

NRC INSPECTION MANUAL

INSPECTION PROCEDURE 72572

LOW POWER TEST PROCEDURE REVIEW (MODERATOR TEMPERATURE COEFFICIENT AND CONTROL ROD WORTH OR BORON WORTH AND PSEUDO ROD EJECTION WORTH)

PROGRAM APPLICABILITY:

72572-01 INSPECTION OBJECTIVE

Ascertain whether one of the identified groups of tests are consistent with regulatory requirements, guidance, license commitments, and technical specifications.

72572-02 INSPECTION REQUIREMENTS

02.01 Moderator Temperature Coefficient, and Control Rod Worth (Group A). If Group A procedures are selected for review, the inspector shall:

- a. Review the FSAR, DL Safety Evaluation Report, and docketed letters from the licensee and verify that the testing commitments have been included.
- b. Verify standard procedures review requirements are met as described in Procedure 72300.
- c. Verify that the procedure contains acceptance criteria for the following:
 - (1) Moderator temperature coefficient
 - (2) Control rod worths
- d. Confirm that precautions include:
 - (1) Startup rate limits.
 - (2) Boron dilution rate limits.
 - (3) Boron sampling rates.
 - (4) Trip points for nuclear instrumentation.

- (5) Limits on power level and startup rates prior to attaining measurable thermal power.

- (6) Incore instrumentation to be used as backup to nuclear instrumentation.
- (7) Controls for reactor operation in event of significant delay or interruption during testing.
- (8) Temperature limits for criticality.
- e. Verify that initial conditions require:
 - (1) Precritical tests after fueling loading to be complete and evaluated.
 - (2) Manual scram tests.
- f. Confirm that test conditions include:
 - (1) Various rod positions, boron concentrations, and temperatures.
 - (2) Incore flux map frequency.
 - (3) Data to be taken.
- g. Verify that procedures contain provisions to extrapolate low power test results to power range conditions to ensure that the plant can safely proceed into the power range.

02.02 Boron Worth and Pseudo Rod Ejection Worth (Group B). If Group B procedures are selected for review, the inspector shall:

- a. Review the FSAR, DL Safety Evaluation Report, and docketed letter from the licensee and verify that the testing commitments have been included.
- b. Verify standard procedure review requirements are met as described in Procedure 72300.
- c. Verify that the procedure contains acceptance criteria for the following:
 - (1) Boron reactivity worth
 - (2) Pseudo rod ejection worth
- d. Verify that precautions include:
 - (1) Startup rate limits
 - (2) Boron dilution rate limits
 - (3) Boron sampling frequency
 - (4) Nuclear instrumentation trip limits
 - (5) Power level limits and startup rates prior to attaining measurable thermal power.

- (6) Incore instrumentation to be used as backup to nuclear instrumentation.
- (7) Controls for reactor operation in event of significant delay or interruption during testing.
- (8) Temperature limits for criticality.
- e. Verify that initial conditions include:
 - (1) Precritical tests after fueling loading complete and evaluated.
 - (2) Manual scram tested.
- f. Confirm that test conditions specify:
 - (1) Various rod positions, Boron concentrations, and temperatures.
 - (2) Incore flux map frequency.
 - (3) Data to be taken.

72572-03 INSPECTION GUIDANCE

General: Guidance is provided in R.G. 1.68, Revision 2, Appendix A, Paragraph 4; and Appendices B and C.

- 1.c.(1) MC Module 61708, "Isothermal Temperature Coefficient of Reactivity Measurement (PWR)" may be used concurrently or as reference in reviewing the procedure.
- 1.c.(2) MC Module 61710, "Control Rod Worth Measurements (PWR)" may be used concurrently or as reference in reviewing the procedure.
- 1.f.(1) Control rod positions should be checked to prevent insertion patterns which can result in ejected rod worths greater than that analyzed in the FSAR.
- 2.f.(1) The licensee should address the test methodology that will be used (e.g., rod swap, dynamic drop, or boron swap) and the appropriate uncertainties that will be incorporated into the data analysis.

END