

WP 13-QA3020

Revision 4

Fabrication Oversight

Management Control Procedure

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APPROVED FOR USE

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INTRODUCTION ^{1, 2, 3}

This procedure provides instructions for the Fabrication Oversight (FO) Section of Oversight Programs to conduct and report quality-related functions in support of the Waste Isolation Pilot Plant (WIPP). This includes the following quality-related activities:

- Performance of fabrication oversight in support of Centralized Procurement
- Performance of the oversight and acceptance process for U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) Government Furnished Equipment (GFE), including Type B packaging
- Development and execution of Quality Assurance Inspection Plans (QAIPs) or Quality Assurance Verification Plans (QAVPs) for WIPP-related commodities and/or equipment.
- Generation of a Washington TRU Solutions LLC (WTS) Certificate of Conformance (c) of C) as specified in the respective QAIP

WTS may conduct verification of an item or equipment by monitoring, witnessing, or observing activities performed by the supplier. This method is called source verification, which uses a QAVP in lieu of a Source/Receipt Inspection Verification Sheet (S/RIVS). See Section 4.0 for details.

No records are generated by the implementation of this procedure.

REFERENCES**BASELINE DOCUMENTS**

- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description

REFERENCED DOCUMENTS

- ANSI/ASQ Z1.4, Sampling Procedures and Tables for Inspection by Attributes
- WP 04-IM1000, Issues Management Processing of WIPP Forms
- WP 13-QA.04, Quality Assurance Department Administrative Program
- WP 13-QA1003, Quality Assurance Receipt/Source Inspections
- WP 13-QA3004, Nonconformance Report
- WP 15-PC3041, Approval/Variation Request Processing
- WP 15-PS3002, WTS Controlled Document Processing

- EA13QA1006-1-0, Quality Assurance Inspection Report
- EA13QA1006-2-0, Quality Assurance Inspection Log

PREREQUISITE ACTIONS

NOTE

QAIPs and/or QAVPs will be required for WTS Centralized Procurement activities as well as CBFO-controlled commodities that require fabrication oversight services (e.g., Type B packaging).

- 1.0 Oversight Programs, perform a task analysis to ensure all required training and qualification elements are identified for WTS **AND** contracted service personnel, to ensure only qualified personnel are utilized.
 - 1.1 Identify all applicable training and qualification requirements for contracted service personnel and include as part of the Statement of Work (SOW).
 - 1.2 Ensure that WTS quality engineers (QEs) and/or inspection personnel are qualified in accordance with WP 13-QA.04.⁴

NOTE

Oversight Programs personnel will coordinate with Procurement to provide outside organizations (e.g., vendor) with copies of QAIPs and/or QAVPs for information purposes on an "as needed" basis.

- 2.0 Oversight Programs, coordinate all related QAIP or QAVP functions that require technical support. This includes:
 - Contracted inspection service personnel
 - WTS inspection and quality engineering personnel
 - WTS Packaging Engineering (Cognizant Engineer [CE])
 - Procurement/Centralized Procurement representative(s), as required
 - CBFO technical representative, as required

PERFORMANCE**NOTE**

Conditions adverse to quality, nonconforming or quality-indeterminate conditions shall be documented and controlled in accordance with Section 5.0.

1.0 FABRICATION OVERSIGHT ^{5, 6, 7}**NOTE**

FO activities shall be accomplished consistent with the supplier's planned inspections, examinations, or tests, and performed at intervals consistent with the importance and complexity of the item.⁵

NOTE

When mandatory hold/witness points are used to control work that is NOT to proceed without the specific consent of the organization placing the hold/witness point, the specific hold/witness points shall be indicated in implementing procedures/work instructions. Only the organization responsible for the hold/witness point may waive it. Approval to waive specified hold/witness points shall be documented before continuing work beyond the designated inspection point.⁷

- 1.1 Oversight Programs, when WTS organizations (e.g., Centralized Procurement) identify the need for fabrication oversight, perform the following:
 - 1.1.1 Ensure oversight planning is initiated and completed for the respective commodity.
 - 1.1.2 Verify appropriate quality and design basis requirements (i.e., specification, drawings, etc.) have been incorporated in the procurement documentation.
 - 1.1.3 Verify that coordination and sequencing of the witness and hold points have been established for successive stages of the vendor's fabrication process.
 - 1.1.4 Ensure the extent of fabrication oversight is a function of the relative importance and complexity of the item as well as the supplier's quality of performance.
 - 1.1.5 Ensure that vendor procedures that govern critical attributes are submitted to WTS for review and approval in accordance with WP 15-PC3041.

- 1.1.6 Ensure pre-production planning identifies all critical attributes and that all parties agree on the methodology, including dimensions and tolerances, to be used for acceptance.
- 1.1.7 Ensure manufacturer's fabrication process (e.g., traveler) establishes all applicable witness and hold points to facilitate fabrication oversight activities.

1.2 Oversight Planning

NOTE

Oversight criteria (i.e., inspection, witnessing and testing) shall be documented in a QAIP and/or QAVP that is approved by Oversight Programs. Changes to the QAIP/QAVP and/or oversight criteria is not permitted without the specific consent of Oversight Programs.

It is permissible for FO to reference existing design specifications, equipment specifications, and drawings that contain applicable quality assurance (QA) and/or quality control (QC) requirements (appropriate to the item/equipment).

If a conflict exists between engineering technical documents (specifications, drawings, etc.) and FO documents, the engineering technical documents take precedence.

- 1.2.1 FO, determine application of quality controls in a manner consistent with the technical design basis (i.e., specification, drawings, etc.).

1.3 QAIP Development

NOTE

Generation of a C of C will be specified and controlled by the individual QAIP. Reference Section 3.0 for C of C guidelines.

- 1.3.1 FO, perform the following for QAIP development:

- [A] Ensure that all QAIPs are processed, controlled, and approved under the provisions of the electronic document system and WP 15-PS3002.
- [B] Ensure that QAIPs address the following attributes, as applicable:
- Introduction
 - References

- Requirements
 - Sampling Methodology
 - Preproduction Review
 - First Article Inspection
 - Production Inspection
 - Data Package Review
- Checklists
- Source Inspection Planning
- Records
- Inspection Reports

1.3.2 FO/QE, perform the following:

- [A] Coordinate with the CE for the affected commodity to identify inspections/tests.
- [B] Using the commodity design basis and CE input, determine applicable inspection/test attributes. This includes, but is not limited to:
 - Drawings and specifications
 - Vendor manufacturing procedures
 - Procurement documents:
 - Purchase Requisitions and associated Purchase Requisition Change Notices
 - Associated SOWs and specifications
 - Associated corrective action documents, if applicable
- [C] Verify the following attributes are addressed in the QAIP, as applicable:
 - Identification of specific items, processes, and fabrication operations where inspections/tests are necessary.
 - Identification of the parameters or characteristics to be inspected/tested and/or witnessed.

- Identification of when, during the fabrication process, inspections/tests are to be performed. Examples:
 - Welding
 - Leak testing
 - Assembly/fabrication
- Verification that dimensional, physical, configuration, identification, cleanliness, or other characteristics meet requirements. Examples:
 - Initial fabrication/assembly
 - Critical attributes
 - In-process fabrication/assembly
 - Final inspection
- Functional and performance testing to verify that items and processes meet requirements and are fit for use and acceptance. Examples:
 - Functional testing of item
 - Continuity checks
- Nondestructive examination (NDE), including procedure used to perform the examination. Examples:
 - Structural components
 - Support equipment
- Inspection/test or monitoring methods to be used. Examples:
 - Witnessing of fabrication/testing
 - Traveler review
 - Data package review
- Acceptance and performance criteria, based on appropriate procedure, design documents, or site or industry specifications.
- Sampling requirements based on ANSI/ASQ Z1.4 or statistical analysis.
- Measuring and test equipment (M&TE) needed to perform the inspection/test, including calibration, type, range, accuracy, and tolerance requirements.

- Test requirements and acceptance limits, including required levels of precision and accuracy.
- Test prerequisites that address calibrated instrumentation, software, appropriate and adequate test equipment and instrumentation, trained personnel, and suitably controlled environmental conditions.
- Provisions for ensuring that prerequisites for the given test have been met.
- Hold and/or witness points.
- Provision for recording inspection/test results.^{8, 9, 10, 11, 12}

1.3.3 FO/QE, establish process monitoring and/or in-process or final inspections/tests (as needed).

1.3.4 FO/QE, complete the oversight planning documentation and submit QAIP for review, approval and publication (reference WP 15-PS3002).

1.4 QAIP Execution - In-Process Inspections/Tests and Monitoring¹³

NOTE

When a combination of inspection/test and process monitoring methods is used, monitoring shall be performed systematically to ensure that the specified requirements for control of the process and the quality of the item are met throughout the duration of the process.

1.4.1 QE, perform the following:

- [A] Establish inspection/test points for process monitoring for items in process as part of the fabrication oversight planning process.
- [B] If inspection/test of the fabricated item is impossible or disadvantageous, provide for indirect control by monitoring of processing methods, equipment, and personnel.
- [C] Provide for both inspection/test and process monitoring when control is deemed inadequate using only one of these methods.

1.4.2 QE/Inspector, complete performance documentation in accordance with Section 1.6 guidelines and specific requirements listed in the applicable QAIP.

1.5 QAIP Execution - Final Inspections/Tests ¹⁴

1.5.1 QE/Inspector, execute final inspection/test controls as follows:

- [A] Review results and verification of resolution of all related supplier nonconformance reports (NCRs).
- [B] Review supplier records to ensure adequacy and completeness.
- [C] Review final Inspection/test results for completeness, or other characteristics to verify quality and conformance to the applicable QAIP requirements.
- [D] Reinspect or retest, as appropriate, modifications, repairs, or replacements to verify acceptability if they were completed after final inspection/test.

1.5.2 QE/Inspector, complete performance documentation in accordance with Section 1.6 guidelines and specific requirements listed in the applicable QAIP.

1.5.3 QE/Inspector, complete C of C in accordance with Section 3.0 guidelines and specific requirements listed in the applicable QAIP.

1.6 Performance Documentation ^{15, 16}

1.6.1 QE/Inspector, perform the following:

- [A] Validate the oversight function by signing or initialing the required inspection/test action (measurement, examination, surveillance etc.) as directed in the QAIP or parent document.
- [B] Document fabrication oversight (i.e., inspection/test) results in the spaces provided in the QAIP or parent document, as required.

This includes the following documentation elements:

- Item inspected and date of inspection/test
- QE or Inspector's name
- Parameters or characteristics to be evaluated
- Inspection/test method and techniques used

- Inspection/test criteria, sampling plan, or reference documents (including revision designation) used to determine acceptance
- Results or acceptability
- M&TE used, including identification number and calibration due date
- Reference to any information on actions taken in connection with nonconformances, as applicable

2.0 FABRICATION OVERSIGHT FOR CBFO COMMODITIES

NOTE

This section details performance requirements for WTS personnel conducting fabrication oversight activities for CBFO commodities used in support of the WIPP project. This includes inspections, reviews, witnessing and surveillance activities for GFE, including Type B packaging.

- 2.1 Oversight Programs, when CBFO identifies the need for WTS to perform fabrication oversight functions, perform the following:
- 2.1.1 Review and concur with all applicable CBFO sponsored documents (e.g., SOW and Fabrication Oversight and Management Plan).
 - 2.1.2 Ensure the extent of fabrication oversight is a function of the relative importance and complexity of the item as well as the supplier's quality of performance.¹
 - 2.1.3 Ensure all applicable prerequisite actions as listed in this procedure have been completed.
 - 2.1.4 Ensure oversight planning is initiated and completed in accordance with Section 1.2.
 - [A] Coordinate results of oversight planning with the CBFO technical representative, as required.
 - [B] Coordinate results of oversight planning with the supplier/manufacturer representatives, as required by CBFO-sponsored documents.
 - 2.1.5 Ensure a QAIP has been initiated in accordance with Section 1.3.
 - [A] Ensure the applicable references to design basis documents are specified in the QAIP.

[B] Submit QAIP to CBFO technical representative for review and approval, as required.

2.1.6 Establish provisions for coordination and sequencing of the witness and hold points for successive stages of the supplier's fabrication process to support fabrication oversight functions.^{6,7}

[A] Provide copy of the QAIP to the supplier for the purpose of coordinating oversight activities, including witness and hold points.

[B] Ensure supplier's fabrication process (e.g., traveler) establishes all applicable witness and hold points to facilitate fabrication oversight activities.

2.1.7 Ensure preproduction planning addresses all critical attributes that require verification, as specified in the applicable design basis.

[A] Ensure QAIP defines all critical attributes and identifies oversight methodology, including dimensions and tolerances to be used for acceptance.

[B] Review and discuss critical attributes with responsible parties (including contract personnel) to ensure agreement on the oversight methodology, including dimensions and tolerances to be used for acceptance.

2.1.8 Execute fabrication oversight QAIPs in accordance with Sections 1.4 and 1.5.

[A] Complete inspections, tests, reviews, witnessing and surveillances as specified by the QAIP.

[B] Complete performance documentation (i.e., data packages) as specified by the QAIP.

[C] Complete oversight and/or inspection reports as specified by the QAIP.

2.2 Quality Assurance Inspection Services (QAIS), perform GFE receipt inspection in accordance with WP 13-QA1003, Section 6.0.

3.0 CERTIFICATE OF CONFORMANCE

3.1 Oversight Programs, complete a C of C only if the individual QAIP or QAVP specifies that a C of C is required.

3.2 Oversight Programs, if a C of C is required, perform the following:

- 3.2.1 Ensure the Data Package Checklist is complete prior to initiating a C of C. (Reference applicable Inspection Plan.)

NOTE

The size of the data package may range from a few pages consisting of a C of C and NCRs to a large volume of documentation including such things as inspection reports, test reports (including NDE reports), manufacturing and inspection travelers, checklists, performance data, installation procedures, operating procedures, maintenance procedures, as-built drawings, and specifications.

- 3.2.2 Generate a C of C in accordance with the applicable QAIP or QAVP.

- 3.2.3 Ensure the C of C meets the following criteria:

- The certificate shall identify the purchased material or equipment, such as by the purchase order number or other identification that is traceable to the requirements of the procurement document (e.g., Blanket Purchase Order).
- The certificate shall identify the specific procurement requirements met by the purchased material or equipment, such as codes, standards, and other specifications. This may be accomplished by including a list of the specific requirements or by providing a copy of the purchase order and the procurement specifications or drawings, together with the C of C. The procurement requirements identified shall include any approved changes, waivers, or deviations applicable to the subject material or equipment.
- The certificate shall identify any procurement requirements that have NOT been met, together with an explanation and the means for resolving the nonconformances.
- The certificate shall be signed or otherwise authenticated by a person who is responsible for the QA function and whose function and position are described in the purchaser's or supplier's QA program.
- The certification system, including the procedures to be followed in filling out a certificate and the administrative procedures for review and approval of the certificates, shall be described in the purchaser's or supplier's QA program.¹⁷

4.0 SOURCE VERIFICATION ¹⁸

NOTE

Source verifications shall include the active involvement of WTS's QA organization and the CE. QAIPs previously used for fabrication oversight should be credited as part of the source verification process and referenced in the QAVP, as applicable.

NOTE

QAVPs are designed to provide source verification criteria that fall outside the scope of a S/RIVS - reference WP 13-QA1003.

- 4.1 Oversight Programs, coordinate all related source verification functions and development of the QAVP.
 - 4.1.1 Ensure that the extent of source verifications is a function of the relative importance, complexity, and quantity of items or equipment being procured, as well as the supplier's quality of performance.
 - 4.1.2 Ensure that QAVPs outline the steps and methods for completing and documenting the source verification activities and functions (e.g., Factory Acceptance Tests, Load Tests, etc.).
 - 4.1.3 Include consideration of previous source inspections (i.e., QAIPs), audits, and the demonstrated quality performance of the supplier in the verification, if applicable.
 - 4.1.4 Ensure that all equipment and items processed under the provisions of a QAVP are validated through a data package review.
 - 4.1.5 Include the specific criteria to support source verification as well as data package review, as applicable, in the QAVP.
 - 4.1.6 Route QAVPs to the WTS technical organization for review and approval.
 - 4.1.7 Ensure that QAVPs are processed, controlled, and approved under the provisions of the electronic document system and WP 15-PS3002.
- 4.2 Oversight Programs, plan and execute source verification activities according to the requirements stated in the QAVP.
 - 4.2.1 Maintain a "QAIS/Fabrication Oversight" planning and scheduling document to forecast planned oversight activities, as needed.
 - 4.2.2 Coordinate activities with the CE and provide the necessary input to the planning and scheduling document.

- 4.2.3 Schedule and coordinate QAVPs and receipt inspections in concert with Centralized Procurement/Procurement and QAIS representatives, as needed.
- 4.2.4 Perform the required actions (monitoring, observation, witnessing, etc.) as directed by the QAVP.
- 4.2.5 If any item or equipment requires receiving inspection, then process it in accordance with WP 13-QA1003.
- 4.2.6 If required, perform data package reviews in a manner to ensure the adequacy and completeness of any required supplier documentation submittals.
- 4.2.7 If required by the QAVP, document source verification activities on a Quality Assurance Inspection Report (EA13QA1006-1-0) using the next sequential number in the Quality Assurance Inspection Log (EA13QA1006-2-0).
- 4.2.8 Furnish documented evidence of acceptance of source-verified items or equipment to the party receiving the item and to the supplier, as needed.

5.0 NONCONFORMANCES¹⁶

- 5.1 **IF** a supplier has been contractually assigned responsibility for a fabrication project under their approved QA Program, **THEN** nonconforming material will be controlled under the supplier's deficiency reporting system (e.g., NCR).
- Supplier nonconforming or quality-indeterminate conditions that require a CE disposition shall be submitted to WTS in accordance with WP 15-PC3041.
 - NCRs will be routed to the CE and QA for review, as required.
- 5.2 **IF** a supplier has been contractually assigned responsibility for a fabrication project, and the supplier does not have an approved nonconformance reporting process, **THEN** nonconforming or quality-indeterminate conditions detected during the performance of WTS assigned fabrication oversight duties shall be identified, documented, and controlled by WTS.

NOTE

An NCR or a WIPP Form may be required for nonconforming or quality-indeterminate conditions, and/or conditions adverse to quality (CAQ).

- 5.2.1 If a nonconforming or quality-indeterminate condition exists with fabricated hardware (not including normal fit-up or assembly), WP 13-QA3004 will be used.
- 5.2.2 If a CAQ exists, WP 04-IM1000 or WIPP Forms will be used.
- 5.2.3 Fabricated items, parts, or components which are not correctable using fabrication work instructions shall be evaluated by the CE and QA for resolution.