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December 15, 2010
L-10-200

10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
License Amendment Request to Modify Technical Specification 3.1.4, "Control Rod Scram Times," to Incorporate TSTF-222-A, Revision 1

Pursuant to 10 CFR 50.90, FirstEnergy Nuclear Operating Company (FENOC) is requesting an amendment to the Perry Nuclear Power Plant (PNPP) Technical Specification (TS) 3.1.4, "Control Rod Scram Times." The proposed amendment would modify the requirements for testing control rod scram times following fuel movement within the reactor pressure vessel by incorporating Nuclear Regulatory Commission (NRC) approved Technical Specification Task Force (TSTF) change traveler TSTF-222-A, Revision 1.

An evaluation of the proposed amendment is provided as an enclosure. NRC staff approval is requested by December 15, 2011. Implementation of the amendment by FENOC is planned within 90 days of its approval.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at (330) 761-6071.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 15, 2010.

Sincerely,

Mark B. Bezilla

Enclosure:
Evaluation of Proposed License Amendment

cc: NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager
Executive Director, Ohio Emergency Management Agency,
State of Ohio (NRC Liaison)
Utility Radiological Safety Board

A001
NRR

EVALUATION OF PROPOSED LICENSE AMENDMENT

Subject: Modification of Required Testing Frequencies Within Perry Nuclear Power Plant (PNPP) Technical Specification 3.1.4, "Control Rod Scram Times"

Attachments:

1. Proposed Technical Specification Changes (Mark-Up)
2. Proposed Technical Specification Bases Changes (Provided For Information)
3. Proposed Technical Specification Changes (Retyped)

1.0 SUMMARY DESCRIPTION

This evaluation supports a FirstEnergy Nuclear Operating Company (FENOC) request to amend Operating License NPF-58 for FENOC's Perry Nuclear Power Plant (PNPP). The proposed license amendment would revise the required testing frequency for surveillance requirements (SR) in the PNPP Technical Specification (TS) 3.1.4, "Control Rod Scram Times," to incorporate Nuclear Regulatory Commission (NRC) approved Technical Specification Task Force (TSTF) change traveler TSTF-222-A, Revision 1. The proposed revision changes SR 3.1.4.1 and SR 3.1.4.4 to modify the requirements for testing control rod scram times following fuel movement within the reactor pressure vessel.

2.0 DETAILED DESCRIPTION

The current words of PNPP's SR 3.1.4.1 require each control rod to be tested if any fuel movement in the reactor pressure vessel occurs. This effectively means that even if only one fuel assembly in the reactor core is moved, such as replacing a leaking fuel assembly mid-cycle, all 177 control rods in the reactor core are required to be tested.

FENOC proposes to revise the PNPP TS to incorporate NRC-approved TSTF-222, which affects BWR/6 Standard Technical Specifications (STS). The proposed TS changes would ensure that only those control rods in core cells in which fuel is moved or replaced, or control rod maintenance was performed, are required to be scram time tested following a shutdown of short duration.

The proposed revision moves the first surveillance frequency of SR 3.1.4.1 to SR 3.1.4.4, and modifies the relocated frequency to read "affected core cell" rather than "reactor pressure vessel." This is consistent with TSTF-222-A and the BWR/6 Standard Technical Specifications (STS). Scram time testing of all control rods "after each reactor shutdown ≥ 120 days," as required by SR 3.1.4.1, remains unchanged.

The proposed TS changes (mark-up) are included as Attachment 1, and the proposed TS changes on retyped pages are included as Attachment 3. The proposed TS Bases changes, provided for information only, are included as Attachment 2.

3.0 TECHNICAL EVALUATION

In a typical, routine refueling outage, all core cells are likely to be affected as a result of some fuel movement; for example, a spent fuel assembly is replaced with a fresh assembly, a fuel assembly is relocated from one core cell to another, or a fuel assembly is reoriented within a core cell. Thus, most if not all control rods will be scram time tested following a routine refueling outage.

However, if a core cell is not affected by movement of one of the four fuel assemblies in the cell, replacement of the control rod in that cell, or maintenance on the control

rod drive system for the rod in that cell, the scram time of the control rod in that core cell is not impacted. As a result, there would be no need to conduct scram time testing on that control rod. Furthermore, the periodic scram time testing of a representative sample, as required by SR 3.1.4.2, is intended to identify any long term phenomenon that could result in degradation of control rod scram times. Revising the frequency from requiring testing of each control rod after a refueling outage, to requiring scram time testing after fuel movement "within the affected core cells" would ensure that only those control rods in core cells in which fuel is moved or replaced, or control rod maintenance was performed, are required to be scram time tested.

The proposed TS changes modify the requirements of PNPP's SR 3.1.4.1 and SR 3.1.4.4 for testing control rod scram times following fuel movement within the reactor pressure vessel. Currently, SR 3.1.4.1 requires all 177 control rods to be tested when any fuel assembly is moved within the reactor, even if only one fuel assembly in the reactor core is moved, such as replacing a leaking fuel assembly mid-cycle. As reflected in TSTF-222-A, the surveillance requirements would be revised to ensure only those control rods affected by fuel movement shall be scram time tested. This portion of the SR 3.1.4.1 frequency would be deleted and a similar frequency added to SR 3.1.4.4, which requires only control rods associated with core cells involved with fuel movement, to be scram time tested. With the proposed changes to SR 3.1.4.1 and SR 3.1.4.4, the PNPP TS will be consistent with the current version of BWR/6 STS.

The proposed changes would eliminate unnecessary scram time testing on control rods in core cells that were not affected by fuel moves, control rod replacement, or control rod drive maintenance. These changes are expected to benefit PNPP outages that are less than 120 days in duration, and in which only a limited number of core cells are affected.

Scram time testing of all control rods "after each reactor shutdown ≥ 120 days," as required by SR 3.1.4.1, remains unchanged.

4.0 REGULATORY EVALUATION

4.1 No Significant Hazards Consideration Determination

The proposed amendment would revise the Perry Nuclear Power Plant (PNPP) Technical Specifications (TS) Surveillance Requirements (SR) 3.1.4.1 and SR 3.1.4.4 to incorporate Technical Specification Task Force (TSTF) change TSTF-222-A, Revision 1. This change revises SR 3.1.4.1 and SR 3.1.4.4 to modify the requirements for testing control rod scram times following fuel movement within the reactor pressure vessel. Currently, SR 3.1.4.1 requires all [177] control rods to be scram time tested when any fuel assembly is moved. This portion of the frequency for SR 3.1.4.1 would be deleted and a similar frequency added to SR 3.1.4.4, which requires only control rods in core cells associated with fuel movement to be scram time tested.

FENOC has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment", as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The control rod drive system is not an initiator to any accident sequence analyzed in the PNPP Updated Final Safety Analysis Report (USAR), including Appendix 15C, "Anticipated Transients Without Scram (ATWS)." The proposed TS changes improve existing surveillance requirements by eliminating unnecessary control rod scram time testing, while continuing to provide adequate assurance of control rod performance for those control rods in core cells in which fuel is moved or replaced, or control rod maintenance was performed.

Historically, testing results indicate the control rod drive system is highly reliable. Since the fall 1996 implementation of Improved Technical Specifications, during 6036 control rod tests covering all 177 control rods, only 7 control rod tests (0.12 percent) yielded results slower than the required insertion time limit, and no control rods were inoperable as a result of scram time testing. All seven slow insertion time test results have been attributed to control rod scram solenoid pilot valves (SSPVs). These seven slow tests occurred prior to May 1999, and prior to a control rod SSPV upgrade program during which all 177 SSPVs were replaced.

As such, this type of change does not affect initiators of analyzed events and does not affect the mitigation of any accidents or transients.

Therefore, the proposed TS changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed TS changes do not involve a physical alteration of the plant. No new equipment is being introduced, and installed equipment is not being operated in a new or different manner. There are no setpoints affected by the changes at which protective or mitigative actions are initiated. The changes will not alter the manner in which equipment operation is initiated, nor will the functional demands on credited equipment be changed. No alterations in the procedures that ensure the plant remains within analyzed limits are being proposed, and no changes are being made to the procedures relied upon to respond to an off-normal event as described in the USAR. This change does not alter assumptions made in the safety analysis and licensing basis. As such, no new failure modes are being introduced. Accordingly,

the proposed changes do not create any new credible failure mechanisms, malfunctions, or accident initiators not previously considered in the PNPP design and licensing basis.

Therefore, the proposed TS changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

Margin of safety is related to the ability of the fission product barriers to perform their design functions during and following accident conditions. These barriers include the fuel cladding, the reactor coolant system, and the containment. This request does not involve a change to the fuel cladding, the reactor coolant system, or the containment.

The proposed TS changes associated with TSTF-222-A modify current frequency requirements for scram time testing control rods following refueling outages and for control rods requiring testing due to work activities. Scram times for control rods not affected by fuel movement or control rod maintenance remain unaffected.

The proposed TS changes have no affect on any safety analysis assumptions or methods of performing safety analyses. The changes do not adversely affect system design or operational requirements, and the equipment continues to be tested in a manner and at a frequency necessary to provide confidence that the equipment can perform its intended safety functions.

Therefore, the proposed TS changes do not involve a significant reduction in a margin of safety

Based on the above, FENOC concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.2 Applicable Regulatory Requirements/Criteria

The proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS, do not affect conformance with any General Design Criteria (GDC), and are consistent with design and operational requirements described in the PNPP USAR.

10 CFR 50.36 requires the TS to include surveillance requirements related to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. The PNPP TS Surveillance

Requirements will continue to provide this assurance with the proposed adoption of the NRC-approved TSTF changes.

4.3 Precedent

Nuclear Regulatory Commission letter to Entergy Operations, Inc., Subject: River Bend Station, Unit 1 – Issuance of Amendment re: Adoption of Technical Specification Task Force Improved Standard Technical Specification Change Travelers TSTF-163, TSTF-222, TSTF-230, and TSTF-306 (TAC No. ME0406), August 11, 2009.

Nuclear Regulatory Commission letter to Entergy Operations, Inc., Subject: Grand Gulf Nuclear Station, Unit 1 – Issuance of Amendment re: Adoption of Approved Generic Changes to the Technical Specifications (TAC No. MC6651), February 1, 2006.

Nuclear Regulator Commission letter to Carolina Power & Light Company, Subject: Brunswick Steam Electric Plant, Units 1 and 2 – Issuance of Amendments Regarding Scram Time Testing and Technical Specification Bases Control Program (TAC Nos. MB3347 and MB3348), March 19, 2002.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. Boiling Water Reactor Owners Group, "Technical Specification Task Force Improved Standard Technical Specifications Change Traveler," TSTF-222-A, Revision 1, May 12, 1999.

2. U.S. Nuclear Regulatory Commission, "Standard Technical Specifications General Electric Plants, BWR/6," NUREG-1434, Volume 1, Specifications, Revision 3.0, June 2004.

3. U.S. Nuclear Regulatory Commission, "Standard Technical Specifications General Electric Plants, BWR/6," NUREG-1434, Volume 2, Bases, Revision 3.0, June 2004.

Attachment 1

PROPOSED TECHNICAL SPECIFICATION CHANGES

(MARK-UP)

(Three Pages Follow)

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Rod Scram Times

LCO 3.1.4

a. No more than 13 OPERABLE control rods shall be "slow," in accordance with Table 3.1.4-1; and

b. No OPERABLE control rod that is "slow" shall occupy a location adjacent to another OPERABLE control rod that is "slow" or a withdrawn control rod that is stuck.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

----------NOTE----------
During single control rod scram time Surveillances, the control rod drive (CRD) pumps shall be isolated from the associated scram accumulator.

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify each control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	Prior to exceeding 40% RTP after fuel movement within the reactor pressure vessel AND (continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	(continued)	Prior to exceeding 40% RTP after each reactor shutdown ≥ 120 days
SR 3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	120 days cumulative operation in MODE 1
SR 3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with any reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect scram time
SR 3.1.4.4	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time

Prior to exceeding 40% RTP after fuel movement within the affected core cell AND

Table 3.1.4-1
Control Rod Scram Times

----------NOTES----------

1. OPERABLE control rods with scram times not within the limits of this Table are considered "slow."

2. Enter applicable Conditions and Required Actions of LCO 3.1.3, "Control Rod OPERABILITY," for control rods with scram times > 7 seconds to notch position 13. These control rods are inoperable, in accordance with SR 3.1.3.3, and are not considered "slow."

NOTCH POSITION	SCRAM TIMES(a)(b) (seconds)	
	REACTOR STEAM DOME PRESSURE(c) 950 psig	REACTOR STEAM DOME PRESSURE(c) 1050 psig
43	0.30	0.31
29	0.78	0.84
13	1.40	1.53

(a) Maximum scram time from fully withdrawn position, based on de-energization of scram pilot valve solenoids as time zero.

(b) Scram times as a function of reactor steam dome pressure when < 950 psig are within established limits.

(c) For intermediate reactor steam dome pressures, the scram time criteria are determined by linear interpolation.

NO CHANGES ON THIS PAGE PROVIDED FOR CONTINUITY

Attachment 2

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES

(PROVIDED FOR INFORMATION)

(Seven Pages Follow)

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.4 Control Rod Scram Times

INFORMATION ONLY

BASES

BACKGROUND

The scram function of the Control Rod Drive (CRD) System controls reactivity changes during abnormal operational transients to ensure that specified acceptable fuel design limits are not exceeded (Ref. 1). The control rods are scrammed by positive means, using hydraulic pressure exerted on the CRD piston.

When a scram signal is initiated, control air is vented from the scram valves, allowing them to open by spring action. Opening the exhaust valves reduces the pressure above the main drive piston to atmospheric pressure, and opening the inlet valve applies the accumulator or reactor pressure to the bottom of the piston. Since the notches in the index tube are tapered on the lower edge, the collet fingers are forced open by cam action, allowing the index tube to move upward without restriction because of the high differential pressure across the piston. As the drive moves upward and accumulator pressure drops below the reactor pressure, a ball check valve opens, letting the reactor pressure complete the scram action. If the reactor pressure is low, such as during startup, the accumulator will fully insert the control rod within the required time without assistance from reactor pressure.

APPLICABLE SAFETY ANALYSES

The analytical methods and assumptions used in evaluating the control rod scram function are presented in References 2, 3, 4, and 5. The Design Basis Accident (DBA) and transient analyses assume that all of the control rods scram at a specified insertion rate. The resulting negative scram reactivity forms the basis for the determination of plant thermal limits (e.g., the MCPR). Other distributions of scram times (e.g., several control rods scramming slower than the average time, with several control rods scramming faster than the average time) can also provide sufficient scram reactivity. Surveillance of each individual control rod's scram time ensures the scram reactivity assumed in the DBA and transient analyses can be met.

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INFORMATION ONLY

BASES

APPLICABLE SAFETY ANALYSES (continued)

The scram function of the CRD System protects the MCPR Safety Limit (SL) (see Bases for LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)"), and the 1% cladding plastic strain fuel design limit (see Bases for LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," and LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)"), which ensure that no fuel damage will occur if these limits are not exceeded. Above 950 psig, the scram function is designed to insert negative reactivity at a rate fast enough to prevent the actual MCPR from becoming less than the MCPR SL during the analyzed limiting power transient. Below 950 psig, the scram function is assumed to perform during the control rod drop accident (Ref. 6) and, therefore, also provides protection against violating fuel damage limits during reactivity insertion accidents (see Bases for LCO 3.1.6, "Control Rod Pattern"). For the reactor vessel overpressure protection analysis, the scram function, along with the safety/relief valves, ensure that the peak vessel pressure is maintained within the applicable ASME Code limits.

Control rod scram times satisfy Criterion 3 of the NRC Final Policy Statement on Technical Specification Improvements (58 FR 39132).

LCO

The scram times specified in Table 3.1.4-1 are required to ensure that the scram reactivity assumed in the DBA and transient analysis is met. To account for single failure and "slow" scramming control rods, the scram times specified in Table 3.1.4-1 are faster than those assumed in the design basis analysis. The scram times have a margin to allow up to 7.5% of the control rods (i.e., 177 x 7.5% = 13) to have scram times that exceed the specified limits (i.e., "slow" control rods) assuming a single stuck control rod (as allowed by LCO 3.1.3, "Control Rod OPERABILITY") and an additional control rod failing to scram per the single failure criterion. The scram times are specified as a function of reactor steam dome pressure to account for the pressure dependence of the scram times. The scram times are specified relative to measurements based on reed switch positions, which provide the control rod position indication. The reed switch closes ("pickup") when the index tube passes a specific location and then opens ("dropout") as the index tube travels upward. Verification of the specified scram times in Table 3.1.4-1 is accomplished through measurement of the "dropout" times.

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INFORMATION ONLY

BASES

LCO (continued)

To ensure that local scram reactivity rates are maintained within acceptable limits, no "slow" control rods may occupy a location adjacent to another "slow" control rod or adjacent to a withdrawn stuck control rod.

Table 3.1.4-1 is modified by two Notes, which state control rods with scram times not within the limits of the Table are considered "slow" and that control rods with scram times > 7 seconds are considered inoperable as required by SR 3.1.3.3.

This LCO applies only to OPERABLE control rods since inoperable control rods will be inserted and disarmed (LCO 3.1.3). Slow scramming control rods may be conservatively declared inoperable and not accounted for as "slow" control rods.

APPLICABILITY

In MODES 1 and 2, a scram is assumed to function during transients and accidents analyzed for these plant conditions. These events are assumed to occur during startup and power operation; therefore, the scram function of the control rods is required during these MODES. In MODES 3 and 4, the control rods are not able to be withdrawn since the reactor mode switch is in the shutdown position and a control rod block is applied. This provides adequate requirements for control rod scram capability during these conditions. Scram requirements in MODE 5 are contained in LCO 3.9.5, "Control Rod OPERABILITY-Refueling."

ACTIONS

A.1

When the requirements of this LCO are not met, the rate of negative reactivity insertion during a scram may not be within the assumptions of the safety analyses. Therefore, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 12 hours. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

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BASES (continued)

SURVEILLANCE REQUIREMENTS

The four SRs of this LCO are modified by a Note stating that during a single control rod scram time surveillance, the CRD pumps shall be isolated from the associated scram accumulator. With the CRD pump isolated (i.e., charging valve closed), the influence of the CRD pump head does not affect the single control rod scram times. During a full core scram, the CRD pump head would be seen by all control rods and would have a negligible effect on the scram insertion times.

SR 3.1.4.1

The scram reactivity used in DBA and transient analyses is based on assumed control rod scram time. Measurement of the scram times with reactor steam dome pressure ≥ 950 psig demonstrates acceptable scram times for the transients analyzed in References 3 and 4.

Scram insertion times increase with increasing reactor pressure because of the competing effects of reactor steam dome pressure and stored accumulator energy. Therefore, demonstration of adequate scram times at reactor steam dome pressure greater than 950 psig ensures that the scram times will be within the specified limits at higher pressures. Limits are specified as a function of reactor pressure to account for the sensitivity of the scram insertion times with pressure and to allow a range of pressures over which scram time testing can be performed. To ensure scram time testing is performed within a reasonable time following a refueling or after a shutdown ≥ 120 days, all control rods are required to be tested before exceeding 40% RTP. This Frequency is acceptable, considering the additional surveillances performed for control rod OPERABILITY, the frequent verification of adequate accumulator pressure, and the required testing of control rods affected by work on control rods or the CRD System.

fuel movement within the associated core cell and by

SR 3.1.4.2

Additional testing of a sample of control rods is required to verify the continued performance of the scram function during the cycle. A representative sample contains at least 10% of the control rods. The sample remains "representative" if no more than 20% of the control rods in

(continued)

BASES

INFORMATION ONLY

SURVEILLANCE REQUIREMENTS

SR 3.1.4.2 (continued)

the tested sample are determined to be "slow." If more than 20% of the sample is declared to be "slow" per the criteria in Table 3.1.4-1, additional control rods are tested until this 20% criterion (e.g., 20% of the entire sample size) is satisfied, or until the total number of "slow" control rods (throughout the core, from all surveillances) exceeds the LCO limit. For planned testing, the control rods selected for the sample shall be different for each test in a cycle. Data from inadvertent scrams should be used whenever possible to avoid unnecessary testing at power, even if the control rods with data were previously tested in a sample. The 120 day Frequency is based on operating experience that has shown control rod scram times do not significantly change over an operating cycle. This Frequency is also reasonable, based on the additional Surveillances done on the CRDs at more frequent intervals in accordance with LCO 3.1.3 and LCO 3.1.5, "Control Rod Scram Accumulators."

SR 3.1.4.3

When work that could affect the scram insertion time is performed on a control rod or the CRD System, testing must be done to demonstrate that each affected control rod retains adequate scram performance over the range of applicable reactor pressures from zero to the maximum permissible pressure. The scram testing must be performed once before declaring the control rod OPERABLE. The required scram time testing must demonstrate that the affected control rod is still within acceptable limits. For control rod drive scram time testing at less than 950 psig, the following scram times to notch position 13 shall be used as acceptance criteria:

0 psig - 0.94 seconds

600 psig - 1.13 seconds

950 psig - 1.40 seconds

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no changes this page

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.4.3 (continued)

For intermediate reactor steam dome pressures, the scram time criteria are determined by linear interpolation. The limits for reactor pressures < 950 psig are established based on a high probability of meeting the acceptance criteria at reactor pressures ≥ 950 psig. Limits for ≥ 950 psig are found in Table 3.1.4-1. If testing demonstrates the affected control rod does not meet these limits, but is within the 7 second limit of Table 3.1.4-1 Note 2, the control rod can be declared OPERABLE and "slow."

Specific examples of work that could affect the scram times include (but are not limited to) the following: removal of any CRD for maintenance or modification; replacement of a control rod; and maintenance or modification of a scram solenoid pilot valve, scram valve, accumulator isolation valve, or check valves in the piping required for scram.

The Frequency of once prior to declaring the affected control rod OPERABLE is acceptable because of the capability of testing the control rod over a range of operating conditions and the more frequent surveillances on other aspects of control rod OPERABILITY.

Or when fuel movement within the reactor pressure vessel occurs,

SR 3.1.4.4

When work that could affect the scram insertion time is performed on a control rod or CRD System, testing must be done to demonstrate each affected control rod is still within the limits of Table 3.1.4-1 with the reactor steam dome pressure ≥ 950 psig. Where work has been performed at high reactor pressure, the requirements of SR 3.1.4.3 and SR 3.1.4.4 will be satisfied with one test. For a control rod affected by work performed while shut down, however, a zero pressure and a high pressure test may be required. This testing ensures that the control rod scram performance is acceptable for operating reactor pressure conditions prior to withdrawing the control rod for continued operation. Alternatively, a test during hydrostatic pressure testing could also satisfy both criteria.

When fuel movement within the reactor pressure vessel occurs, only those control rods associated with the core cells affected by the fuel movement are required to be scram time tested. During a routine refueling outage, it is expected that all control rods will be affected.

The Frequency of once prior to exceeding 40% RTP is acceptable because of the capability of testing the control rod at the different conditions and the more frequent surveillances on other aspects of control rod OPERABILITY.

(continued)

INFORMATION ONLY

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10.
2. USAR, Section 4.3.2.5.5.
3. USAR, Section 4.6.1.1.2.5.3.
4. USAR, Section 5.2.2.2.2.3.
5. USAR, Section 15.4.1.
6. USAR, Section 15.4.9.

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Attachment 3

PROPOSED TECHNICAL SPECIFICATION CHANGES

(RETYPED)

(Two Pages Follow)

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Rod Scram Times

LCO 3.1.4

a. No more than 13 OPERABLE control rods shall be "slow," in accordance with Table 3.1.4-1; and

b. No OPERABLE control rod that is "slow" shall occupy a location adjacent to another OPERABLE control rod that is "slow" or a withdrawn control rod that is stuck.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

----------NOTE----------
During single control rod scram time Surveillances, the control rod drive (CRD) pumps shall be isolated from the associated scram accumulator.

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify each control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	Prior to exceeding 40% RTP after each reactor shutdown ≥ 120 days

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	120 days cumulative operation in MODE 1
SR 3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with any reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect scram time
SR 3.1.4.4	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	Prior to exceeding 40% RTP after fuel movement within the affected core cell AND Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time