



April 22, 2008

L-MT-08-012  
10 CFR 50.90  
TSTF-475, Rev. 1

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

Monticello Nuclear Generating Plant  
Docket 50-263  
Renewed Operating License No. DPR-22

License Amendment Request: Application for Technical Specification Change Regarding Revision of Control Rod Notch Surveillance Test Frequency and a Clarification of a Frequency Example Using the Consolidated Line Item Improvement Process

In accordance with the provisions of 10 CFR 50.90 the Nuclear Management Company, LLC (NMC) is requesting an amendment to the Technical Specifications (TS) for the Monticello Nuclear Generating Plant (MNGP). This proposed amendment would: (1) revise the TS surveillance requirement frequency in Specification 3.1.3, "Control Rod Operability," and (2) revise Example 1.4-3 in Section 1.4 "Frequency" to clarify the applicability of the 1.25 surveillance test interval extension.

Enclosure 1 provides a description of the proposed change, the requested confirmation of applicability, and plant-specific verifications. Enclosure 2 provides the existing TS pages marked-up to show the proposed changes. Enclosure 3 provides the retyped TS pages showing the proposed changes. Enclosure 4 provides draft TS Bases pages (for information) showing the associated bases changes in accordance with 10 CFR 50.36(a).

The NMC requests expeditious approval of this proposed license amendment in accordance with the Consolidated Line Item Improvement Process.

Summary of Commitments

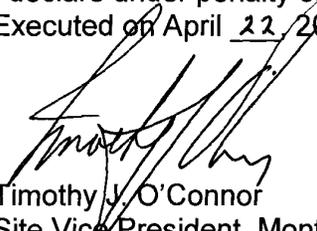
This following commitment is proposed:

- The NMC will establish and implement Technical Specification Bases consistent with the applicable bases discussed in TSTF-475, Revision 1, "Control Rod Notch Testing Frequency and SRM Insert Control Rod Action," in conjunction with this amendment.

An implementation period of 90 days following issuance is requested.

In accordance with 10 CFR 50.91, a copy of this application, with enclosures, is being provided to the designated Minnesota Official.

I declare under penalty of perjury that the foregoing is true and correct.  
Executed on April 22, 2008.



Timothy J. O'Connor  
Site Vice President, Monticello Nuclear Generating Plant  
Nuclear Management Company, LLC

Enclosures (4)

cc: Administrator, Region III, USNRC  
Project Manager, Monticello, USNRC  
Resident Inspector, Monticello, USNRC  
Minnesota Department of Commerce

## ENCLOSURE 1

### DESCRIPTION OF CHANGE AND ASSESSMENT

#### APPLICATION FOR TECHNICAL SPECIFICATION CHANGE REGARDING REVISION OF CONTROL ROD NOTCH SURVEILLANCE TEST FREQUENCY AND A CLARIFICATION OF A FREQUENCY EXAMPLE USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS

##### 1.0 DESCRIPTION

The proposed amendment to the Monticello Nuclear Generating Plant (MNGP) Technical Specifications (TSs) would (1) revise the TS surveillance requirement (SR) (SR 3.1.3.2) frequency in Specification 3.1.3, "Control Rod Operability," to require control rod notch testing to be performed at a 31-day frequency for both partially and fully withdrawn control rods, and (2) revise Example 1.4-3 in Section 1.4 "Frequency" to clarify the applicability of the 1.25 surveillance test interval extension.<sup>(1)</sup>

The proposed changes are consistent with the Nuclear Regulatory Commission (NRC) approved Industry / Technical Specification Task Force (TSTF) Improved Standard Technical Specifications (STS) Change Traveler, TSTF-475, Revision 1 (Reference 1). A notice of availability for this TS improvement was published in the *Federal Register* on November 13, 2007 (Reference 2), as part of the Consolidated Line Item Improvement Process (CLIIP).

##### 2.0 ASSESSMENT

###### 2.1 Applicability of TSTF-475 and the Published Safety Evaluation

The Nuclear Management Company, LLC (NMC) has reviewed TSTF-475, Revision 1, and the NRC model safety evaluation published in the *Federal Register* on November 13, 2007 (Reference 2) as part of the CLIIP.

The NMC has concluded that the justifications presented in the TSTF proposal, as well as the supporting information provided to support the TSTF, and the safety evaluation prepared by the NRC staff are applicable to the MNGP and justify this amendment for incorporation of these changes into the MNGP TS.

###### 2.2 Optional Changes and Variations

The NMC is not proposing any variations or deviation from the TS changes described in the modified TSTF-475, Revision 1, or the NRC model safety evaluation dated November 13, 2007.

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1. The second change to fully insert all insertable control rods in Specification 3.3.1.2, Required Action E.2, is not applicable since it is already included in the MNGP TS.

## ENCLOSURE 1

As previously discussed, the third change proposed in TSTF-475, Revision 1, to clarify the TS requirement (and discussion in the Bases) to fully insert all insertable control rods within Specification 3.3.1.2, Required Action E.2, "Source Range Monitoring Instrumentation," is not applicable since this change was included in the MNGP TS and Bases as part of the improved standard TS conversion.

Additional minor wording changes (not discussed in the TSTF) are proposed for the Bases of SR 3.1.3.2 to clarify tense and reflect that this surveillance now applies to both partially and fully withdrawn control rods (see double-underlined words in Enclosure 4). An additional TS Bases change to renumber SR 3.1.3.4 as SR 3.1.3.3 in the bases (LCO Section) for Specification 3.1.4, "Control Rod Scram Times," is proposed since the surveillances were renumbered in TS Table 3.1.4-1 in accordance with this TSTF.

Also, the proposed removal of SR 3.1.4.3 from the list of control rod scram time testing surveillances that re-numbered SR 3.1.3.3 is performed in conjunction with, as indicated in the marked-up Bases pages for TSTF-475, Revision 1, is not appropriate. SR 3.1.4.3 verifies each affected control rod scram time is within the limits of TS Table 3.1.4-1 with any reactor steam dome pressure. SR 3.1.4.3 is unaffected by the proposed changes of TSTF-475, Revision 1, and reference to this surveillance should be retained within the re-numbered SR 3.1.3.3 bases. Therefore, this Bases change proposed in TSTF-475, Revision 1 will not be adopted.

### 3.0 REGULATORY ANALYSIS

#### 3.1 No Significant Hazards Consideration Determination

The NMC has reviewed the proposed No Significant Hazards Consideration (NSHC) determination published in the *Federal Register* on November 13, 2007 (Reference 2), as part of the CLIP. The NMC has concluded that the proposed NSHC determination presented in this *Federal Register* notice is applicable to the MNGP and is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

#### 3.2 Verification and Commitments

The MNGP TS include Specification 5.5.9, "Technical Specifications (TS) Bases Control Program," that is consistent with Section 5.5 of the STS.

As discussed in the notice of availability published in the *Federal Register* on November 13, 2007, for this TS improvement, the NMC verifies the applicability of TSTF-475 to the MNGP, and will establish Bases for the TS as proposed in TSTF-475, Revision 1.

These changes are based on TSTF change traveler TSTF-475, Revision 1 that proposes revisions to the STS by: (1) Revising the frequency of SR 3.1.3.2 for notch testing of fully withdrawn control rods, from "7 days after the control rod is withdrawn and THERMAL POWER is greater than the Low Power Set Point (LPSP) of the Rod Worth Minimizer (RWM)" to "31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM," and (2) revising Example 1.4-3 in

## ENCLOSURE 1

Section 1.4 "Frequency" to clarify that the 1.25 surveillance test interval extension in SR 3.0.2 is applicable to time periods discussed in NOTES in the "SURVEILLANCE" column in addition to the time periods in the "FREQUENCY" column.

As discussed in the notice of availability, the NMC is making the following commitment for the MNGP:

- The NMC will establish and implement Technical Specification Bases consistent with the applicable bases discussed in TSTF-475, Revision 1, "Control Rod Notch Testing Frequency and SRM Insert Control Rod Action," in conjunction with this amendment.

### 4.0 ENVIRONMENTAL EVALUATION

The NMC has reviewed the environmental evaluation included in the model safety evaluation dated November 13, 2007, as part of the CLIIP. The NMC has concluded that the staff's findings presented in that evaluation are applicable to the MNGP and the evaluation is hereby incorporated by reference for this application.

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### 5.0 REFERENCES

1. Technical Specification Task Force, Improved Standard Technical Specifications Change Traveler, TSTF-475, Revision 1, "Control Rod Notch Testing Frequency and SRM Insert Control Rod Action."
2. Federal Register Notice, Nuclear Regulatory Commission, "Notice of Availability of Model Application Concerning Technical Specification Improvement to Revise Control Rod Notch Surveillance Frequency, Clarify SRM Insert Control Rod Action, and Clarify Frequency Example," published on November 13, 2007 (72 FR 63935).

**ENCLOSURE 2**

**MONTICELLO NUCLEAR GENERATING PLANT**

**APPLICATION FOR TECHNICAL SPECIFICATION CHANGE REGARDING  
REVISION OF CONTROL ROD NOTCH SURVEILLANCE TEST FREQUENCY  
AND A CLARIFICATION OF A FREQUENCY EXAMPLE USING THE  
CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS**

**PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)**

(6 pages follow)

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>-----NOTE-----                      Not required to be performed until 12 hours after                      ≥ 25% RTP.                      -----</p>	
<p>Perform channel adjustment.</p>	<p>7 days</p>

The interval continues, whether or not the unit operation is < 25% RTP between performances.

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is < 25% RTP, this Note allows 12 hours after power reaches ≥ 25% RTP to perform the Surveillance. The Surveillance is still considered to be within the "specified Frequency." Therefore, if the Surveillance was not performed within the 7 day interval (plus the extension allowed by SR 3.0.2), but operation was < 25% RTP, it would not constitute a failure of the SR or failure to meet the LCO. Also, no violation of SR 3.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not exceed 12 hours (plus the extension allowed by SR 3.0.2) with power ≥ 25% RTP.

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance was not performed within this 12 hour interval (plus the extension allowed by SR 3.0.2), there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Control Rod OPERABILITY

LCO 3.1.3 Each control rod shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each control rod.  
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CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One withdrawn control rod stuck.</p>	<p>-----NOTE----- Rod worth minimizer (RWM) may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation," if required, to allow continued operation. -----</p> <p>A.1 Verify stuck control rod separation criteria are met.</p> <p><u>AND</u></p> <p>A.2 Disarm the associated control rod drive (CRD).</p> <p><u>AND</u></p>	<p>Immediately</p> <p>2 hours</p>

**NO CHANGES FOR INFORMATION ONLY**

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>A.3 Perform SR 3.1.3.2 and <del>SR 3.1.3.3</del> for each withdrawn OPERABLE control rod.</p> <p><u>AND</u></p> <p>A.4 Perform SR 3.1.1.1.</p>	<p>24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM</p> <p>72 hours</p>
<p>B. Two or more withdrawn control rods stuck.</p>	<p>B.1 Be in MODE 3.</p>	<p>12 hours</p>
<p>C. One or more control rods inoperable for reasons other than Condition A or B.</p>	<p>C.1 -----NOTE----- RWM may be bypassed as allowed by LCO 3.3.2.1, if required, to allow insertion of inoperable control rod and continued operation. ----- Fully insert inoperable control rod.</p> <p><u>AND</u></p> <p>C.2 Disarm the associated CRD.</p>	<p>3 hours</p> <p>4 hours</p>



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR <del>3.1.3.3</del> 3.1.3.2	<p>-----NOTE----- Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM. -----</p> <p>Insert each partially withdrawn control rod at least one notch.</p>	31 days
SR <del>3.1.3.4</del> 3.1.3.3	Verify each control rod scram time from fully withdrawn to notch position 06 is $\leq 7$ seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4
SR <del>3.1.3.5</del> 3.1.3.4	Verify each control rod does not go to the withdrawn overtravel position.	<p>Each time the control rod is withdrawn to "full out" position</p> <p>AND</p> <p>Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect coupling</p>

Table 3.1.4-1 (page 1 of 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 06. These control rods are inoperable, in accordance with SR ~~3.1.3.4~~ 3.1.3.3 and are not considered "slow."
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NOTCH POSITION	SCRAM TIMES <sup>(a)(b)</sup> (seconds) WHEN REACTOR STEAM DOME PRESSURE ≥ 800 psig
46	0.44
36	1.08
26	1.83
06	3.35

- (a) Maximum scram time from fully withdrawn position based on de-energization of scram pilot valve solenoids at time zero.
- (b) Scram times as a function of reactor steam dome pressure when < 800 psig are within established limits.

**ENCLOSURE 3**

**MONTICELLO NUCLEAR GENERATING PLANT**

**APPLICATION FOR TECHNICAL SPECIFICATION CHANGE REGARDING  
REVISION OF CONTROL ROD NOTCH SURVEILLANCE TEST FREQUENCY  
AND A CLARIFICATION OF A FREQUENCY EXAMPLE USING THE  
CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS**

**PROPOSED RETYPED TECHNICAL SPECIFICATION CHANGES**

(5 pages follow)

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p style="text-align: center;">-----NOTE----- Not required to be performed until 12 hours after ≥ 25% RTP. -----</p>	
<p>Perform channel adjustment.</p>	<p>7 days</p>

The interval continues, whether or not the unit operation is < 25% RTP between performances.

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is < 25% RTP, this Note allows 12 hours after power reaches ≥ 25% RTP to perform the Surveillance. The Surveillance is still considered to be within the "specified Frequency." Therefore, if the Surveillance was not performed within the 7 day interval (plus the extension allowed by SR 3.0.2), but operation was < 25% RTP, it would not constitute a failure of the SR or failure to meet the LCO. Also, no violation of SR 3.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not exceed 12 hours (plus the extension allowed by SR 3.0.2) with power ≥ 25% RTP.

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance was not performed within this 12 hour interval (plus the extension allowed by SR 3.0.2), there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>A.3 Perform SR 3.1.3.2 for each withdrawn OPERABLE control rod.</p> <p><u>AND</u></p> <p>A.4 Perform SR 3.1.1.1.</p>	<p>24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM</p> <p>72 hours</p>
<p>B. Two or more withdrawn control rods stuck.</p>	<p>B.1 Be in MODE 3.</p>	<p>12 hours</p>
<p>C. One or more control rods inoperable for reasons other than Condition A or B.</p>	<p>C.1 -----NOTE----- RWM may be bypassed as allowed by LCO 3.3.2.1, if required, to allow insertion of inoperable control rod and continued operation. -----</p> <p>Fully insert inoperable control rod.</p> <p><u>AND</u></p> <p>C.2 Disarm the associated CRD.</p>	<p>3 hours</p> <p>4 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. -----NOTE----- Not applicable when THERMAL POWER &gt; 10% RTP. -----</p> <p>Two or more inoperable control rods not in compliance with banked position withdrawal sequence (BPWS) and not separated by two or more OPERABLE control rods.</p>	<p>D.1 Restore compliance with BPWS.</p> <p><u>OR</u></p> <p>D.2 Restore control rod to OPERABLE status.</p>	<p>4 hours</p> <p>4 hours</p>
<p>E. Required Action and associated Completion Time of Condition A, C, or D not met.</p> <p><u>OR</u></p> <p>Nine or more control rods inoperable.</p>	<p>E.1 Be in MODE 3.</p>	<p>12 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	24 hours
SR 3.1.3.2	<p>-----NOTE----- Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM. -----</p> <p>Insert each withdrawn control rod at least one notch.</p>	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.3.3	Verify each control rod scram time from fully withdrawn to notch position 06 is $\leq 7$ seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4
SR 3.1.3.4	Verify each control rod does not go to the withdrawn overtravel position.	Each time the control rod is withdrawn to "full out" position  AND  Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect coupling

Table 3.1.4-1 (page 1 of 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 06. These control rods are inoperable, in accordance with SR 3.1.3.3 and are not considered "slow."
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NOTCH POSITION	SCRAM TIMES <sup>(a)(b)</sup> (seconds) WHEN REACTOR STEAM DOME PRESSURE ≥ 800 psig
46	0.44
36	1.08
26	1.83
06	3.35

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

(b) Scram times as a function of reactor steam dome pressure when < 800 psig are within established limits.

**ENCLOSURE 4**

**MONTICELLO NUCLEAR GENERATING PLANT**

**APPLICATION FOR TECHNICAL SPECIFICATION CHANGE REGARDING  
REVISION OF CONTROL ROD NOTCH SURVEILLANCE TEST FREQUENCY  
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**MARKED-UP DRAFT TECHNICAL SPECIFICATION BASES PAGES**

(4 pages follow)

## BASES

## ACTIONS (continued)

Monitoring of the insertion capability of each withdrawn control rod must also be performed within 24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM. SR 3.1.3.2 and ~~SR 3.1.3.3~~ performs periodic tests of the control rod insertion capability of withdrawn control rods. Testing each withdrawn control rod ensures that a generic problem does not exist. This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." The Required Action A.3 Completion Time only begins upon discovery of Condition A concurrent with THERMAL POWER greater than the actual LPSP of the RWM since the notch insertions may not be compatible with the requirements of rod pattern control (LCO 3.1.6) and the RWM (LCO 3.3.2.1). The allowed Completion Time of 24 hours from discovery of Condition A, concurrent with THERMAL POWER greater than the LPSP of the RWM, provides a reasonable time to test the control rods, considering the potential for a need to reduce power to perform the tests.

To allow continued operation with a withdrawn control rod stuck, an evaluation of adequate SDM is also required within 72 hours. Should a DBA or transient require a shutdown, to preserve the single failure criterion, an additional control rod would have to be assumed to fail to insert when required. Therefore, the original SDM demonstration may not be valid. The SDM must therefore be evaluated (by measurement or analysis) with the stuck control rod at its stuck position and the highest worth OPERABLE control rod assumed to be fully withdrawn.

The allowed Completion Time of 72 hours to verify SDM is adequate, considering that with a single control rod stuck in a withdrawn position, the remaining OPERABLE control rods are capable of providing the required scram and shutdown reactivity. Failure to reach MODE 4 is only likely if an additional control rod adjacent to the stuck control rod also fails to insert during a required scram. Even with the postulated additional single failure of an adjacent control rod to insert, sufficient reactivity control remains to reach MODE 3 conditions.

B.1

With two or more withdrawn control rods stuck, the plant must be brought to MODE 3 within 12 hours. The occurrence of more than one control rod stuck at a withdrawn position increases the probability that the reactor cannot be shut down if required. Insertion of all insertable control rods eliminates the possibility of an additional failure of a control rod to insert. 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.

BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.1.3.1

The position of each control rod must be determined to ensure adequate information on control rod position is available to the operator for determining control rod OPERABILITY and controlling rod patterns. Control rod position may be determined by the use of OPERABLE position indicators, by moving control rods to a position with an OPERABLE indicator, or by the use of other appropriate methods. The 24 hour Frequency of this SR is based on operating experience related to expected changes in control rod position and the availability of control rod position indications in the control room.

SR 3.1.3.2 and SR 3.1.3.3

Control rod insertion capability is demonstrated by inserting each partially or fully withdrawn control rod at least one notch and observing that the control rod moves. The control rod may then be returned to its original position. This ensures the control rod is not stuck and is free to insert on a scram signal. These Surveillances are not required when THERMAL POWER is less than or equal to the actual LPSP of the RWM, since the notch insertions may not be compatible with the requirements of the Banked Position Withdrawal Sequence (BPWS) (LCO 3.1.6) and the RWM (LCO 3.3.2.1). ~~The 7 day Frequency of SR 3.1.3.2 is based on operating experience related to the changes in CRD performance and the ease of performing notch testing for fully withdrawn control rods. Partially or fully withdrawn control rods are tested at a 31 day Frequency, based on the potential power reduction required to allow the control rod movement (Ref. 6). and considering the large testing sample of SR 3.1.3.2.~~ Furthermore, the 31 day Frequency takes into account operating experience related to changes in CRD performance. At any time, if a control rod is immovable, a determination of that control rod's trippability (OPERABILITY) must be made and appropriate action taken.

~~The SR is~~ These SRs are modified by a Notes that allows 7 days and 31 days ~~respectively~~, after withdrawal of the control rod and increasing power to above the LPSP, to perform the Surveillance. This acknowledges that the control rod must be first withdrawn and THERMAL POWER must be increased to above the LPSP before performance of the Surveillance, and therefore, the Notes avoids potential conflicts with SR 3.0.1 and SR 3.0.4.

SR 3.1.3.4 3.1.3.3

Verifying that the scram time for each control rod to notch position 06 is  $\leq 7$  seconds provides reasonable assurance that the control rod will insert when required during a DBA or transient, thereby completing its shutdown function. This SR is performed in conjunction with the control rod scram

BASES

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SURVEILLANCE REQUIREMENTS (continued)

time testing of SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," and the functional testing of SDV vent and drain valves in LCO 3.1.8, "Scram Discharge Volume (SDV) Vent and Drain Valves," overlap this Surveillance to provide complete testing of the assumed safety function. The associated Frequencies are acceptable, considering the more frequent testing performed to demonstrate other aspects of control rod OPERABILITY and operating experience, which shows scram times do not significantly change over an operating cycle.

~~SR 3.1.3.5~~ 3.1.3.4

Coupling verification is performed to ensure the control rod is connected to the CRDM and will perform its intended function when necessary. The Surveillance requires verifying that a control rod does not go to the withdrawn overtravel position when it is fully withdrawn. The overtravel position feature provides a positive check on the coupling integrity since only an uncoupled CRD can reach the overtravel position. The verification is required to be performed any time a control rod is withdrawn to the "full out" position (notch position 48) or prior to declaring the control rod OPERABLE after work on the control rod or CRD System that could affect coupling. This includes control rods inserted one notch and then returned to the "full out" position during the performance of SR 3.1.3.2. This Frequency is acceptable, considering the low probability that a control rod will become uncoupled when it is not being moved and operating experience related to uncoupling events.

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REFERENCES

1. USAR, Section 1.2.2.
  2. USAR, Chapter 14.
  3. USAR, Chapter 14A.
  4. USAR, Chapter 3.
  5. NEDO-21231, "Banked Position Withdrawal Sequence," Section 7.2, January 1977.
  6. Amendment No. \_\_\_\_\_, TSTF-475, Revision 1, "Control Rod Notch Testing Frequency and SRM Insert Control Rod Action."
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BASES

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APPLICABLE SAFETY ANALYSES (continued)

a rate fast enough to prevent the actual MCPR from becoming less than the MCPR SL, during the analyzed limiting power transient. Below 800 psig, the scram function is assumed to perform during the control rod drop accident (Ref. 5) and, therefore, also provides protection against violating fuel design limits during reactivity insertion accidents (see Bases for LCO 3.1.6, "Rod Pattern Control"). 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 10 CFR 50.36(c)(2)(ii).

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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 (Ref. 6). To account for single failures 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 that allows up to approximately 7% of the control rods (e.g.,  $121 \times 7\% \approx 8$ ) to have scram times exceeding 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. To ensure that local scram reactivity rates are maintained within acceptable limits, no more than two of the allowed "slow" control rods may occupy adjacent locations (face or diagonal).

Table 3.1.4-1 is modified by two Notes which state that 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 ~~3.1.3.4~~ 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.