

- 3.2 Identify and review a sample of the modifications and repair evolutions performed on the selected systems, subsystems, or components. The identification and selection of the modified/repared system, subsystem, or component will cover both the pre-operational and operational phases.
- 3.3 Physically witness a sampling of functional tests.
- 3.4 Physically verify that the functional testing of components/systems are performed under operational conditions using actual processes when possible or meets applicable design basis criteria.
- 3.5 Physically verify that test equipment used in functional testing of safety-related applications meet the criteria as set forth for test equipment calibration.
- 3.6 If approved surveillance, maintenance, preventive maintenance procedures are used in lieu of approved functional test procedures, verify that the specified testing requirements are met.
- 3.7 Review and verify that the completed functional test is made part of the maintenance/modification work package or that a cross reference exists so that the testing results are retrievable.
- 3.8 Review and verify that the stipulated post modification/maintenance testing requirements satisfy the design basis of the component tested.
- 3.9 Review and verify that items that do not meet the specification testing requirements are identified, evaluated, and resolved.

4.0 Other Guidelines for Consideration

- 4.1 See Chapter 1, "General Quality Surveillance Guidance."
- 4.2 See Chapter 16, "Post-Maintenance Testing."

Activity Functional Testing

1.0 Purpose This guideline provides a method to evaluate the methods and procedures that ensure the functional operability of systems, subsystems, and components that have been newly installed, repaired, or modified.

2.0 Scope This guideline has been developed for the quality surveillance of the following areas:

- Administrative controls and practices that have been established to document that modified systems, subsystems, and components perform to the design acceptance criteria.
- The functional test procedures are properly reviewed and address those testing requirements, as set forth by engineering criteria.
- The functional test procedures not only address and satisfy those engineering requirements, but also address and satisfy the design basis criteria.

References

1. USNRC I&E Manual Chapter 37703, "Tests and Experiments Program."
2. USNRC I&C Manual Part 7000, "Preoperational Testing."
3. INPO Good Practice 85-013, "Plant Modification Control Program."
4. INPO Good Practice 87-028 (MA-305), "Post-Maintenance Testing."
5. ANSI 18.7-1976, Sections 5.2.6, 5.2.7, 5.2.17, 5.2.19.3, 5.3, 5.31, 5.32-Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants."
6. ANSI N45.2.4-1972, Sections 5.2.1.2, 6.2 and 7, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations."
7. ANSI N45.2.10, "Quality Assurance Terms and Definitions."
8. 10CFR50 Appendix B, Criteria 11, 12, and 14.

3.0 Guidelines

3.1 In preparation for and during the conduct of this surveillance

- Obtain and review implementing procedures, instructions, and drawings governing this activity.
- Prepare a guide or checklist using the selected items from this guideline.
- Review past surveys, audits, surveillances, and other evaluations/assessments.
- Ensure that checklists include, where applicable, actual observations of performance, i.e., general plant conditions, radiological work practices, housekeeping, work document controls and use, and safety practices.

Note: Refer to Chapter 1 for specific details on the attributes listed above.