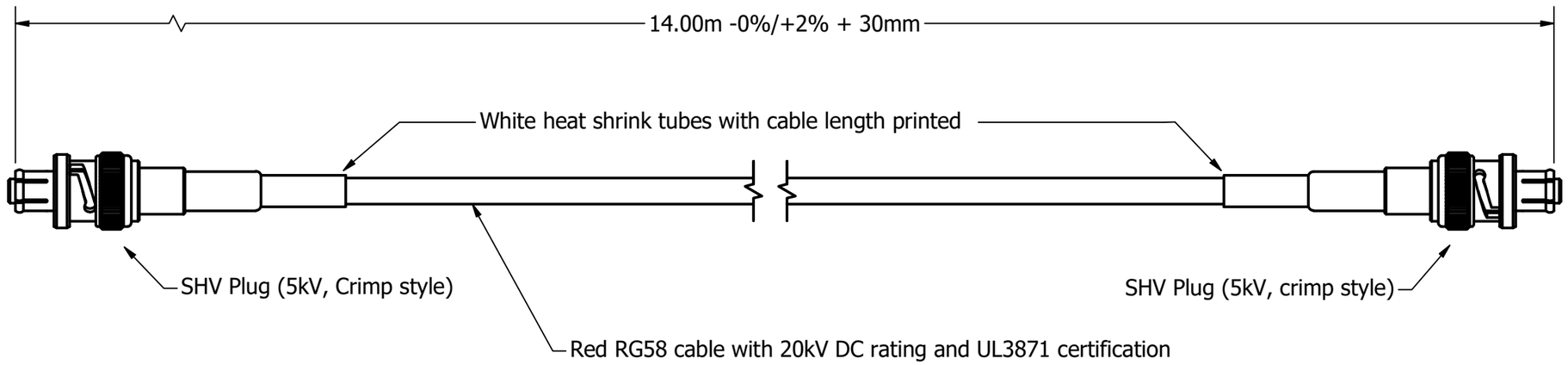
Task No.	Description
1	Assemble the 4 sets of cables based on the technical drawings
2	Perform QC tests on the completed cable assemblies that meet or exceed those specified in the Scope of Work section
3	Ship the requested quantity of cable assemblies, spare parts, and a QC certification to BNL

Signature of Requestor or Technical Rep: _____

Date: July 31, 2026

EXHIBIT B

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
0	Initial Release	4/24/2026	B. Yu

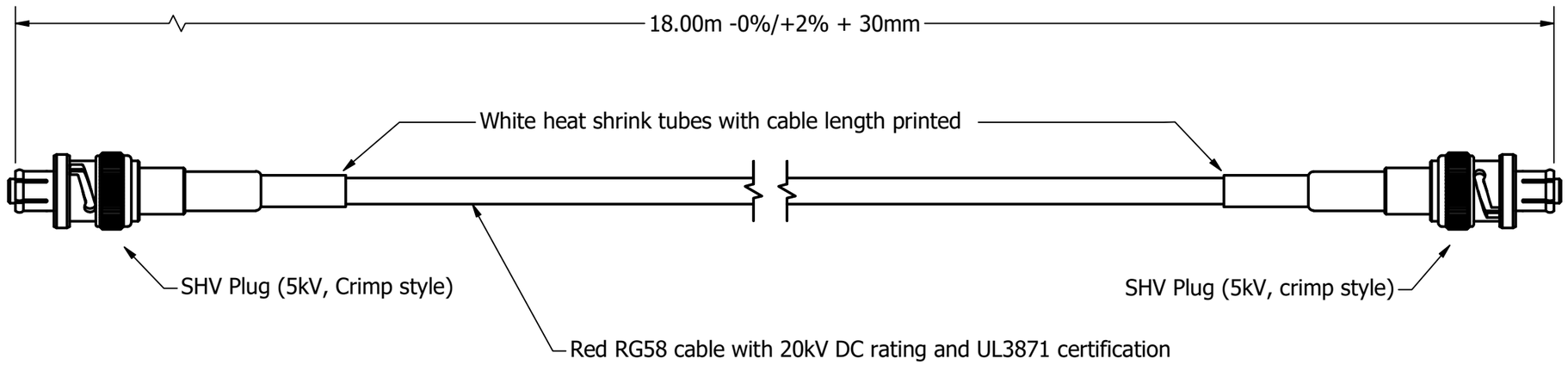


This information is controlled by the U.S. Department of Commerce Export Administration Regulations 15 CFR Parts 730-774 as EAR99 Technology.

DRAWN Bo Yu	4/24/2026	Brookhaven National Laboratory
CHECKED M. Zhao	5/13/2026	TITLE
QA G. Mussi	6/8/2026	Warm CRP/FC Bias Cables, 14m
MFG		
APPROVED B. Yu	5/13/2026	SIZE A3 / DWG NO DFVD-HV-WSHV-14M / REV 0
ESH&Q Risk Level	A3	SCALE 1 : 1 / SHEET 1 OF 1

EXHIBIT B

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
0	Initial Release	6/8/2026	B. Yu

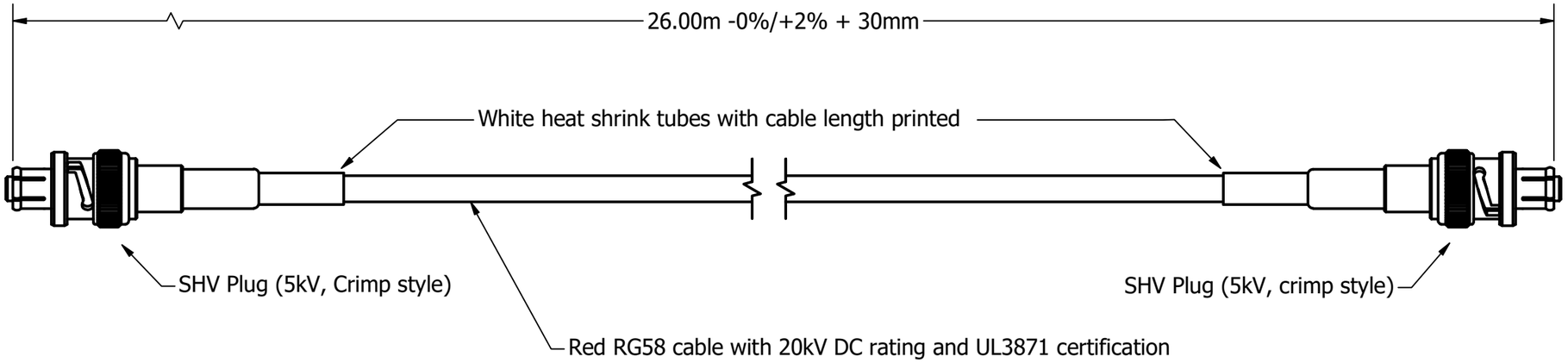


This information is controlled by the U.S. Department of Commerce Export Administration Regulations 15 CFR Parts 730-774 as EAR99 Technology.

DRAWN Bo Yu	4/24/2026	Brookhaven National Laboratory
CHECKED M. Zhao	5/13/2026	TITLE
QA G. Mussi	6/8/2026	Warm CRP/FC Bias Cables, 18m
MFG		
APPROVED B. Yu	5/13/2026	SIZE A3 / DWG NO DFVD-HV-WSHV-18M / REV 0
ESH&Q Risk Level	A3	SCALE 1 : 1 / SHEET 1 OF 1

EXHIBIT B

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
0	Initial Release	4/24/2026	B. Yu

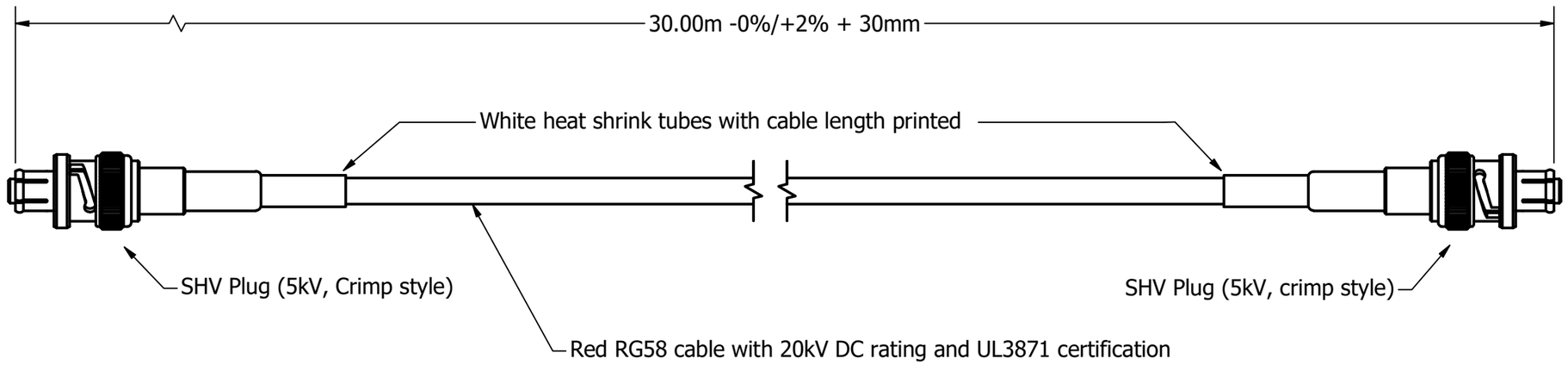


This information is controlled by the U.S. Department of Commerce Export Administration Regulations 15 CFR Parts 730-774 as EAR99 Technology.

DRAWN Bo Yu	4/24/2026	Brookhaven National Laboratory
CHECKED M. Zhao	5/13/2026	TITLE
QA G. Mussi	6/8/2026	Warm CRP/FC Bias Cables, 26m
MFG		
APPROVED B. Yu	5/13/2026	SIZE A3 / DWG NO DFVD-HV-WSHV-26M / REV 0
ESH&Q Risk Level	A3	SCALE 1 : 1 / SHEET 1 OF 1

EXHIBIT B

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
0	Initial Release	6/8/2026	B. Yu



This information is controlled by the U.S. Department of Commerce Export Administration Regulations 15 CFR Parts 730-774 as EAR99 Technology.

DRAWN Bo Yu	4/24/2026	Brookhaven National Laboratory
CHECKED M. Zhao	5/13/2026	TITLE
QA G. Mussi	6/8/2026	Warm CRP/FC Bias Cables, 30m
MFG		
APPROVED B. Yu	5/13/2026	SIZE A3 / DWG NO DFVD-HV-WSHV-30M / REV 0
ESH&Q Risk Level	A3	SCALE 1 : 1 / SHEET 1 OF 1

EXHIBIT C

BROOKHAVEN NATIONAL LABORATORY
SUPPLIER QUALITY ASSURANCE REQUIREMENTS
(BNL-QA-101)

PO/Contract No.: 471924
Date: 7/30/2026

1.0 PURPOSE & SCOPE

1.1 This document establishes quality assurance requirements to which Suppliers to Brookhaven Science Associates (BSA) must conform when specified in the procurement documentation.

1.2 This document contains two main sections. Section 3.0 covers the general requirements that are applicable to all Suppliers. Section 4.0 contains special quality requirements that are applicable only when specifically invoked in the procurement documentation.

2.0 DEFINITIONS

2.1 The term Procurement documentation means the purchase order (PO), contract, subcontract, Request for Proposal (RFP), Request for Quotation (RFQ) or other written agreement with the Supplier (seller) in which the requirements of BSA are incorporated.

2.2 The term Buyer means BSA operating Brookhaven National Laboratory, acting by and through its Procurement & Property Management Division (PPM) issuing the PO/contract.

2.3 The term Supplier (seller) means the legal entity, which is the contracting party, with the Buyer with respect to the procurement documentation.

2.4 The term article or item means a product and/or a service.

3.0 GENERAL REQUIREMENTS

Unless otherwise specified in the procurement documentation, the following General Requirements apply:

3.1 Supplier's Quality System and Quality Requirements

The Supplier must have and maintain an effective quality system that will, as a minimum, comply with all of the requirements as designated by the following:

☐ **3.1.1** A quality system certified/registered to the ISO 9001 standard: (latest revision as of the date of issuing the procurement documentation).

☐ **3.1.2** A quality system that meets the requirements of the ISO 9001 standard: "Quality Management Systems – Requirements" (latest revision as of the date of issuing the procurement documentation).

☒ **3.1.3** Conformance to Supplier's/Manufacturer's quality program or system.
☒ **3.1.4** Other: Refer to procurement documentation, (e.g. PO, Statement of Work [SOW], specifications, drawings) for quality requirements.

NOTE: Clauses 3.2 through 3.22 apply to all POs and will be included collectively in other procurement documentation when required/specified.

3.2 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 must 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.

3.3 Change Approval

No change(s) are permitted to be made to any Buyer requirements, (e.g. part number, model number, etc.) without the prior written approval of the Buyer.

3.4 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**.** For nuclear facility requirements per NQA-1, the Supplier must incorporate NQA-1 requirements in sub-tier procurement documents.

3.5 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.

When NQA-1 requirements are imposed, prior to shipment, the Supplier must report any nonconformance that cannot be corrected to full conformance and obtain approval from BNL for possible Use-As-Is or Repair dispositions. Additionally, for commercial grade services, a service performance record must be provided that documents the adequacy of the service performed to the identified critical characteristics documented in the PO/contract.

3.6 Protection of Material and Equipment

The Supplier must employ procedures that assure adequate protection of material and equipment during shipment and while in storage. Such protection must include special environmental packaging, as necessary. All items shipped (originally packaged or repackaged) to BNL or other locations cited in the PO or contract, must comply with the requirements for preservation, packaging and marking as stated in the latest revision of ASTM Standard D 3951 Standard Practice for Commercial Packaging.

3.7 Measuring and Test Equipment (M&TE) Calibration

The Supplier must 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 must 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.

3.8 Suspect Counterfeit Parts

- The Supplier shall verify the procurement source and associated documentation certifying authenticity.
- Appropriate incoming inspection and / or test methods shall be used to detect potential suspect counterfeit items.
- The Supplier shall flow this requirement down to all sub-tier suppliers to prevent the inadvertent use of suspect counterfeit items.
- Distributors shall not modify, rework or repair any items shipped on this order.
- For reference only, a list of authorized/franchised distributors for electronic components can be found at: https://www.trustedparts.com/

* For more information refer to the following Department of Energy website: https://www.energy.gov/ehss/corporate-reporting-analysis/databases/suspectcounterfeit-and-defective-items

3.9 Electrostatic Discharge Control
Items that are susceptible/sensitive to electrostatic discharge (ESDS) must be handled and packaged to protect them from damage. Items and/or packages must be labeled to indicate the susceptibility to electrostatic discharge.

3.10 Electrical or Fire Protection Equipment, Material, and Systems
All electrical or fire protection equipment, material, and systems delivered to BNL must be certified, listed, or labeled by a Nationally Recognized Testing Laboratory (NRTL). The CE mark is NOT a recognized NRTL certification mark. (For a listing of OSHA-recognized NRTLs, refer to http://www.osha.gov/)

For electrical or fire protection equipment, material, and systems which no NRTL accepts, certifies, lists, labels, or otherwise determined to be safe, the Supplier must determine the equipment to be safe for its intended use. The determination must be made on the basis of test data. The determination and test data documents must be made available to BSA prior to or upon delivery for review and acceptance by the applicable BSA Authority Having Jurisdiction (AHJ).

In accordance with 29 CFR 1910.147(c)(2)(iii) whenever new machines or equipment are provided with energy isolating devices, those devices must be designed to accept a lockout device.

3.11 Hoisting & Rigging Equipment
All hoisting & rigging equipment used at BNL must meet the requirements of the latest applicable OSHA Regulations and ASME B30 Series standards for design, construction, markings, and proof load testing.

When proof load testing is required by the standards, a certificate must be provided upon delivery documenting the proof test.

3.12 Deleted – requirements were added to each Purchase Order as the "Advance Notification of Delivery."

3.13 Powered Machine Shop Equipment
All powered machine shop equipment (e.g., lathe) delivered to BNL must meet the requirements of the latest applicable OSHA 1910 Regulations (e.g., part subpart O). Equipment purchased must include an integrated NFPA 79 compliant emergency stop and an anti-restart device.

3.14 Vehicle-Mounted Elevating and Rotating Aerial Devices
All vehicle-mounted and rotating aerial devices equipment used at BNL must meet the requirements of ANSI A92.2.

3.15 Self-propelled Elevating Work Platform Equipment
All self-propelled elevating work platform equipment (e.g., scissor lift) used at BNL must meet the requirements of ANSI A92.6.

3.16 Manually Propelled Elevating Aerial Platform Equipment
All manually propelled elevating aerial platform equipment used at BNL must meet the requirements of ANSI 92.3.

3.17 Boom Supported Elevating Work Platform Equipment
All boom supported elevating work platform equipment used at BNL must meet the requirements of ANSI 92.5.

3.18 Powered Industrial Trucks and Attachments
Powered industrial trucks (e.g. forklifts, hi-lows) must meet the requirements of the ANSI/ITSDF B56 series for design, construction, markings, and test loading. Industrial truck attachments must be approved by the truck manufacturer and supplied with an attachment data plate indicating the new truck capacities.

3.19 Used Industrial Equipment
For used industrial equipment (e.g. scissor lifts, forklifts, etc.), a Certificate of Conformance as defined in clause 4.16 must be provided as objective evidence and must additionally state that all maintenance and manufacturing alerts have been screened and all required repairs and improvements have been completed. The Supplier must provide records of the last year of maintenance.

3.20 Global Harmonized System Compliance
The supplier of chemicals must deliver the chemical in full compliance with the Department of Labor, Occupational Safety & Health Administration (OSHA)'s Globally Harmonized System (GHS) Hazard Communication Standard (29CFR1910.1200), available at:
https://www.osha.gov/dsg/hazcom/HCSFinalRegTxt.html

All hazardous chemicals delivered to BNL must be accompanied by an GHS Safety Data Sheets (SDS) with the format and content specified in 29CFR1910.1200. For information on the GHS SDS see OSHA Brief- Hazard Communication Standard: Safety Data Sheets Publication 3514 available at:
https://www.osha.gov/Publications/OSHA3514.pdf

All hazardous chemicals delivered to BNL after 12/01/2015 must have a label with the elements specified in 29CFR1910.1200 [product identifier; pictograms; signal words; hazard statement(s); precautionary statement(s); and manufacturer, importer, or distributor's name, address, and telephone number]. For information on the GHS label, see OSHA Brief- Hazard Communication Standard: Labels and Pictograms Publication 3636 available at:
https://www.osha.gov/Publications/OSHA3636.pdf

3.21 Age/Shelf Life and Storage Control
The Supplier must have an effective storage and age control system for items where acceptability is limited by the age or manner of storage of the item. The system must include a method of identifying the expiration date on the containers in which material is delivered to the Buyer. Special handling conditions must be recorded on certifications and shipping documents covering the material delivered to the Buyer. At the time of receipt, the material must not have less than three-quarters of its shelf life remaining, without prior written approval from the Buyer for each shipment.

3.22 Product Recalls/Product Bulletins/Safety Alerts

Any and all product recall alerts, product bulletins, or safety alerts must be communicated by email directly to ProductRecallAlert@BNL.gov. Provide the Purchase Order Number(s) and names of purchasers with notification to assist BNL in locating and identifying the subject material.

4.0 SPECIAL REQUIREMENTS
The following Special Requirements are applicable only when specified in the procurement documentation or as indicated by check mark hereon. These Requirements can be modified as required.

INSTRUCTIONS: Since sub-clauses (e.g., 4.4.1) are tied to the main clause (e.g., 4.4), the requirements of the main clause will apply by default whenever any sub-clause is selected (regardless of whether the main clause was selected/checked).

☐**4.1 Quality Assurance Program or Manual**
The Supplier must submit a copy of their Quality Assurance Program or Manual with their proposal for review and evaluation.

☐ **Suppliers providing A1/A2 but without a quality system compliant with NQA-1, i.e., Commercial Grade Supplier,** must follow applicable Commercial Grade Dedication Instructions as defined in the SOW.

OR

☐ Supplier must utilize the QA Program audited and approved by BNL.

☐**4.2 Configuration Control System**
The Supplier must establish and maintain a system to assure that all end items (including spares) are of the proper configuration, and that all approved configuration changes are incorporated at the specified effectivity points. Records must be maintained to verify the configuration of each item.

☐**4.3 Process Sheets, Travelers, etc.**
The Supplier must 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, must 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.

☐**4.4 Manufacturing/Inspection/Test Plan**
Sixty (60) calendar days prior to performance of work, the Supplier must 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 must satisfy one or more of the following as selected:

☐**4.4.1** Identification of parts and subassemblies showing integrated flow into end item(s).

☐**4.4.2** Identification of critical manufacturing operations, as well as inspection and test checkpoints.

☐**4.4.3** The Plan may be a single document, or may make use of existing "travelers," or other suitable planning and control documents.

☐**4.5 "Witness" Points**
The Buyer reserves the right to designate selected manufacturing, inspection, and/or test operations as "witness" points. The Supplier must provide the Buyer with five (5) working days' notice in advance of reaching such witness points during the manufacturing and test cycle of each item. For nuclear facility applications (NQA-1), witness points are required when Source Inspection is invoked. (see Clause 4.14)

☐**4.6 Test and Inspection Procedures**
Test and inspection procedures required to demonstrate satisfactory completion of requirements must be prepared by the Supplier and submitted to the Buyer for approval sixty (60) calendar days prior to use of such procedures. Once approved, changes/revisions must be approved in writing by the Buyer prior to implementation.

☐**4.7 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) must be performed in accordance with detailed written procedures. These procedures must specifically describe the exact manner in which the processes are to be performed. Additionally, the following requirements apply as selected:

☐ **4.7.1** Copies of special process procedures must be made available on request for review by the Buyer's representative.

☐ **4.7.2** At least sixty (60) calendar days prior to use on items deliverable to the Buyer, the Supplier must 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.

☐**4.7.3 Qualification of Procedures, Facilities, Equipment and Personnel**
The Supplier must, 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 must be used to perform that process. Records of such qualification must be available to the Buyer's representative upon request.

4.8 Qualification of Procedures, Facilities, Equipment
Superseded by Sub-clause 4.7.3

4.9 Qualification of Special Process Personnel
Superseded by Sub-clause 4.7.3

☐**4.10 End-Item Documentation Package**
The Supplier must 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 must be complete, legible, indexed, and traceable to the item supplied. Additionally, the following requirements apply as selected:

☐**4.10.1** Copies of reports of all required or necessary inspections, examinations and tests, properly validated by the Supplier's authorized personnel.

☐**4.10.2** A listing of the as-built configuration of each delivered item; this may be defined by the use of drawing numbers and revisions, unique parts lists or other such means of positive identification.

☐**4.10.3** Copies of nonconformance reports dispositioned as "rework/repair" or "use-as-is", and all BSA approved deviation/waivers.

☐ **4.10.4** Copies of material test certificates for specified materials, showing physical and chemical properties.

4.10.5 – Superseded by Clause 4.16

☐**4.11 Release for Shipment**
The documentation package required in Clause 4.10 must be approved by the Buyer's representative prior to release of the item for shipment.

☐**4.12 Shipment of Documentation Package to Buyer**
Three (3) copies of the documentation package required in Clause 4.10 must be shipped to the Buyer with or prior to each shipment of the purchased items.

☐**4.13 Failure Reporting, Analysis and Corrective Action**
The Supplier must maintain a failure reporting, analysis and corrective action system that must, at 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 must be documented and available for review by the Buyer.

☐**4.14 Source Inspection/Verification**
Items to be delivered require inspection, tests or surveillance by the Buyer's representative at the Supplier's facility. Five (5) working days advance notice, for acceptance inspections and tests, must be provided by the Supplier to the Buyer to permit scheduling of source inspection. For nuclear facility applications (NQA-1), source verification must be conducted in accordance with a Verification Plan to inspect, test, or examine at predetermined/Witness points (see Clause 4.5). Documented evidence of acceptance must be provided upon completion of all verifications.

☐**4.15 Chemical and Physical Test Report**
One copy of the actual chemical and physical test report(s) for each heat, batch or lot must accompany each shipment. Test reports must list the actual parameters tested, the acceptable limits for each parameter, and must contain the actual readings taken during test.

☐**4.16 Certificate of Conformance (C of C)**
With each shipment, per the procurement documentation, the Supplier must submit a Certificate of Conformance (C of C). In case of drop shipment, a copy of the certificate must be submitted to the Buyer at the time of shipment. The certificate must identify the purchased item/material/equipment by PO number and quantity, include the title of and be signed by an authorized representative of the company, and must constitute a representation by the Supplier that:

A. 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;

B. 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;

C. The items as delivered comply with all applicable drawings, specifications, deviations/waivers and other requirements of the procurement documentation; and-

D. When specified, cleaning and cleanliness requirements have been completely satisfied. The C of C must reference the Supplier's applicable cleaning procedures.

☐**4.16.1 Additional C of C Requirements for Nuclear (NQA-1) Purchases**

A. The certificate must be signed by the person responsible for the quality function and whose function and position is described by the supplier's QA program/system.

B. The Supplier's Certification system must be described in their QA Program/system documentation and include the process for completing the C of C along with the review and Approval of the C of C prior to delivery.

C. The Buyer reserves the right to verify the validity of Supplier's certificates and the effectiveness of the Supplier's certification system. This verification will be commensurate with the Supplier's quality performance/history.

4.17 Report with Each Shipment
Superseded by Clause 4.10

☐**4.18 First Article Acceptance**
Buyer acceptance of first article(s) is required prior to the production run. The first article(s) must be identified as such, including the PO number/contract, part number, and part name. The Supplier is required to:

☐ **4.18.1** Submit the first article(s) to the Buyer's representative for test/inspection to be conducted at the Supplier's facility by the Buyer's representative.

☐ **4.18.2** Submit the first article(s) to the Buyer for test / inspection by the Buyer at the Buyer's facility.

☐ **4.18.3** Submit the first article(s) to the Buyer together with documents showing data representing results of the Supplier's first article(s) test/inspection, including the actual dimension or value for each specified characteristic.

☐ **4.18.4** After Buyer acceptance of first article(s), all of the remaining units required by the PO/contract must be produced by the Supplier and the Supplier's suppliers using the same design, materials, processes, methods and tooling that were used to manufacture the approved first article(s). Any changes must have prior written approval from the Buyer.

☐**4.19 Notification of Change to Design, Methods, or Processes**
The Supplier must immediately notify the Buyer of any significant changes (those that may affect form, fit, function, reliability, safety, or interchangeability) in product design, fabrication methods, materials, or processing from those used by the Supplier at time of Supplier's quotation or offer to the Buyer, which resulted in the PO.

4.20 Age/Shelf Life and Storage Control
Superseded by Clause 3.21

☐**4.21 Serial Numbers**
The Supplier must assign/mark a separate and distinct serial number to each end-item in accordance with the procurement documentation. A record of the serial number, for each part number, must be maintained by the Supplier.

☐**4.22 Lot or Batch Numbers**
For items furnished in accordance with the procurement documentation, the manufacturing lot or batch number must be indicated on the packing list, certifications and other applicable documents. Where impractical to mark individual parts due to size or shape, the lot or batch number must be marked on identifying tags or the smallest unit package.

☐**4.23 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 must be available for review by the Buyer's representative.

☐**4.24 Shipment Destination Other than BNL**
The material ordered is to be shipped to other than the Buyer's facilities. Copies of the data required in accordance with the procurement documentation must accompany the shipment; in addition, one copy of such data must be mailed to the Buyer on the same day that shipment is made.

4.25 Heat Treat Bars
Superseded by Clause 4.7

☐**4.26 Burn-in**
Burn-in must be performed on each completed item, per the procurement specification or Supplier's Burn-In process approved by the Buyer. Records of burn-in testing, repairs and test results must be maintained and must be available to the Buyer's representative upon request.

4.27 Welding Procedures
Superseded by Clause 4.7

☐**4.28 Weld/Braze Inspection Report**
A report(s) must be submitted that indicates the complete inspection of welds or brazes from the initial fit-up stage through final inspection. Inspection reports must be accompanied by all radiographic films, filler metal reports etc. The reports must contain the signature or stamp, and title of an authorized Supplier representative.

☐**4.29 Radiographic Quality Requirements**
Items requiring radiographic inspection must be radiographed and processed in accordance with the Supplier's special process procedures that satisfy design specifications, standards or other procurement documentation requirements. Personnel reading and interpreting film must have been examined and certified. Responsibility for this certification must rest with the Supplier, whether the Supplier does the work or subcontracts to a specialized laboratory. A report of the findings must include the name of the reader and the signature and title of a responsible representative. The radiographic film and a reproducible copy of the report must accompany each shipment. An adequate method of identifying and cross-referencing each film exposure, report, and item must be provided. When parts are serialized, serial numbers must appear on the report and the film.

☐**4.30 Nondestructive Test Reports**
All nondestructive testing must be conducted in compliance with the Supplier's special process procedures that satisfy the applicable provisions of the design specifications, or other procurement documentation requirements. Personnel and equipment utilized in performance of such tests must be qualified for the type of test performed. The Supplier must furnish with, or prior to, each shipment reports of such nondestructive examination of material or items furnished. These reports must be identifiable to the respective item or material including the specific section, joints or views of the item furnished. These reports must contain the signature and title of an authorized Supplier representative. When items are serialized, the serial numbers must appear on the reports.

☐ **4.31 Pressure or Leak Test Reports**
Test reports must be prepared for all pressure and leak tests. Such reports must state the requirement, the Supplier's test procedure number, and the observed result for each item, joint or connection tested. When items are serialized, the serial numbers must appear on the report. Reports must contain the signature/title of an authorized Supplier representative and must accompany each shipment.

4.32 Cleaning Certification
Superseded by Clause 4.16 D

☐ **4.33 Calibration Certification**
The Supplier must submit with each instrument/system a certification that the instrument/system has been calibrated and is ready for use. The certification must contain, at a minimum, the identity of the instrument/system, identification of the calibration procedure used, identification of the standards and/or equipment utilized for the calibration, and a statement that the calibration of the standards and/or equipment used is traceable to the NIST or some other recognized national or international standard, or physical constant. Unless otherwise specified, detailed support data must remain on file for minimum of three (3) years with the Supplier and must be available for review by the Buyer. The certification must also contain the signature and title of an authorized Supplier representative.

☐ **4.33.1** The Supplier will provide "As Found" (i.e., before) and "As Left" (i.e., after) measurements with the certification.

☐ **4.33.2 Additional NQA-1 Calibration Certification Requirements**
The certificate must be signed by the person responsible for the quality function and whose function and position is described by the supplier's QA program/system.

The Supplier's Certification system must be described in their QA Program/system documentation and include the process for completing the C of C along with the review and Approval of the C of C prior to delivery.

The Buyer reserves the right to verify the validity of Supplier's certificates and the effectiveness of the Supplier's certification system. This verification will be commensurate with the Supplier's quality performance/history.

The certificate must include the following:

- M&TE ID or Asset number
- The Supplier's calibration procedure
- The recommended frequency of calibration
- The calibration date
- The next calibration due date
- As-found calibration data must be reported in the certificate of calibration when calibrated items are found to be out-of-tolerance.
- The standards used for calibration
- The PO number
- Any additional technical and quality requirements, as necessary.

On the certificate, the supplier must also attest that the contracted calibration or test service has been performed in accordance with their ISO/IEC-17025 program, has been performed within their scope of accreditation, is traceable to NIST, the PO's requirements are met, and identify any and all nonconforming conditions.

☐**4.34 Operating-Maintenance Manual**
Documentation containing operating procedures, maintenance instructions, spare parts lists, and handling procedures must be submitted with the shipment of the first item.

☐**4.35 Computer Software Configuration Management**
The Supplier must have and maintain an effective software configuration management system. The Supplier's system must establish requirements for placing software under configuration control, provide for the positive identification of software, and the control of all software baseline changes.

☐ **4.35.1** The Supplier must submit a copy of their software configuration management procedure(s) with their proposal for review and evaluation, and specifications for software features, including requirements for safety, security, functions, and performance.

4.35.2 Superseded by Sub-clause 4.35.1

☐**4.36 Computer Software Verification and Validation (V&V)**
The Supplier must develop written procedures describing the controls applied to the design of software and the validation of the design through independent technical review. The procedures must provide for documentation of review activities, including requirements for documenting comments and resolution of comments. Supplier software designs and review documentation must be subject to review and approval by the Buyer.
The Supplier must test and verify computer software developed or modified to fulfill the requirements in the procurement documentation. The verification testing must be accomplished by a comparison of test results with those from other verified software, or by a comparison with results from analytical solutions or Buyer-approved alternatives.

☐**4.37 Computer Software Notification of defects, new releases or other issues**
For Safety Software, the Supplier must provide a process to (a) notify users of defects, new releases, or other issues that impact the operation and (b) mechanisms for the users of the software to report defects and request assistance in operating software.

4.38 Computer Software User Training
The Supplier must provide formal on-site, off-site or on-line training for users.

☐**4.39 Records**
The Supplier must retain objective evidence, including records, of the inspections and tests performed in the course of manufacturing, testing, inspecting, preserving, packaging, and preparation for shipment of procured items. These records must be made available to the Buyer's representative for review upon request. These records must be maintained for a minimum of three (3) years, unless otherwise specified in the procurement documentation, after the completion of the PO/contract.

4.40 Electrical, Fire Protection, or Scaffolding Equipment, Material, and Systems
Superseded by Clause 3.10

4.41 Hoisting & Rigging Equipment
Superseded by Clause 3.11

4.41.1 Powered Industrial Truck Attachments
Superseded by Clause 3.18

4.41.2 Custom-made Equipment
Superseded by Clause 3.11

4.41.3 Critical Lifts
Superseded by Clause 3.11

4.42 Marking of Outer Package and Hoisting & Rigging Services
Superseded by Clause 3.12

☒**4.43 Franchised/Licensed "Distributor" Traceability**
Products that are not purchased directly from the Original Equipment Manufacturer (OEM)/Original Component Manufacturer (OCM) must be purchased only from a franchised/licensed distributor of the product being offered. The distributor must provide documentation that the distributor is contractually authorized by the manufacturer as a franchised / licensed distributor along with the geographic region(s) covered by the authorization. The distributor must not use brokers (any company, person, or entity who is not an OEM/OCM or authorized by the OEM/OCM) for the purchase of items, unless pre-approval has been granted by Brookhaven Science Associates (BSA). For reference only, a list of authorized/franchised distributors for electronic components can be found at:
https://www.trustedparts.com/

☐ **4.43.1** The distributor must ensure traceability of all products to the Original Equipment Manufacturer (OEM)/Original Component Manufacturer (OCM) by identifying the Original Equipment Manufacturer (OEM)/Original Component Manufacturer (OCM) for each lot and / or date code on the Certificate of Conformance. The distributor must provide a copy of the Manufacturer's certificate for the lot number being supplied, along with their franchised distributor documentation.

4.44 Power Machine Shop Equipment
Superseded by Clause 3.13

4.45 Aerial Lifts Equipment
Superseded by Clause 3.14

4.46 Self-propelled Elevating Work Platform Equipment
Superseded by Clause 3.15

☐**4.47 Nuclear (NQA-1) Calibration Services**
The service must be provided in accordance with the supplier's accredited ISO/IEC-17025 program and scope of accreditation. As-found calibration data must be reported in the certificate of calibration when calibrated items are found to be out-of-tolerance. The equipment and standards used to perform the calibration must be identified in the certificate of calibration. Subcontracting of these accredited services is prohibited. BNL must be notified of any condition that adversely impacts the supplier's ability to maintain the scope of accreditation. Performance of the services listed on this order is contingent on the Supplier's accreditation having been achieved through an on-site accreditation assessment by the accreditation body within the past 48 months. Any additional technical and quality requirements, as necessary.

☐**4.48 Nuclear (NQA-1) Right of Access**
BNL or designated representative may enter the premises of Supplier (or its sub-tier supplier) and review records for the purpose of inspection, surveillance, or quality assurance audit.

☐ **4.49 Nuclear (NQA-1) Partial Orders**
Supplier may not ship partial orders without prior written approval from BNL.