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U.S. Nuclear Regulatory Commission
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**SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT NO. 284 TO LICENSE
NPF-14 AND PROPOSED AMENDMENT NO. 252
TO LICENSE NPF-22: APPLICATION FOR
TECHNICAL SPECIFICATION IMPROVEMENT
TO REVISE TECHNICAL SPECIFICATION 3.1.4
"CONTROL ROD SCRAM TIMES" PER TSTF-222,
REVISION 1
PLA-5993**

**Docket Nos. 50-387
and 50-388**

In accordance with the provisions of 10 CFR 50.90, PPL Susquehanna, LLC (PPL) is submitting a request for an amendment to the Technical Specifications (TS) for Susquehanna Steam Electric (SSES) Units 1 and 2.

The proposed amendment would clarify the TS testing frequency for the surveillance requirements (SR) in TS 3.1.4, "Control Rod Scram Times." This change is based on the TS Task Force (TSTF) change traveler TSTF-222, Revision 1, which has been approved generically for the boiling water reactor (BWR) Standard TS for BWR/4, NUREG-1433, "Standard Technical Specifications for General Electric Plants (BWR/4)," and was incorporated in NUREG 1433, Revision 2 (STS) and was retained in the latest approved version, Revision 3.0. This generic change revises SR 3.1.4.1 and SR 3.1.4.4 to better state the intended requirements for testing control rod scram times following fuel movement within the reactor.

These proposed changes have been reviewed by the Plant Operations Review Committee and by the Susquehanna Review Committee.

Attachment 1 provides a description of the proposed change, the requested confirmation of applicability, and plant-specific verifications. Attachment 2 provides the existing Technical Specification pages marked-up to show the proposed change. Attachment 3 provides the corresponding TS Bases "markup" pages for information.

A001

There are no regulatory commitments associated with this change.

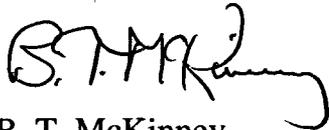
We request approval of the proposed License Amendment by August 01, 2006 with the amendment being implemented within 60 days following approval.

In accordance with 10 CFR 50.91(b), PPL Susquehanna, LLC is providing the Commonwealth of Pennsylvania with a copy of this proposed License Amendment request.

If you have any questions regarding this submittal, please contact Mr. Michael H. Crowthers at (610) 774-7766.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 8/1-06



B. T. McKinney

Attachments:

- Attachment 1 - Description, Applicability, and Verification of the Proposed Change
- Attachment 2 - Proposed Technical Specification Changes Units 1 & 2, (Mark-ups)
- Attachment 3 - Technical Specification Bases "Markup" Pages (Provided for Information)

cc: NRC Region I
Mr. B. A. Bickett, NRC Sr. Resident Inspector
Mr. R. V. Guzman, NRC Project Manager
Mr. R. Janati, DEP/BRP

Attachment 1 to PLA-5993

Description, Applicability, and Verification of the Proposed Change

1. DESCRIPTION
2. PROPOSED CHANGE
3. BACKGROUND
4. TECHNICAL ANALYSIS
5. REGULATORY ANALYSIS
 - 5.1 No Significant Hazards Consideration
 - 5.2 Applicable Regulatory Requirements/Criteria
6. ENVIRONMENTAL CONSIDERATIONS
7. PRECEDENT
8. REFERENCES

DESCRIPTION AND ASSESSMENT

1.0 INTRODUCTION

This letter is a request to amend Operating Licenses NPF-14 and NPF-22 for PPL Susquehanna, LLC (PPL), Susquehanna Steam Electric Station Units 1 and 2 (SSES) respectively. The proposed license amendment revises the required testing frequency for surveillance requirements (SR) in for SSES Units 1 and 2 Technical Specification (TS) 3.1.4, "Control Rod Scram Times" to incorporate NRC approved industry Technical Specification Task Force (TSTF) change TSTF 222, Revision 1 (Reference 1). This generic change revises SR 3.1.4.1 and SR 3.1.4.4 to better state the desired requirements for testing control rod scram times following fuel movement within the reactor.

2.0 PROPOSED CHANGE

The current TS wording requires each control rod to be scram time tested if any fuel movement occurs in the reactor pressure vessel. With only a limited number of control rods affected by minor fuel movements, unnecessary scram time testing will result. In order to correct this condition consistent with TSTF-222, Revision 1, PPL proposes to move the first frequency of SR 3.1.4.1 to SR 3.1.4.4, and to modify the relocated SR frequency to state "affected core cell" in place of "reactor pressure vessel." This revision serves to ensure that necessary testing of the control rods will be conducted without imposing an unnecessary burden.

SR 3.1.4.1 currently requires a scram time test of each control rod at the following times:

1. "Prior to exceeding 40% RTP [rated thermal power] after fuel movement within the reactor pressure vessel and"
2. "Prior to exceeding 40% RTP after each reactor shutdown greater than or equal to 120 days."

SR 3.1.4.1 is being revised to require a scram time test for control rods at only the following times:

"Prior to exceeding 40% RTP after each reactor shutdown greater than or equal to 120 days."

This removes the requirement that is not consistent with the intent of testing only the control rods in cells in which fuel has been moved. The intended more specific requirement to test rods affected by fuel movement is added to SR 3.1.4.4.

SR 3.1.4.4 currently requires a scram time test of each control rod affected by a refueling outage or work activities for the following condition:

“Prior to exceeding 40% RTP after work on the control rod or CRD [Control Rod Drive] System that could affect scram time.”

SR 3.1.4.4 is being revised to require a scram test of each control rod affected by a refueling outage or work activities for the following conditions:

1. “Prior to exceeding 40% RTP after fuel movement within the affected core cell, and”
2. “Prior to exceeding 40% RTP after work on the control rod or CRD System that could affect scram time.”

This would allow TS requirements for testing of the control rods to better state the desired requirements for testing control rod scram times following fuel movement within the reactor.

3.0 BACKGROUND

The scram function of the Control Rod Drive System controls reactivity changes during abnormal operational transients to ensure that specified acceptable fuel design limits are not exceeded.

The TS 3.1.4 requirements governing the control rod scram time surveillances are intended to assure proper function of control rod insertion during a scram. These revisions were proposed in Technical Specification Task Force (TSTF) traveler TSTF-222, Revision 1, and approved by the NRC as reflected in letter to the Nuclear Energy Institute (NEI) dated May 12, 1999 (Reference 2). These revisions were incorporated into Revision 2 of BWR/4 Standard Technical Specifications (STS) issued by the NRC (Reference 3), and are retained in the latest approved version, Revision 3.0 (Reference 4).

4.0 TECHNICAL ANALYSIS

This change more accurately states the intended requirements in SSES SR 3.1.4.1 and SR 3.1.4.4 for testing control rod scram times following fuel movement within the reactor. Currently, SR 3.1.4.1 would require all control rods to be tested when any fuel bundle is moved within the reactor pressure vessel. This would even include when only one fuel bundle is moved, such as removing a leaking fuel bundle during a mid-cycle outage. As reflected in TSTF-222, Revision 1, the SRs should be revised to make it clear that only the control rods affected by the fuel movement should be scram tested. 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 associated with core cells involved with fuel movement, to be scram time tested.

In a typical, routine refueling outage, all core cells are likely to be affected as a result of some fuel movement, e.g., a spent fuel assembly is replaced with a fresh assembly, a fuel assembly is relocated from one 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.

However, if a core cell is not affected by (1) movement of one of the four fuel assemblies in the cell, (2) replacement of the control rod in that cell, or (3) 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 scram time.

Revising the Frequency from requiring testing of each control rod after a refueling outage, to require scram time testing after fuel movement "within the affected core cells" clarifies that only those control rods in core cells in which fuel was moved or replaced or control rod maintenance was performed are required to be scram time tested, and makes the SSES TS consistent with these SRs in the current version of BWR/4 STS (NUREG-1433, Revision 3.0).

These changes are expected to be of benefit in the conduct of outages in which only a limited number of fuel cells are affected by avoiding the need to perform scram time testing on control rods in core cells that were not affected by fuel moves, control rod replacement, or control rod drive maintenance.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

The proposed amendment revises Susquehanna Steam Electric Station Units 1 and 2 (SSES) Technical Specifications (TS) Surveillance Requirements (SR) SR 3.1.4.1 and SR 3.1.4.4 to incorporate NRC approved industry Technical Specification Task Force (TSTF) change TSTF-222, Revision 1. This change more accurately states the intended requirements in SR 3.1.4.1 and SR 3.1.4.4 for testing control rod scram times following fuel movement within the reactor. Currently, SR 3.1.4.1 would require all 185 control rods to be scram time tested when any fuel bundle 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 applies to require only control rods associated core cells with fuel movement, to be scram time tested.

PPL Susquehanna, LLC (PPL) 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 change involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated?

Response: No.

The control rod hydraulic scram insertion system is not an initiator to any accident sequence analyzed in the Final Safety Analysis Report (FSAR). The changes do not involve any physical change to structures, systems, or components (SSCs) and do not alter the method of operation or control of SSCs. The current assumptions in the safety analysis regarding accident initiators and mitigation of accidents (including assumed scram insertion times) are unaffected by these changes. No additional failure modes or mechanisms are being introduced and the likelihood of previously analyzed failures remains unchanged.

Operation in accordance with the proposed Technical Specification (TS) ensures that the control rods and associated scram insertion function remain capable of performing the function as described in the FSAR. Therefore, the mitigative scram functions will continue to provide the protection assumed by the analysis.

Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed change does 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 this change at which protective or mitigative actions are initiated. This change 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 FSAR. As such, no new failure modes are being introduced. The change does not alter assumptions made in the safety analysis and licensing basis.

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

Response: No.

The margin of safety is established through equipment design, operating parameters, and the setpoints at which automatic actions are initiated. Operation in accordance with the proposed TS ensures that the control rod scram insertion system remains capable of performing the function as described in the FSAR. Sufficiently rapid insertion of control rods following certain accidents (scram time) will prevent fuel damage, and thereby maintain a margin of safety to fuel damage. No change is being made to the required insertion rate specified in plant technical specifications. Clarifying when control rod insertion times must be verified following movement of fuel assemblies, without actually changing the requirement (verification of insertion times will continue to be required whenever work that might impact the rod insertion time is done), does not reduce the margin of safety related to fuel damage. Therefore, the change does not involve a significant reduction in a margin of safety.

5.2 Applicable Regulatory Requirements/Criteria

SSES FSAR Sections 3.1 and 3.13 provide detailed discussion of SSES compliance with the applicable regulatory requirements and guidance, while FSAR Section 4.6 describes the detailed design and design basis related to control rod scram functional requirements.

The proposed TS amendment:

- (a) Does not alter the design or function of any reactivity control system;
- (b) Does not result in any change in the qualifications of any component; and
- (c) Does not result in the reclassification of any component's status in the areas of shared, safety related, independent, redundant, and physically or electrically separated.

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.

6.0 ENVIRONMENTAL CONSIDERATIONS

10 CFR 51.22(c)(9) identifies certain licensing and regulatory actions, which are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility does not require an environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; or (3) result in a significant increase in individual or cumulative occupational radiation exposure. PPL Susquehanna, LLC has evaluated the proposed change and has determined that the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Accordingly, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with issuance of the amendment. The basis for this determination, using the above criteria, follows:

Basis

As demonstrated in the No Significant Hazards Consideration Evaluation, the proposed amendment does not involve a significant hazards consideration.

There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite. The proposed change does not involve any physical alteration of the plant (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

There is no significant increase in individual or cumulative occupational radiation exposure. The proposed change does not involve any physical alteration of the plant (no new or different type of equipment will be installed) or change in methods governing normal plant operation.

7.0 PRECEDENT

This changes has been previously reviewed and approved for the Brunswick Steam Electric Plant (BSEP) on March 19, 2002 (Reference 5). PPL has reviewed the BSEP request and NRC Staff conclusions and finds them applicable to the PPL request for SSES.

8.0 REFERENCES

1. Industry/Technical Specifications Task Force Standard Technical Specification Change Traveler-222, "Control Rod Scram Time Testing," Revision 1.
2. Letter from NRC to the Nuclear Energy Institute (NEI) dated May 12, 1999.
3. NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," Revision 2, dated June 2001.
4. NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," Revision 3.0, dated March 31, 2004.
5. Brunswick Steam Electric Plant (BSEP), Units 1 and 2, License Amendment Nos. 219 and 245, dated March 19, 2002.

Attachment 2 to PLA-5993
Proposed Technical Specification Changes
Units 1 & 2
(Mark-ups)

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 more than 2 OPERABLE control rods that are "slow" shall occupy adjacent locations.

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 \geq 800 psig.	<p>Prior to exceeding 40% RTP after fuel movement within the reactor pressure vessel</p> <p>AND affected core cell</p> <p>(continued)</p>

MOVE TO
SR 3.1.4.4

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 ≥ 800 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 ≥ 800 psig.	Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time

INSERT
 FROM SR 3.1.4.1

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
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APPLICABILITY: MODES 1 AND 2.

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MOVE TO
SR 3.1.4.4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.4.1 (continued)	Prior to exceeding 40% RTP after each reactor shutdown ≥ 120 days
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INSERT
FROM
SR 3.1.4.1

Attachment 3 to PLA-5993
Technical Specification Bases “Markup” Pages
(Provided for Information)

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 an assumed control rod scram time. Measurement of the scram times with reactor steam dome pressure ≥ 800 psig demonstrates acceptable scram times for the transients analyzed in References 3 and 4.

Maximum scram insertion times occur at a reactor steam dome pressure of approximately 800 psig 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 ≥ 800 psig ensures that the measured 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 that scram time testing is performed within a reasonable time following fuel

~~movement within the reactor pressure vessel after a shutdown~~
 ≥ 120 days or longer, control rods are required to be tested before exceeding 40% RTP following the shutdown. In the event fuel

movement is limited to selected core cells, it is the intent of this SR that only those CRDs associated with the core cells affected by the fuel movement are required to be scram time tested. However, if the reactor remains shutdown > 120 days, all control rods are required to be scram time tested.

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

(continued)

BASES

REQUIREMENTS SURVEILLANCE SR 3.1.4.3 (continued)

Specific examples of work that could affect the scram times are (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 valve in the piping required for scram.

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

SR 3.1.4.4

or when fuel movement within the affected core cell occurs

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 ≥ 800 psig. Where work has been performed at high reactor pressure, the requirements of SR 3.1.4.3 and SR 3.1.4.4 can be satisfied with one test. For a control rod affected by work performed while shut down, however, a zero pressure and high pressure test may be required. This testing ensures that, prior to withdrawing the control rod for continued operation, the control rod scram performance is acceptable for operating reactor pressure conditions. Alternatively, a control rod scram test during hydrostatic pressure testing could also satisfy both criteria.

INSERT For SR 3.1.4.4 Bases

The Frequency of once prior to exceeding 40% RTP is acceptable because of the capability to test the control rod over a range of operating conditions and the more frequent surveillances on other aspects of control rod OPERABILITY.

- REFERENCES**
1. 10 CFR 50, Appendix A, GDC 10.
 2. FSAR, Section 4.3.2.
 3. FSAR, Section 4.6.

(continued)

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 an assumed control rod scram time. Measurement of the scram times with reactor steam dome pressure ≥ 800 psig demonstrates acceptable scram times for the transients analyzed in References 3 and 4.

Maximum scram insertion times occur at a reactor steam dome pressure of approximately 800 psig 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 ≥ 800 psig ensures that the measured 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 that scram time testing is performed within a reasonable time following ~~fuel movement within the reactor pressure vessel after~~ a shutdown ≥ 120 days or longer, control rods are required to be tested before exceeding 40% RTP following the shutdown. ~~In the event fuel movement is limited to selected core cells, it is the intent of this SR that only those CRDs associated with the core cells affected by the fuel movement are required to be scram time tested. However, if the reactor remains shutdown > 120 days, all control rods are required to be scram time tested.~~ 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

(continued)

BASES

**SURVEILLANCE
REQUIREMENTS**

SR 3.1.4.3 (continued)

Specific examples of work that could affect the scram times are (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 valve in the piping required for scram.

The Frequency of once prior to declaring the affected control rod OPERABLE is acceptable because of the capability to test 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 affected core cell 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 ≥ 800 psig. Where work has been performed at high reactor pressure, the requirements of SR 3.1.4.3 and SR 3.1.4.4 can be satisfied with one test. For a control rod affected by work performed while shut down, however, a zero pressure and high pressure test may be required. This testing ensures that, prior to withdrawing the control rod for continued operation, the control rod scram performance is acceptable for operating reactor pressure conditions. Alternatively, a control rod scram test during hydrostatic pressure testing could also satisfy both criteria.

INSERT For SR 3.1.4.4 BASES

The Frequency of once prior to exceeding 40% RTP is acceptable because of the capability to test the control rod over a range of operating conditions and the more frequent surveillances on other aspects of control rod OPERABILITY.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10.
2. FSAR, Section 4.3.2.
3. FSAR, Section 4.6.

(continued)

INSERT Bases SR 3.1.4.4

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.