

## EXHIBIT "H" QUALITY ASSURANCE REQUIREMENTS

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**QC-01B QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR ONSITE SUBCONTRACTS  
(Feb 2018)**

All work activities, including the purchase and inspection of any provided items intended for permanent installation (or spares), items ultimately intended for off-site shipment such as waste containers etc., or calibrated portable Measuring & Test Equipment (M&TE) being used in testing/calibration of permanently installed equipment, will be governed by the following sub-clauses that are marked with an "X":

- In accordance with CONTRACTOR's responsibilities under DOE Order 414.1D, *Quality Assurance* and 10 CFR 830 Subpart A, *Quality Assurance Requirements*, SUBCONTRACTOR'S Quality Assurance (QA) Program is required to be evaluated for the capability of providing items/services in accordance with subcontract technical and quality requirements prior to award, and is required to be approved by CONTRACTOR prior to the start of work (as further defined/controlled in the subcontract). SUBCONTRACTOR QA Program approval documentation will be maintained on file with CONTRACTOR. SUBCONTRACTOR will perform all work under this Subcontract in accordance with its approved QA Program and further will notify CONTRACTOR of any quality affecting changes made to its QA Program, whereupon CONTRACTOR will determine need for re-evaluation/re-approval. SUBCONTRACTOR'S QA Program shall be subject to ongoing evaluation and monitoring by CONTRACTOR and shall address configuration control of subcontract requirements, including CONTRACTOR approval of substitutions and configuration control of any provided CONTRACTOR procedures, specifications, or items. SUBCONTRACTOR agrees to provide CONTRACTOR and/or DOE/NNSA the right and access to conduct audits of SUBCONTRACTOR'S quality systems and verify compliance with subcontract requirements as well as the right to conduct inspection and/or testing of SUBCONTRACTOR'S product to assure conformance with subcontract requirements. Any SUBCONTRACTOR proprietary processes must be specifically identified in writing in order to prevent disclosure. Unless otherwise provided for in this subcontract, SUBCONTRACTOR is responsible for including (i.e. flowing down) the quality assurance requirements of this subcontract in its lower-tier subcontracts to the extent necessary to ensure SUBCONTRACTOR'S compliance with these requirements.
- The LANL Quality Assurance (QA) Program governs the subject work. All applicable items must be procured by LANL through the LANL procurement process and be receipt inspected by LANL QPA Division with an associated Inspection Plan (i.e. Form 1952) prepared by LANL project personnel, unless an approved LANL Compensatory Action Plan and/or Commercial Grade Dedication (CGD) package allows otherwise.
- LANL developed and approved Compensatory Action Plan and/or Commercial Grade Dedication (CGD) package shall be submitted as a supplement to Exhibit H.
- Staff Augmentation: The LANL QA Program (SD330), which meets the requirements of DOE O 414.1D and 10 CFR 830 Subpart A, applies to this support service subcontract and SUBCONTRACTOR personnel will comply with SD330 when working under this subcontract. A copy of SD330 will be made available upon request. SUBCONTRACTOR personnel are augmenting LANL staff personnel under the direction of LANL supervision.
- For LANL designated ML-4 work only: All work activities associated with this Subcontract have been planned, reviewed, approved, and designated herein by CONTRACTOR under the controls of the LANL Quality Assurance (QA) Program defined in SD330, which is compliant with DOE Order 414.1D and 10 CFR 830 Subpart A. As such, applicable

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LANL QA Program requirements have been tailored to the scope of work of this Subcontract within the various Subcontract Exhibits for implementation by SUBCONTRACTOR. Thus, SUBCONTRACTOR is performing work under this Subcontract in accordance with the graded approach requirements of the LANL QA Program.

Consistent with a graded approach to the LANL QA Program, it is acceptable for SUBCONTRACTOR to directly procure/supply items as necessary in support of the scope of this Subcontract. SUBCONTRACTOR owned/leased Measuring and Test Equipment (M&TE) which requires calibration and is used on-site at LANL for determining LANL item/process acceptability must be coordinated with the LANL Standards & Calibration Laboratory (S&CL), if LANL item/process acceptability determination includes M&TE enrolled in the LANL S&CL program. As defined in LANL procurement quality procedures, any SUBCONTRACTOR supplied stand-alone circuit breakers and fasteners, and/or hoisting, lifting, and rigging equipment intended to be installed at LANL or otherwise remain at LANL for future use (i.e. spares), must have an Inspection Plan (Form 1952) completed by LANL project personnel and receive documented LANL QPA Division receipt inspection approval prior to installation. Unless otherwise provided for in this subcontract, no other exceptions to the LANL QA Program are allowable unless specifically defined in an approved LANL Compensatory Action Plan.

Unless otherwise provided for in this subcontract, SUBCONTRACTOR is responsible for including (i.e. flowing down) the quality assurance requirements of this subcontract in its lower-tier subcontracts to the extent necessary to ensure SUBCONTRACTOR'S compliance with these requirements.

#### **QC-02 DESIGN/CHANGE CONTROL FOR SUBCONTRACTOR PROVIDED DESIGN (May 2008)**

SUBCONTRACTOR shall provide a design that is defined, controlled, and verified. Applicable design inputs shall be appropriately specified on a timely basis and correctly translated into design documents. Design interfaces shall be identified and controlled. Persons other than those who designed the item shall verify design adequacy and accuracy. Design changes shall be governed by controlled measures commensurate with those applied to the original design.

#### **QC-02A DESIGN/CHANGE CONTROL FOR LANL PROVIDED DESIGN (Sept 2014)**

SUBCONTRACTOR shall implement the LANL provided design for the work involved. In the case of maintenance and repair work on existing LANL equipment/systems, the LANL provided design includes the current design configuration of existing equipment/systems being worked on. Design questions and design change requests must be transmitted to the CONTRACTOR via formal documents such as Requests for Information (RFI), Field Change Requests (FCR), or Subcontractor Deviation Disposition Request (SDDR). No design changes will be implemented unless formally approved by the CONTRACTOR via Engineering Change Notice (ECN) or other controlled document.

#### **QC-03 QUALIFICATION AND CERTIFICATION OF PERSONNEL AND STAFF (Sept 2014)**

SUBCONTRACTOR'S personnel and staff shall have the indoctrination, training, experience, qualifications and certifications necessary for the work to be performed as required by industry standards, as well as any additional requirements specified in this subcontract. Qualification and certification records shall be available for review by CONTRACTOR upon request.

#### **QC-07 MANUFACTURING, INSPECTION, MAINTENANCE, REPAIR, AND/OR TEST PROCEDURES (Sept 2014)**

SUBCONTRACTOR shall upon CONTRACTOR'S request, submit to CONTRACTOR for review prior to manufacturing, inspection, maintenance, repair and/or testing, written procedures, checklists, and/or travelers detailing the activity that will be performed to verify that the items being supplied or worked on conform to the requirements of this subcontract.

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**QC-08 INSPECTION, EXAMINATION, AND TEST REPORTS (Mar 2016)**

SUBCONTRACTOR shall provide to CONTRACTOR, with or prior to each shipment, or as the result of on-site testing/inspection, all reports of inspections and/or tests performed on the items procured/inspected/tested. The reports shall be traceable to the subcontract number, item part/model number, item serial number (where applicable), and/or system description (when items are tested/inspected as part of an overall integrated system).

**QC-09 SPECIAL PROCESS PROCEDURES (Jun 2011)**

SUBCONTRACTOR'S special process procedures as applicable to a work activity shall be made available for CONTRACTOR'S review upon request. Special processes (e.g., welding, brazing, bonding, plating, chemical machining, heat- treating, radiographic inspection, ultrasonic testing, pressure leak testing, or waste processing, etc.) shall be performed in accordance with written procedures or instructions. SUBCONTRACTOR 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. SUBCONTRACTOR shall provide for the qualification/certification of personnel, prior to their assignment, to ensure competence in the use of the special process and associated procedures or specifications. Qualification/certification records of SUBCONTRACTOR personnel who will be performing special process operations shall be available to CONTRACTOR for review upon request. Only those personnel that have been qualified to perform a specific special process shall be used to perform that process.

**QC-10 WELDING REQUIREMENTS FOR ON-SITE WELDING AT LANL (Jun 2011)**

All on-site welding shall meet the requirements of the LANL Engineering Standards Manual, Chapter 13 – Welding & Joining. A copy of said document will be made available to SUBCONTRACTOR upon request. Prior to performing any welding on-site at Los Alamos National Laboratory (LANL) under this subcontract, all persons who will perform the welding shall provide evidence to CONTRACTOR that they have been previously certified by CONTRACTOR to perform such welding at LANL.

**QC-11 ENGINEERING DRAWINGS (Sept 2011)**

SUBCONTRACTOR shall provide to CONTRACTOR, with or prior to completion of design deliverables or prior to fabrication if required by the procurement documents, or with or prior to the shipment of any applicable items and traceable to the item shipment, engineering drawings detailing the design of the items/systems required by this subcontract. For specific items, this requirement may be satisfied by inclusion of existing drawings in a technical operations/maintenance manual. Further, drawings may be for design only or for fabrication/construction to occur at a later date and may include, during or after fabrication/construction, any applicable as-built drawings.

**QC-12A CERTIFICATION OF CALIBRATION FOR SUBCONTRACTOR M&TE (Sept 2014)**

For any SUBCONTRACTOR measuring and test equipment (M&TE) that provides measurement on the acceptability of CONTRACTOR items/processes and is by design required to be calibrated, SUBCONTRACTOR shall make available for CONTRACTOR'S review or provide copies, as requested, all current calibration documentation associated with SUBCONTRACTOR owned M&TE.

For SUBCONTRACTOR owned or leased M&TE used in the performance of work (or M&TE equipment owned or leased by any sub-tier SUBCONTRACTOR) that provides measurement on the acceptability of CONTRACTOR items/processes, M&TE shall be suitably marked for traceability to the calibration documentation with recalibration due dates marked on the applicable M&TE.

SUBCONTRACTOR shall maintain a user log or other documented means to identify where each calibrated M&TE device was used, including the date(s) used.

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**QC-12B POST-USE CERTIFICATION OF CALIBRATION FOR SUBCONTRACTOR M&TE (Feb 2018)**

Unless waived in writing by CONTRACTOR, SUBCONTRACTOR shall provide to the CONTRACTOR's Purchasing Agent, M&TE post-use calibration documentation indicating that current and proper calibration of M&TE was verified and maintained (i.e., M&TE is shown to still be in calibration after use) when recalibration becomes due and prior to close-out of the subcontract. The SUBCONTRACTOR post-use calibration documentation shall contain a statement that the calibration of the standards and/or equipment used in the M&TE calibration is traceable to the National Institute of Standards and Technology (NIST) or other industry recognized and accepted national or international standard. Additionally, the SUBCONTRACTOR's post-use calibration documentation shall include the following:

- title (e.g., "Calibration Certificate"),
- name and address of the calibration laboratory or other entity (which may or may not be the original equipment manufacturer),
- identification of the standards and/or equipment used for the calibration,
- a reference to any applicable procedures used to calibrate,
- description of the item being calibrated, including any applicable model and serial numbers,
- date of calibration,
- calibration results, including as-found and as-left data,
- tolerance/uncertainty of measurement,
- any conditions of concern that may have an influence on the measurement results, and
- signature(s) of authorized persons.

SUBCONTRACTOR shall immediately notify CONTRACTOR if post-work calibration of M&TE is found to be out-of-calibration. CONTRACTOR and SUBCONTRACTOR shall jointly evaluate the validity of previous measurement, inspection, or test results, and the acceptability of items previously inspected or tested. SUBCONTRACTOR shall be responsible for additional costs associated with any additional M&TE measurements necessary as a result of out-of-calibration SUBCONTRACTOR M&TE used to provide measurement on the acceptability of CONTRACTOR items/processes.

**QC-16 SHELF LIFE CERTIFICATIONS/STORAGE REQUIREMENTS (Jun 2011)**

SUBCONTRACTOR shall have an effective storage and age control system for items whose acceptability is limited by its age or manner of storage. Items provided with a designed shelf life must be marked or have their packaging marked with cure/manufacturing dates or expiration dates. At the time of receipt, the material shall not have less than 85% (allowing for rounding to whole months) of its shelf life remaining without prior written approval from CONTRACTOR. In lieu of product or container marking, SUBCONTRACTOR may include shelf life information on a certification document provided with the ordered material delivered to CONTRACTOR. Any applicable special storage and handling instructions shall be provided.

**QC-17 MANUALS / INSTRUCTIONS (Jun 2011)**

SUBCONTRACTOR shall submit manuals/instructions or other documents that identify the items provided and include as applicable, drawings/sketches, part/model numbers (including recommended spare and replacement parts and data required for ordering), storage guidelines, safety precautions, installation/test instructions, and operating and maintenance instructions. The manual/instructions shall be written in clear, concise language readily understandable by a technician or craftsman, and shall conform to the industry standards that prevail for the preparation of such documents.

**QC-17A CATALOG DATA (Jun 2011)**

SUBCONTRACTOR shall submit their most up to date technical catalog data applicable to the item(s) being procured, including any applicable technical bulletins regarding installation, operations, or maintenance.

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**QC-22 CONTRACTOR'S RIGHT OF ACCESS TO SUBCONTRACTOR'S FACILITY (Visit) (Jun 2011)**

CONTRACTOR reserves the right to send its representatives to visit SUBCONTRACTOR'S facilities, on a non-resident basis, for surveillance and survey/audit purposes, to assure/verify SUBCONTRACTOR'S conformance to the technical requirements of this subcontract, including test and inspection requirements, and all applicable quality assurance requirements. Such personnel shall be allowed full access to: (1) witness all operations/tests involved in the performance of this subcontract; and (2) survey/audit all records pertaining to the subcontract. Reasonable advance notice (minimum 24 hours), in writing, will be provided to SUBCONTRACTOR prior to any such visits. SUBCONTRACTOR shall flow down this requirement for CONTRACTOR'S right of access to all lower-tier subcontractors and suppliers.

**QC-24 DESIGN REVIEW PRIOR TO PRODUCTION (Sept 2011)**

Unless waived in writing by CONTRACTOR, before release of the design documents, SUBCONTRACTOR shall provide for one or more design reviews by CONTRACTOR and shall obtain written approval/authorization from CONTRACTOR to finalize design and/or begin production/fabrication/construction. To facilitate the design review, SUBCONTRACTOR shall notify CONTRACTOR of its readiness for a design review conference at least five (5) working days before the date on which the conference is scheduled. The notification shall include the proposed conference agenda and one reproducible copy of each document that constitutes the design or helps to demonstrate that the design meets CONTRACTOR'S requirements.

**QC-25 NONCONFORMANCE REPORTING (Feb 2018)**

SUBCONTRACTOR shall evaluate and notify CONTRACTOR of each nonconformance against items and services that do not meet procurement document requirements within three (3) working days of discovery. This includes, but is not limited to, nonconformance with documentation requirements and technical or material requirements, including situations where an item may be restored so as to function unimpaired, but it does not meet the original subcontract/design requirement. Notice of a nonconformance shall consist of a written description of the nonconformance and when available, an assessment of the cause and the proposed disposition/corrective action, including technical justifications for any proposed Use-As-Is or Repair dispositions. In cases where the SUBCONTRACTOR proposes a Use-As-Is or Repair disposition, the disposition of the nonconformance will be approved by CONTRACTOR with corresponding disposition implementation verified. Such Use-As-Is or Repair nonconformance documentation will be supplied by SUBCONTRACTOR to CONTRACTOR via LANL Form 2178, *Conduct of Engineering Subcontractor Deviation Disposition Request (SDDR)* or other formal/controlled method and *all* records of nonconformance shall be maintained by the SUBCONTRACTOR. SUBCONTRACTOR shall allow for the return of any materials determined by CONTRACTOR to be nonconforming as a result of CONTRACTOR'S receipt inspection.

**QC-27 SUSPECT/COUNTERFEIT ITEMS (S/CI) (Feb 2018)**

- (a) A suspect item is one in which there is an indication by visual inspection, testing, or other information that it may not conform to established Government or industry-accepted specifications or national consensus standards. A counterfeit item is a suspect item that is a copy or substitute, without legal right or authority to do so, or one whose material, performance, or characteristics are knowingly misrepresented by the vendor, supplier, distributor, or manufacturer.
- (b) SUBCONTRACTOR warrants that all items, including their subassemblies, components, and parts, tendered to CONTRACTOR shall be genuine (i.e., not counterfeit), new and unused, and conform to the requirements of this subcontract, without substitution unless otherwise provided for within this subcontract or approved in writing by CONTRACTOR prior to delivery.
  - (1) SUBCONTRACTOR shall ensure (as applicable) that malicious software (and hardware) is prevented from entering into their supply chain for items/services to be provided to CONTRACTOR.

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- (c) SUBCONTRACTOR further warrants that all components, parts, materials, and supplies incorporated into CONTRACTOR'S facilities or equipment by SUBCONTRACTOR, during performance of work at LANL, shall be genuine, new and unused, and original-equipment-manufacturer items, without substitution unless otherwise provided for within this subcontract or approved by CONTRACTOR in writing as suitable for the intended purpose prior to use.
- (1) If SUBCONTRACTOR discovers any S/CI items or S/CI conditions of concern for items in use (including SUBCONTRACTOR owned items) or in the process of being installed at LANL, SUBCONTRACTOR shall temporarily segregate/control the items and immediately notify CONTRACTOR. CONTRACTOR will make subsequent notifications concerning CONTRACTOR owned items in accordance with CONTRACTOR'S S/CI procedures and provide SUBCONTRACTOR direction as to S/CI disposition. For SUBCONTRACTOR owned items with S/CI concerns (e.g. tools, scaffolding, hoisting, lifting, and rigging equipment, etc.), CONTRACTOR will provide direction to SUBCONTRACTOR up to and including the removal of such items from the LANL site.
- (d) As part of the foregoing warranties, SUBCONTRACTOR also certifies that all labels and/or trademarks or logos affixed, or designed to be affixed; to items supplied or delivered to CONTRACTOR, and to certifications, affirmations, information, or documentation related to the authenticity and quality of items supplied or delivered to CONTRACTOR under this subcontract, are genuine.
- (e) Falsification of information or documentation may constitute criminal conduct; accordingly, SUBCONTRACTOR grants CONTRACTOR the right to temporarily segregate items, and related paperwork, that are suspected to be S/CI, pending a determination by National Nuclear Security Administration (NNSA) or Department of Energy (DOE) officials whether the segregated items should be impounded as evidence.
- (1) In the event NNSA/DOE directs CONTRACTOR to impound the segregated items, no liability shall be asserted or enforceable against CONTRACTOR, NNSA, or DOE because of the impoundment, all such liability being expressly waived by SUBCONTRACTOR or any person claiming any right or interest under this subcontract in the impounded items.
- (2) CONTRACTOR shall incur no liability for failure to return impounded items to SUBCONTRACTOR and does not assume any liability for loss or damage to the items impounded or temporarily segregated pursuant to this clause regardless of the circumstances under which said loss or damage may have occurred, and whether the impounded or temporarily segregated items are in CONTRACTOR'S possession or under its control.
- (f) Nothing in this clause shall limit CONTRACTOR'S right to reject S/CI, and related paperwork, as nonconforming, to deny payment for such items, to return such items to SUBCONTRACTOR once NNSA/DOE has released the items, or to assert other remedies provided under this subcontract or by law.

**QC-29 HANDLING, RECEIVING, STORAGE, SHIPPING, AND PACKAGING (Mar 2016)**

SUBCONTRACTOR shall control the handling, receiving, storage, cleaning, packaging, shipping, and preservation of items to prevent damage or loss and to minimize deterioration. Such activities shall include as applicable, the appropriate controls for items categorized as Level A, B, C, or D per ASME NQA-1 2008/2009a, Part II, Subpart 2.2. This includes items being provided by SUBCONTRACTOR to CONTRACTOR as well as any items being provided by CONTRACTOR to SUBCONTRACTOR. Handling, storage, and shipping of items shall be conducted in accordance with established work and inspection instructions, drawings, specifications, shipment instructions, or other pertinent documents or

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procedures specified for use in conducting the activity. Items shall be packaged according to size, manufacturer, dimensional and manufacturer lot or heat number. Packages shall be closed and labeled in a manner that identifies the item, dimensions and weight (where applicable), SUBCONTRACTOR'S and/or manufacturer's name, and CONTRACTOR'S subcontract number. Non-conforming packages may be returned to SUBCONTRACTOR at SUBCONTRACTOR'S expense.

**QC-32 LANL APPROVAL (IN SUPPORT OF ONSITE WORK REQUIREMENTS) OF INTERNATIONAL BUILDING CODE (IBC) FIELD AND LABORATORY TESTING AGENCIES AND SPECIAL INSPECTION AGENCIES (Jun 2011)**

SUBCONTRACTOR and all lower tier subcontractors who perform field and/or laboratory testing or special inspections of work shall be approved by the LANL Building Official (LBO) or LBO assigned Chief Inspector, prior to starting work.

**QC-34 DOCUMENTS AND RECORDS (May 2012)**

Any documents and records required to be submitted by SUBCONTRACTOR to CONTRACTOR are identified in this subcontract, including any dates/times for submittal. SUBCONTRACTOR shall retain records resulting from subcontract performance for 3 years from final payment, unless otherwise specified by applicable law. Disposition of Subcontractor maintained records after the specified retention times are at the discretion of the SUBCONTRACTOR.