

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 1 of 9
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Companywide	Program Requirements Document	For Additional Info: http://EDMS	Effective Date: 09/18/13
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Manual: 13—Quality Assurance Program

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*The current revision can be verified on EDMS.

1. PURPOSE

This program requirements document (PRD) identifies requirements and responsibilities for planning and executing *tests* (see def.) that are used to *verify* (see def.) conformance of an *item* (see def.) to specified requirements or to demonstrate satisfactory performance for service.

2. APPLICABILITY

This PRD applies to company organizations involved in performing tests, such as prototype *qualification tests* (see def.), production tests, proof tests, construction tests, operational and preoperational tests, factory and site *acceptance tests* (see def.), in-use tests, and post-maintenance/modification tests.

Computer program test requirements are identified in PRD-5092, “Software Quality Assurance.”

Tests supporting the acquisition of data from samples and scientific investigation for spent nuclear fuel and high level waste shall be performed in accordance with PRD-5094, “Spent Nuclear Fuel and High Level Waste Scientific Investigation.”

3. RESPONSIBILITIES

3.1 Organizations Performing Tests

Organizations performing tests are responsible for:

- A. Preparing test procedures, procedure change requests, or equivalent test planning documentation.
- B. Preparing data collection and/or data sheets (as required).
- C. Providing and approving test requirements and *acceptance criteria* (see def.). Identifying potential sources of uncertainty and error. Test parameters affected by potential sources of uncertainty and error shall be identified and controlled.
- D. Identifying the personnel responsible for independent *verification* (see def.) of test results/data.
- E. Evaluating and accepting test results/data generated by the test.

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 2 of 9
---------------------	---

- F. Approving changes to test procedures.
- G. Providing final disposition of test results and data.
- H. Initiating a *nonconformance* (see def.) or *deficiency* (see def.) report if test results do not meet specified acceptance criteria.

3.2 Personnel Performing Independent Verification

Personnel performing independent verification are responsible for:

- A. Verifying that test data and results are collected in accordance with test procedures
- B. Verifying that test data and results are accurately recorded in accordance with the test.

4. REQUIREMENTS

4.1 Companywide Applications

The requirements identified in this subsection meet the requirements in “Quality Assurance Requirements for Nuclear Facility Application,” American Society of Mechanical Engineers (ASME) NQA-1-2008 with Addenda through NQA-1a-2009, Department of Energy (DOE) O 414.1D, “Quality Assurance,” and the other standards listed in FWD-7, “Foreword.” These requirements apply to the entire company as defined by FWD-7.

4.1.1 Basic

- 4.1.1.1 Tests required to collect data (e.g., for siting or *design input* [see def.]) to verify conformance of an item to specified requirements, or to demonstrate satisfactory performance for service, will be planned and executed.
- 4.1.1.2 Required tests (other than for computer programs), including, as appropriate, prototype qualification tests, production tests, proof tests before installation, construction tests, preoperational tests and operational tests, factory acceptance tests, site acceptance tests, in-use tests, and post-maintenance/modification tests will be controlled.

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 3 of 9
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4.1.1.3 Computer program tests, such as software design verification testing, computer program acceptance testing, and in-use computer program testing shall be in accordance with PRD-5092, “Software Quality Assurance.”

4.1.2 Test Requirements

4.1.2.1 Test requirements and acceptance criteria will be provided or approved by the responsible Design Authority.

4.1.2.2 Test requirements and acceptance criteria will be based on specified requirements contained in applicable design documents or other pertinent technical documents that provide approved requirements.

4.1.2.3 If temporary changes to the approved *configuration* (see def.) of a facility are required for testing purposes, *approval* (see def.) by the design authority is required before performing the test.

4.1.2.4 Tests performed will provide the necessary data with sufficient accuracy for evaluation and acceptance.

4.1.3 Test Planning

4.1.3.1 Test planning includes specification of *characteristics* (see def.) to be tested, test methods to be employed, and instructions for performing the test.

4.1.3.2 Test planning includes test prerequisites that address calibrated instrumentation, appropriate and adequate test equipment and instrumentation, trained personnel, condition of test equipment and the item to be tested, suitably controlled environmental conditions, and provisions for data acquisition.

4.1.3.3 Required tests will be performed and documented in accordance with approved written instructions as described in Subsections 4.1.4 and 4.1.5 of this PRD.

4.1.3.4 Test-procedure reviews will be documented and comments will be dispositioned and resolved before final review and approval by all responsible organizations. The organization responsible for performing the test will be responsible for obtaining approval of test procedures and authorization for a test activity.

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 4 of 9
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4.1.3.5 The type and extent of test controls applied will be based on the functional classification, and design, technical, or operational requirements assigned to the structure, system, or component.

4.1.4 Test Procedure

4.1.4.1 Tests will be performed in accordance with implementing documents that address the following requirements:

- A. Test procedures that include or reference the test configuration and test objectives.
- B. Test procedures that include provisions for ensuring 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.
- C. Prerequisites that include the following, as applicable: calibrated instruments, appropriate equipment, trained personnel, condition of test equipment and the item to be tested, suitable environmental conditions, and provisions for data acquisition.

4.1.5 Use of Other Testing Documents

4.1.5.1 As an alternative to Subsection 4.1.4, appropriate sections of related documents (e.g., American Society for Testing and Materials methods, supplier manuals, equipment maintenance instructions, or approved drawings or travelers with acceptance criteria) can be used instead of preparing *special test* (see def.) -implementing documents. If used, the information will be incorporated directly into the approved test-implementing document or will be incorporated by reference in the approved test-implementing document.

4.1.5.2 Implementing documents shall include or be supplemented with instructions as required to ensure that the appropriate criteria from Subsection 4.1.4 ensures adequate procedures for the test are used.

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 5 of 9
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4.1.6 Test Results

4.1.6.1 Test results will be documented and maintained; and their conformance with test requirements and acceptance criteria will be evaluated by the design authority.

NOTE: *PRD-5092, "Software Quality Assurance," contains computer program test procedure requirements. The test status of an item will be identified in accordance with PRD-5085, "Inspection, Test, and Operating Status."*

4.1.6.2 Test records shall be established and maintained to indicate the ability of the item to satisfactorily perform its intended function or to meet its documented requirements.

4.1.6.2.1 Test records vary depending on the test type, purpose, and application, but shall contain the following information, as a minimum, for the specified application:

- A. Item tested
- B. Date of test
- C. Tester or data recorder
- D. Type of observation and method of testing
- E. Test criteria
- F. Results and applicability
- G. Action taken in connection with any deviations
- H. Person evaluating test results
- I. Material and test equipment used.

4.1.7 Qualification of Test Personnel

4.1.7.1 Personnel who perform quality inspection activities during testing will be qualified in accordance with PRD-5081, "Inspection," and PRD-5072, "Personnel Training and Qualification."

4.1.7.2 *Qualifications* (see def.) of personnel who operate the systems/subsystems during testing will be controlled in accordance with the requirements for qualification of facility operators.

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 6 of 9
---------------------	---

- 4.1.7.3 Test engineers and other personnel who prepare and direct testing activities will meet the qualification requirements in PRD-5072.

4.2 Specific Requirements for DOE/RW-0333P, Quality Assurance Requirements and Descriptions, Applications

This subsection contains additional requirements from the Quality Assurance Requirements and Descriptions (Department of Energy/Office of Civilian Radioactive Waste [DOE/RW] -0333P) that are specific to spent nuclear fuel and high-level waste activities as defined in FWD-7, “Foreword.”

4.2.1 Test Planning

- 4.2.1.1 Test planning shall require that test implementing documents provide for the following:
- 4.2.1.1.1 Identification of the implementing documents to be developed to control and perform tests and provide criteria for (i) determining the accuracy requirements of the test and (ii) determining when tests are required and defining how and when testing activities are performed.
 - 4.2.1.1.2 Provisions for performing prototype, component, or feature qualification testing, including design verification testing, must be defined as early as possible before installation would be irreversible.
 - 4.2.1.1.3 Identification of the item to be tested and the test requirements and acceptance limits, including required levels of precision and accuracy
 - 4.2.1.1.4 Identification of test methods to be employed and instructions for performing the test.

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 7 of 9
---------------------	---

- 4.2.1.1.5 Test prerequisites that address the following: calibrated instrumentation, appropriate and adequate test equipment and instrumentation, including accuracy requirements, trained personnel, condition of test equipment, and the completeness of the item to be tested; controlled environmental conditions; and provisions for data acquisition and storage.
- 4.2.1.1.6 Mandatory hold points for witnessing by the organization placing the hold point.
- 4.2.1.1.7 Methods to record data and results.
- 4.2.1.1.8 Provisions for ensuring that test prerequisites have been met.
- 4.2.1.1.9 Selection and identification of the measuring and test equipment to be used to perform the test to ensure that the measuring and test equipment is of proper type, range, accuracy, and tolerance to accomplish the intended function.

4.2.2 Test Documentation

- 4.2.2.1 Test documentation will identify the following:
 - D. Item or work product tested
 - E. Date of the test
 - F. Name of the tester and data recorders
 - G. Type of observation and method of testing
 - H. Identification of test criteria or reference documents used to determine acceptance
 - I. Results and acceptability of the test
 - J. Actions taken in connection with any non-conformances noted
 - K. Name of the person evaluating the test results
 - L. Identification of *measuring and test equipment* (see def.) used during the test including the identification number and the most recent calibrated date.

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 8 of 9
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5. Records

- 5.1 All records generated by this document that are designated in implementing documents as *quality assurance records* (see def.) will be controlled in accordance with PRD-5088, “Quality Assurance Records.”
- 5.2 Test records will be established and maintained to indicate the ability of the item to satisfactorily perform its intended function or to meet its documented requirements.
- 5.3 Test records vary depending on the test type, purpose, and application, but shall contain the following information, as a minimum:
 - A. Item tested
 - B. Date of test
 - C. Tester or data recorder
 - D. Type of observation
 - E. Results and acceptability
 - F. Action taken in connection with any deviations
 - G. Person evaluating the test.

6. DEFINITIONS

Refer to LST-199, “Quality Assurance Program Requirements Document Definitions,” for definitions of the following terms:

acceptance criteria

acceptance test

approval

characteristics

configuration

deficiency

design input

item

measuring and test equipment

nonconformance

qualification (personnel)

qualification test

quality assurance record

special test

TEST CONTROL	Identifier: PRD-5082 Revision*: 17 Page: 9 of 9
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test

verification

verify

7. REFERENCES

ASME NQA-1-2008 with Addenda through NQA-1a-2009, “Quality Assurance Requirements for Nuclear Facility Applications,” American Society of Mechanical Engineers

DOE/RW-0333P, *Quality Assurance Requirements and Description*, Revision 20, Office of Civilian Radioactive Waste Management Program

DOE O 414.1D, “Quality Assurance”

FWD-7, “Foreword”

LST-199, “Quality Assurance Program Requirements Document Definitions”

PRD-5072, “Personnel Training and Qualification”

PRD-5081, “Inspection”

PRD-5085, “Inspection, Test, and Operating Status”

PRD-5088, “Quality Assurance Records”

PRD-5092, “Software Quality Assurance”

PRD-5094, “Spent Nuclear Fuel and High Level Waste Scientific Investigation”