

Inspection, Test and Acceptance

Effective Date: 06/11/07

Doris M. Quintana	Signature on File	06/11/07
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Procedure Owner

Signature

Date

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 2 of 14

HISTORY OF REVISIONS

Revision Number	Issue Date	Action	Description
0.0	06/11/07	Revision to QP-8.1	Incorporate NQA-1-2000 requirements; reformatted and renumbered.

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 3 of 14

1.0 PURPOSE AND SCOPE

The purpose of this procedure is to describe a process for conducting inspection, test and acceptance activities for the Environmental Programs (EP) Directorate. This procedure applies to all EP Directorate and subcontracted personnel conducting work for the EP Directorate. EP Directorate personnel deployed to other organizations will meet the requirements of that organizations Inspection and Test Program.

2.0 BACKGROUND AND PRECAUTIONS

2.1 Background

With the exception of inspection of drum banding and clips by the Environmental and Waste Management Facility Operations (EWMO), personnel within the EP Directorate, typically, do not perform inspection, test and acceptance activities. These activities are conducted by subcontractors or by the Procurement Quality Department of the Quality Assurance Division (QA-PQ). This procedure was developed based on the requirements of ASME NQA-1-2000 for Inspection (Requirement 10) and Test Control (Requirement 11).

The EP Directorate requires subcontractors and applicable EP personnel to conduct inspections and tests of specified items, services, and processes using established acceptance and performance criteria, and to calibrate and maintain equipment used for inspections and tests. Test requirements and acceptance criteria are provided and approved by the responsible design organization.

Technically qualified individuals plan, schedule, and conduct inspection, test, and acceptance activities. These individuals have the authority to access approved information and facilities in order to verify acceptance and in accordance with approved test procedures/plans that include accept/reject criteria. Inspection and test personnel are independent from those who performed or directly supervised the work being inspected.

Inspections and tests that are required to verify conformance of an item or activity to specified requirements or continued acceptability of items are planned and executed. Characteristics to be inspected or tested and the inspection and test methods to be employed are specified. Results of inspections and tests are documented, and their conformance with requirements and acceptance criteria is evaluated.

For receipt inspections performed by LANS employees in accordance with ISD 840-1, Procurement Quality, the Quality Assurance Division (QAD) performs receipt inspections for all ML-1, ML-2, and ML-3 fasteners, circuit breakers, and hoisting/lifting/rigging equipment. This receipt inspection activity is performed to QAD procedures. EWMO personnel performing receipt inspections and subcontractors not performing receipt inspections to their own QA Program will perform receipt inspections of remaining ML-3 and ML-4 equipment in accordance with this procedure. This demonstrates the use of a graded approach.

2.2 Precautions

None.

3.0 EQUIPMENT AND TOOLS

None.

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 4 of 14

4.0 STEP-BY-STEP PROCESS DESCRIPTION

4.1 General Requirements

- | | | |
|--|----|---|
| Requester of Inspection and Testing Services | 1. | <i>Subcontract inspection and test services using a detailed statement of work (SOW) or memorandum of understanding (MOU) if internal to LANL.</i> |
| | 2. | <i>Require within the documented SOW or MOU the subcontractor to conduct inspection and testing services in accordance with the requirements of ASME NQA-1-2000, or this procedure.</i> |
| | 3. | <i>Require within the documented statement of work the subcontractor to use individuals qualified to the requirements of ASME NQA-1-2000 when performing inspection and test activities.</i> |
| | 4. | <i>Review the qualifications of the subcontractor's inspection and test personnel prior to allowing them to perform work for the EP Directorate.</i> |
| Responsible Manager | 5. | <i>Provide inspection and test personnel appropriate facilities and equipment to enable performance of the inspections or tests.</i> |

4.2 Inspection Requirements

- | | | |
|--|----|--|
| Requester of Inspection and Testing Services | 1. | <i>Obtain the approved inspection and acceptance criteria specified within the applicable design documents or other pertinent technical documents from the design organization.</i> |
| | 2. | <i>Provide the approved inspection and acceptance criteria to the inspection and test personnel.</i> |

4.3 Inspection Hold Points

- | | | |
|--|----|---|
| Requester of Inspection and Testing Services | 1. | <i>Determine if mandatory inspection hold points are required beyond which work cannot proceed without the specific consent of a designated representative.</i> |
| | 2. | <i>Indicate the specific mandatory inspection hold points within the appropriate documents.</i>
<i>[NOTE: Inspection hold points may be determined by the engineer, the person in charge (PIC), or qualified workers and stipulated in contract or work/change control documents.]</i> |
| | 3. | <i>Notify the responsible inspector when inspection hold points are reached beyond which work cannot proceed without the specific consent of the inspector.</i> |
| Inspector | 4. | <i>Conduct the inspection to accept the work before work can resume and document the results of the inspection.</i> |
| | 5. | <i>Sign the appropriate document and notify the appropriate personnel (if necessary) so work may resume.</i> |

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 5 of 14

4.4 Inspection Planning

Requester of Inspection and Testing Services	1.	Identify the characteristics to be inspected, methods of inspection, and acceptance criteria during the inspection planning process. [NOTE: When the method of inspection includes sampling, it is based upon valid statistical methods.]
Inspector	2.	Obtain, as applicable, an Inspection Report or Receipt Inspection Report form (see Attachments 1 and 2).
	3.	Obtain current and approved acceptance/test plans, technical or performance specifications, inspection/acceptance criteria, QA/QC criteria, and acceptance and test procedures and methods for the item or service to be inspected.
	4.	Become familiar with inspection/acceptance test requirements for the item or service by reviewing the applicable inspection/acceptance test plans, specifications, criteria, and procedures.
	5.	Notify the responsible Project Leader (i.e., the Requester of Inspection and Testing Services) that the item or service requires a witness or hold point inspection during work activity or after installation.
Requester of Inspection and Testing Services	6.	Notify the Technical Representative or Design Authority before reaching the inspection point.
	7.	Contact the EP Quality Assurance Team for assistance with the documentation when Project Leader has documented objective evidence for the necessity of bypassing a witness or hold point inspection.
	8.	Do not allow anyone to waive a hold point except the organization responsible for establishing the hold point.
	9.	Document the hold point waiver.
	10.	Notify the responsible Technical Representative and Design Agent when a waiver is requested.
Inspector	11.	Obtain the measuring and test equipment (M&TE) of the proper type, range, accuracy, and tolerance to provide all information necessary to ensure the viability of the test or inspection.
	12.	Train on the use of the M&TE.
	13.	Verify M&TE was procured in accordance with the requirements contained in OST 308-00-00, Laboratory Calibration Program.
	14.	Confirm all components that require calibration to ensure the safety and viability of the process activity/results is identified and calibrated by instruments traceable to the National Institute of Standards and Traceability (NIST).

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 6 of 14

Inspector
(Continued)

15. Verify M&TE has an identifying number and valid calibration sticker.

LANL
Workers

16. ***Monitor the subcontractor's use and control of M&TE through surveillances and assessments conducted in accordance with approved procedures.***

17. ***Confirm M&TE used for inspection and testing activities has been calibrated and controlled.***

4.5 Perform Inspection and Acceptance Testing

Inspector

1. Perform the inspection/acceptance test of the item or service in accordance with instructions, requirements, and methods described in the inspection/acceptance test plans, procedures, specifications, and criteria approved for the item or service.
2. Implement ISD 322-4.2, *Issues and Corrective Action Management Process*, for any item or service rejected at any point during the inspection/acceptance testing.

4.6 In-Process Inspection

Requester of
Inspection
and Testing
Services

1. ***Request inspection of items under construction or otherwise in-process (when necessary) to verify quality.***
2. ***Require monitoring of processing methods, equipment, and personnel by qualified individuals if inspection of processed items is impossible or disadvantageous.***
3. ***Require both inspection and process monitoring when control is inadequate, and require documentation of each.***

4.7 Final Inspections

Requester of
Inspection
and Testing
Services

1. ***Request final inspections that include a records review of the results and resolution of nonconformances identified by prior inspections.***
2. ***Require inspectors to inspect completed items for completeness, markings, calibration, adjustments, protection from damage, or other characteristics as required to verify the quality and conformance of the item to specified requirements.***
3. ***Require re-inspection or re-test, as appropriate, to verify acceptability for any modifications, repairs, or replacements of items performed subsequent to final inspection.***

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 7 of 14

4.8 Inspection Records

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|-----------|---|
| Inspector | <ol style="list-style-type: none">1. Complete the Inspection Report and/or the Receipt Inspection Report form to document inspection/acceptance test results.2. Record inspection/acceptance test results on the Inspection Report and/or the Receipt Inspection Report form in accordance with the instructions, requirements, and methods described in the inspection/acceptance test plans, procedures, specifications, and criteria approved for the item or service.3. <i>Include the following information, as a minimum, in the Inspection Report and/or the Receipt Inspection Report:</i><ul style="list-style-type: none">• <i>item inspected;</i>• <i>date of inspection;</i>• <i>inspector;</i>• <i>type of observation;</i>• <i>results or acceptability; and</i>• <i>reference to information on action taken in connection with nonconformances.</i>4. Submit the Inspection Report, the Receipt Inspection Report, and associated documentation to the QA Representative for review. |
| QA Rep. | <ol style="list-style-type: none">5. Review the Inspection Report, the Receipt Inspection Report, and associated documentation to evaluate the inspection/acceptance testing for approval or rejection.6. Indicate approval or rejection of the inspection/acceptance testing by checking the Accept or Reject boxes on the Inspection Report, and signing and dating the form in the spaces indicated.7. Return the signed, "Accepted" Inspection Report and associated documentation to the inspector for submittal to the Records Processing Facility.8. Determine the proper course of follow-up action in accordance with the procedural documentation requirements of ISD 322-4.2, <i>Issues and Corrective Action Management Process</i>, if the Inspection Report is "Rejected."9. Return the signed, "Rejected" Inspection Report and associated documentation to the Inspector to implement follow-up action as directed. |

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 8 of 14

4.9 Test Control

- Requester of Inspection and Testing Services
1. **Control the following tests, if required:**
 - **prototype qualification testing;**
 - **production tests;**
 - **proof tests prior to installation;**
 - **construction tests;**
 - **pre-operational tests;**
 - **operational tests; and**
 - **computer program tests, including software design verification, factory acceptance tests, site acceptance tests, and in-use tests.**
 2. **Control required tests under appropriate environmental conditions using the tools and equipment necessary to conduct the test in a manner to fulfill test requirements and acceptance criteria.**
 3. **Provide testing personnel the necessary data with sufficient accuracy for evaluation and acceptance.**
 4. **Base test requirements and acceptance criteria upon specified requirements contained in applicable design documents, or pertinent technical documents that provide approved requirements.**
 5. **Obtain approval by the design authority prior to performing tests if temporary changes to the approved configuration of a facility are required for testing purposes.**

4.10 Test Plans or Procedures (Other than for Computer Programs)

- Requester of Inspection and Testing Services
1. **Include or reference the test configuration and test objectives within test plans or procedures.**
 2. **Include the following within test plans or procedures:**
 - **assuring that prerequisites and suitable environmental conditions are met;**
 - **adequate instrumentation is available and used;**
 - **appropriate tests and equipment are used; and**
 - **necessary monitoring is performed.**

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 9 of 14

Requester of
Inspection
and Testing
Services
(Continued)

3. ***Include the following prerequisites to be met within the test plans or procedures, as applicable:***
 - ***calibrated instrumentation;***
 - ***appropriate equipment;***
 - ***trained personnel;***
 - ***condition of test equipment and the item to be tested;***
 - ***suitable environmental conditions; and***
 - ***provisions for data acquisition.***
4. ***Address current equipment listings (e.g., Master Equipment List [MEL]) including process equipment, including identifying all the systems, structures, and components that are important to the administration of the test or inspection within test plans or procedures.***
5. ***Require verification of the correct installation and operability of all components, software, and system interlocks important to safety or to the quality of the deliverable within test plans or procedures.***

4.11 Computer Program Test Procedures

Requester of
Inspection
and Testing
Services

1. ***Require the subcontractor to develop computer program test procedures that provide for demonstrating the adherence of the computer program to documented requirements.***
2. ***Require the subcontractor who uses computer programs in design activities to develop computer program test procedures and conduct tests to assure that the computer program produces correct results.***
3. ***Require the subcontractor who develops computer programs for operational control to develop computer program test procedures and conduct tests to demonstrate required performance over the range of operation of the controlled function or process.***
4. ***Require the subcontractor to develop procedures for evaluating technical adequacy through comparison of test results from alternative methods such as hand calculations, calculations using comparable proven programs, or empirical data and information from technical literature.***
5. ***Require the subcontractor to develop and document in-use test procedures to permit confirmation of acceptable performance of the computer program in the operating system.***

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 10 of 14

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|--|----|--|
| Requester of
Inspection
and Testing
Services
(Continued) | 6. | <i>Require the subcontractor to perform in-use test procedures following installation of the computer program on a different computer or when there are significant changes in the operating system.</i> |
| | 7. | <i>Require the subcontractor to prescribe and perform periodic in-use manual or automatic self-check in-use tests for those computer programs in which computer program errors, data errors, computer hardware failures, or instrument drift can affect required performance.</i> |

4.12 Records

- | | | |
|---|----|--|
| Person
Conducting
the Test | 1. | <i>Document test results and submit to the Requester of Inspection and Testing Services.</i> |
| Requester of
Inspection
and Testing
Services | 2. | <i>Evaluate test results to ensure test requirements have been satisfied.</i> |
| | 3. | <i>Obtain an evaluation of test results for design qualification tests and software design verification by the design organization.</i> |

4.13 Test Documentation

- | | | |
|---|----|---|
| Requester of
Inspection
and Testing
Services | 1. | <i>Establish and maintain test records to indicate the ability of the item or computer program to satisfactorily perform its intended function or to meet its documented requirements.</i> |
|---|----|---|

4.14 Records

- | | | |
|---|----|---|
| Requester of
Inspection
and Testing
Services | 1. | Transmit the following records generated from this procedure to the Records Processing Facility: <ul style="list-style-type: none">• Inspector Qualification Records;• Inspection Reports;• Receipt Inspection Reports;• Document Signature Forms; and• Test Reports. |
|---|----|---|

5.0 PROCESS FLOW CHART

Flow chart is to be included later.

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 11 of 14

6.0 ATTACHMENTS

Attachment 1: 8001-1 Inspection Report (1 page)

Attachment 2: 8001-2 Receipt Inspection Report (2 pages)

[Using a CRYPTOCARD, click here to record "self-study" training to this procedure.](#)

If you do not possess a CRYPTOCARD or encounter problems, contact the ERSS training specialist.

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 12 of 14

ATTACHMENT 1: INSPECTION REPORT

8001-1

Inspection Report

Records Use only



Date of Inspection:

Name of Inspector:

Location/Area:

Type of Inspection (check below)

Receipt
Inspection

Source
Inspection

In-Process
Inspection

Final Inspection

Audit

Surveillance

Item(s)/Service(s) Inspected:

Inspection Criteria: (Briefly describe inspection criteria and source for criteria, e.g., test plan, procedure, design document.)

M&TE Used:

Inspection Performed: (Provide a clear, concise, step-by-step explanation of the inspection performed.)

Inspection Result:

Accept _____ N/A _____

Reject _____ CAR _____

Stop Work Order _____

Inspection Performed by:

Printed Name/Signature

Date

Re-Inspection Result:

Accept _____

Reject _____

Inspection Performed by:

Printed Name/Signature

Date

QA Representative Review:

Accept _____

Reject _____

QA Representative Review:

Printed Name/Signature

Date

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 13 of 14

ATTACHMENT 2: RECEIPT INSPECTION REPORT

8001-2

Receipt Inspection Report

Records Use only



Receipt inspection criteria: (Inspectors: Check the criteria applicable to the item received and indicated whether the item does or does not meet the criteria by checking the yes/accept or no/reject boxes as applicable.)

Criteria	Y	N
1. Quantity, dimensions, identification, and markings of receive item(s) match PR description.	<input type="checkbox"/>	<input type="checkbox"/>
2. Visual inspection confirms no shipping damage.	<input type="checkbox"/>	<input type="checkbox"/>
3. Supplier documentation is complete, legible, and meets PR requirements.	<input type="checkbox"/>	<input type="checkbox"/>
4. Certifications required by the PR are correct, complete, and authenticated.	<input type="checkbox"/>	<input type="checkbox"/>
5. Inspection and test records conform to manufacture's published data.	<input type="checkbox"/>	<input type="checkbox"/>
6. Certificates of Calibration have traceability to NIST.	<input type="checkbox"/>	<input type="checkbox"/>
7. Item marking and/or serialization is traceable to test data.	<input type="checkbox"/>	<input type="checkbox"/>
8. Expiration date is marked on item(s) with limited shelf life.	<input type="checkbox"/>	<input type="checkbox"/>
9. Manufacturing nonconformances have been reported to the purchaser.	<input type="checkbox"/>	<input type="checkbox"/>
10. Required Certified Material Test Reports are included.	<input type="checkbox"/>	<input type="checkbox"/>
11. Inspect for evidence of suspect or counterfeit parts or material.	<input type="checkbox"/>	<input type="checkbox"/>
12. Manufacturer's certificate of conformance presents, at a minimum:		
13. Traceability to PR requirements.	<input type="checkbox"/>	<input type="checkbox"/>
14. Codes, standards, and specifications that meet those of the PR.	<input type="checkbox"/>	<input type="checkbox"/>
15. Any deviations from PR requirements.	<input type="checkbox"/>	<input type="checkbox"/>
16. The name and signature of an official of the supplier organization.	<input type="checkbox"/>	<input type="checkbox"/>
17. Deliverables meet the requirements of the applicable Statement of Work.	<input type="checkbox"/>	<input type="checkbox"/>
18. All analytical samples requested are present.	<input type="checkbox"/>	<input type="checkbox"/>

Inspection, Test and Acceptance

Procedure No: EP-DIR-SOP-8001

Revision: 0.0

Effective Date: 06/11/07

Page: Page 14 of 14

ATTACHMENT 2: RECEIPT INSPECTION REPORT

8001-2

Receipt Inspection Report

Records Use only



Receipt inspection criteria: (Inspectors: Check the criteria applicable to the item received and indicated whether the item does or does not meet the criteria by checking the yes/accept or no/reject boxes as applicable.)

Criteria	Y	N
19. Data for all analytical suites requested are present.	<input type="checkbox"/>	<input type="checkbox"/>
20. Required QA/QC forms and documentation are present.	<input type="checkbox"/>	<input type="checkbox"/>

Remarks:

Hold tag issued: Yes No N/A

Placed in storage: Yes No N/A Location: _____

Verification of inspection:

I verify that this receipt inspection was conducted properly and the item(s) inspected meet the requirements specified in the PR specified above.

Inspected by: _____
Printed name Signature Date

Accepted by: _____
Printed name Signature Date