



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 14, 2015

Mr. Paul Fessler
Senior Vice President and Chief Nuclear Officer
DTE Electric Company
Fermi 2 - 210 NOC
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI 2 - ISSUANCE OF AMENDMENT RE: REVISE TECHNICAL SPECIFICATIONS BY RELOCATING SURVEILLANCE FREQUENCIES TO LICENSEE CONTROL IN ACCORDANCE WITH TECHNICAL SPECIFICATION TASK FORCE TRAVELER 425, REVISION 3 (TAC NO. MF4859)

Dear Mr. Fessler:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 201 to Facility Operating License No. NPF-43 for the Fermi 2 facility. The amendment consists of changes to the technical specifications (TSs) in response to your application dated September 16, 2014, as supplemented by letter dated April 17, 2015.

The amendment revises the TS by relocating specific surveillance frequencies to a licensee-controlled program. The changes are based on U.S. Nuclear Regulatory Commission approved TS Task Force (TSTF) Change Traveler TSTF – 425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF [Risk-Informed TSTF] Initiative 5b."

A copy of our safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennivine K. Rankin", is written over a horizontal line.

Jennivine K. Rankin, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosures:

1. Amendment No. 201 to NPF-43
2. Safety Evaluation

cc w/encls: Distribution via ListServ



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

DTE ELECTRIC COMPANY

DOCKET NO. 50-341

FERMI 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 201
License No. NPF-43

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the DTE Electric Company (DTE, the licensee) dated September 16, 2014, as supplemented by letter dated April 17, 2015, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. NPF-43 is hereby amended to read as follows:

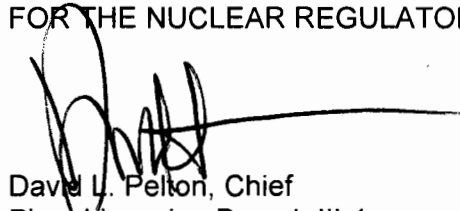
Enclosure 1

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 201, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. DTE Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days.

FOR THE NUCLEAR REGULATORY COMMISSION

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David L. Pelton, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating License
and Technical Specifications

Date of Issuance: July 14, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 201

FACILITY OPERATING LICENSE NO. NPF-43

DOCKET NO. 50-341

Replace the following pages of the Facility Operating License and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

License Page 3

INSERT

License Page 3

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.1-6
3.1-10
3.1-13
3.1-17
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3.3-23
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3.3-40

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3.2-1
3.2-3
3.2-4
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3.3-5
3.3-6
3.3-7
3.3-7a
3.3-13
3.3-14
3.3-15
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3.4-6
3.4-8
3.4-10
3.4-15
3.4-17
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3.6-41

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REMOVE

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INSERT

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- (4) DTE Electric Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material such as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
 - (5) DTE Electric Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
 - (6) DTE Electric Company, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level

DTE Electric Company is authorized to operate the facility at reactor core power levels not in excess of 3486 megawatts thermal (100% power) in accordance with conditions specified herein and in Attachment 1 to this license. The items identified in Attachment 1 to this license shall be completed as specified. Attachment 1 is hereby incorporated into this license.
 - (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 201, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. DTE Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.
 - (3) Antitrust Conditions

DTE Electric Company shall abide by the agreements and interpretations between it and the Department of Justice relating to Article I, Paragraph 3 of the Electric Power Pool Agreement between DTE Electric Company and

Reactivity Anomalies
3.1.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.2.1 Verify core reactivity difference between the monitored reactivity and the predicted reactivity is within $\pm 1\% \Delta k/k$.	Once within 24 hours after reaching equilibrium conditions following startup after fuel movement within the reactor pressure vessel <u>AND</u> In accordance with the Surveillance Frequency Control Program

Control Rod OPERABILITY
3.1.3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	In accordance with the Surveillance Frequency Control Program
SR 3.1.3.2	<p>.....NOTE.....</p> <p>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>.....</p> <p>Insert each withdrawn control rod at least one notch.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.1.3.3	Verify each control rod scram time from fully withdrawn to notch position 06 is ≤ 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.	<p>Each time the control rod is withdrawn to "full out" position</p> <p><u>AND</u></p> <p>Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect coupling</p>

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 \geq 800 psig.	In accordance with the Surveillance Frequency Control Program
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 \geq 800 psig.	Prior to exceeding 40% RTP after fuel movement within the associated core cell <u>AND</u> Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time

Control Rod Scram Accumulators
3.1.5

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more control rod scram accumulators inoperable with reactor steam dome pressure < 900 psig.	C.1 Verify all control rods associated with inoperable accumulators are fully inserted.	Immediately upon discovery of charging water header pressure < 940 psig
	<u>AND</u> C.2 Declare the associated control rod inoperable.	1 hour
D. Required Action and associated Completion Time of Required Action B.1 or C.1 not met.	D.1 -----NOTE----- Not applicable if all inoperable control rod scram accumulators are associated with fully inserted control rods. ----- Place the reactor mode switch in the shutdown position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.5.1 Verify each control rod scram accumulator pressure is \geq 940 psig.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Nine or more OPERABLE control rods not in compliance with the prescribed withdrawal sequence.	B.1 -----NOTE----- Rod worth minimizer (RWM) may be bypassed as allowed by LCO 3.3.2.1. ----- Suspend withdrawal of control rods.	Immediately
	<u>AND</u> B.2 Place the reactor mode switch in the shutdown position.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.6.1 Verify all OPERABLE control rods comply with the prescribed withdrawal sequence.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Verify available volume of sodium pentaborate solution is within the limits of Figure 3.1.7-1.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.2	Verify temperature of sodium pentaborate solution is $\geq 48^{\circ}\text{F}$.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.3	Verify temperature of pump suction piping is $\geq 48^{\circ}\text{F}$.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.4	Verify continuity of explosive charge.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.5	Verify the concentration of boron in solution is within the limits of Figure 3.1.7-1.	In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 24 hours after water or boron is added to solution <u>AND</u> Once within 24 hours after solution temperature is restored $\geq 48^{\circ}\text{F}$

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.1.7.6 Verify each SLC subsystem manual valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position, or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.7 Verify each pump develops a flow rate ≥ 41.2 gpm at a discharge pressure ≥ 1215 psig.	In accordance with the Inservice Testing Program
SR 3.1.7.8 Verify flow through one SLC subsystem from pump into reactor pressure vessel.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.9 Verify all piping between storage tank and explosive valve is unblocked.	In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 24 hours after solution temperature is restored $\geq 48^{\circ}\text{F}$
SR 3.1.7.10 Verify sodium pentaborate enrichment is ≥ 65 atom percent B-10.	Prior to addition to SLC tank

SDV Vent and Drain Valves
3.1.8

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	<p>-----NOTE----- Not required to be met on vent and drain valves closed intermittently for testing under administrative control. -----</p> <p>Verify each SDV vent and drain valve is open.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.2	<p>Verify each SDV vent and drain valve:</p> <ul style="list-style-type: none"> a. Closes in ≤ 30 seconds after receipt of an actual or simulated scram signal; and b. Opens when the actual or simulated scram signal is reset. 	In accordance with the Surveillance Frequency Control Program

3.2 POWER DISTRIBUTION LIMITS

3.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)

LCO 3.2.1 All APLHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER \geq 25% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any APLHGR not within limits.	A.1 Restore APLHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify all APLHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after \geq 25% RPT <u>AND</u> In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.2.1 Verify all MCPRs are greater than or equal to the limits specified in the COLR.	Once within 12 hours after $\geq 25\%$ RTP <u>AND</u> In accordance with the Surveillance Frequency Control Program
SR 3.2.2.2 Determine the MCPR limits.	Once within 72 hours after each completion of SR 3.1.4.1 <u>AND</u> Once within 72 hours after each completion of SR 3.1.4.2 <u>AND</u> Once within 72 hours after each completion of SR 3.1.4.4

3.2 POWER DISTRIBUTION LIMITS

3.2.1 LINEAR HEAT GENERATION RATE (LHGR)

LCO 3.2.3 All LHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER \geq 25% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any LHGR not within limits.	A.1 Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.3.1 Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after \geq 25% RPT <u>AND</u> In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.2	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.3	<p>-----NOTE----- Not required to be performed until 12 hours after THERMAL POWER \geq 25% RTP. -----</p> <p>Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is \leq 2% RTP, while operating at \geq 25% RTP.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.4	<p>-----NOTE----- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. -----</p> <p>Perform CHANNEL FUNCTIONAL TEST.</p>	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.5	Perform CHANNEL Functional Test.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.6	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to fully withdrawing SRMs from the core
SR 3.3.1.1.7	<p>-----NOTE----- Only required to be met during entry into MODE 2 from MODE 1. -----</p> <p>Verify the IRM and APRM channels overlap.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.8	Calibrate the local power range monitors.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.9	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.1.1.10 Verify the trip unit setpoint.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.11 NOTES..... 1. Neutron detectors are excluded. 2. For Function 1.a not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.12 NOTE..... For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.13 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.14	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.15	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.16	Verify Turbine Stop Valve-Closure and Turbine Control Valve Fast Closure Functions are not bypassed when THERMAL POWER is $\geq 29.5\%$ RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.17	<p>.....NOTE.....</p> <p>Neutron detectors are excluded.</p> <p>.....</p> <p>Verify the RPS RESPONSE TIME is within limits.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.18	<p>.....NOTE.....</p> <p>Neutron detectors are excluded.</p> <p>.....</p> <p>Perform CHANNEL CALIBRATION.</p>	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.1.1.19 Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.20 Verify OPRM is not bypassed when APRM Simulated Thermal Power is $\geq 27.5\%$ and recirculation drive flow is $< 60\%$ of rated recirculation drive flow.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.1.2-1 to determine which SRs apply for each applicable MODE or other specified conditions.

SURVEILLANCE	FREQUENCY
SR 3.3.1.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2.2 -----NOTES----- 1. Only required to be met during CORE ALTERATIONS. 2. One SRM may be used to satisfy more than one of the following. ----- Verify an OPERABLE SRM detector is located in: a. The fueled region; b. The core quadrant where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region; and c. A core quadrant adjacent to where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2.3 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.2.4NOTE.....</p> <p>Not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant.</p> <p>.....</p> <p>Verify count rate is:</p> <p>a. ≥ 3.0 cps; or</p> <p>b. ≥ 0.7 cps when signal-to-noise ratio is $\geq 20:1$.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.1.2.5NOTE.....</p> <p>Signal-to-noise ratio not required to be determined when SRM count rate is ≥ 3.0 cps</p> <p>.....</p> <p>Perform CHANNEL FUNCTIONAL TEST and determination of signal-to-noise ratio.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.1.2.6NOTES.....</p> <p>1. Signal-to-noise ratio not required to be determined when SRM count rate is ≥ 3.0 cps</p> <p>2. Not required to be performed until 12 hours after IRMs on Range 2 or below.</p> <p>.....</p> <p>Perform CHANNEL FUNCTIONAL TEST and determination of signal-to-noise ratio.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.2.7 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. Not required to be performed until 12 hours after IRMs on Range 2 or below. <p>-----</p> <p>Perform CHANNEL CALIBRATION.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more Reactor Mode Switch-Shutdown Position channels inoperable.	E.1 Suspend control rod withdrawal.	Immediately
	<u>AND</u> E.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTES-----
1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.
 2. When an RBM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.
-

SURVEILLANCE	FREQUENCY
SR 3.3.2.1.1 -----NOTE----- Not required to be performed until 1 hour after any control rod is withdrawn at $\leq 10\%$ RTP in MODE 2. ----- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.2.1.2NOTE..... Not required to be performed until 1 hour after THERMAL POWER is \leq 10% RTP in MODE 1. Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.3 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.4NOTE..... Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.5 Verify the RBM is not bypassed when THERMAL POWER is \geq 30% RTP.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.2.1.6NOTE..... Neutron detectors are excluded. Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.7 Verify control rod sequences input to the RWM are in conformance with the prescribed withdrawal sequence.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

Feedwater and Main Turbine High Water Level Trip Instrumentation
3.3.2.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.2.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2.3	Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ 219 inches.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2.4	Perform LOGIC SYSTEM FUNCTIONAL TEST including valve actuation.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTE-----
These SRs apply to each Function in Table 3.3.3.1-1.

SURVEILLANCE	FREQUENCY
SR 3.3.3.1.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.1.2 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.2.1	Perform CHANNEL CHECK for each required instrumentation channel.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.2.2	Verify each required control circuit and transfer switch is capable of performing the intended function.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.2.3	Perform CHANNEL CALIBRATION for each required instrumentation channel.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTE-----
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 2 hours provided the associated Function maintains ATWS-RPT trip capability.

SURVEILLANCE	FREQUENCY
SR 3.3.4.1.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.1.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.1.3 Perform CHANNEL CALIBRATION. The Allowable Values shall be: <ul style="list-style-type: none"> a. Reactor Vessel Water Level—Low Low, Level 2: ≥ 103.8 inches; and b. Reactor Vessel Pressure—High: ≤ 1153 psig. 	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.1.4 Perform LOGIC SYSTEM FUNCTIONAL TEST including breaker actuation.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

NOTES

1. Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Function 3.c; and (b) for up to 6 hours for Functions other than 3.c and 3.f provided the associated Function or the redundant Function maintains ECCS initiation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.5.1.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.3 Verify the trip unit setpoint.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.4 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.5 Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.5.1.6 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

- NOTES-----
1. Refer to Table 3.3.5.2-1 to determine which SRs apply for each RCIC Function.
 2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Function 2; and (b) for up to 6 hours for Functions 1 and 3 provided the associated Function maintains RCIC initiation capability.
-

SURVEILLANCE	FREQUENCY
SR 3.3.5.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.3 Verify the trip unit setpoint.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.4 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.5 Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.5.2.6 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

Primary Containment Isolation Instrumentation
3.3.6.1

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Primary Containment Isolation Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to:
 - a. 2 hours for Function 5.a when testing non-redundant circuitry that results in loss of isolation capability associated with this Function, provided Functions 5.b, 5.c, and 5.e are OPERABLE;
 - b. 6 hours for Function 5 (other than non-redundant circuitry of 5.a) provided the associated Function maintains isolation capability.
6 hours for Function 5.c provided Function 5.b is OPERABLE in the affected room;
 - c. 6 hours for Functions 1, 2, 6, and 7, provided the associated Function maintains isolation capability; and
 - d. 8 hours for Functions 3 and 4, provided the associated Function maintains isolation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.6.1.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.3 Verify the trip unit setpoint.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.4 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

(continued)

Primary Containment Isolation Instrumentation
3.3.6.1

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.6	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.7	Verify the Main Steam Line Isolation Instrumentation DC Output Relays response time allows the overall ISOLATION SYSTEM RESPONSE TIME to remain within limits.	In accordance with the Surveillance Frequency Control Program

Secondary Containment Isolation Instrumentation
3.3.6.2

SURVEILLANCE REQUIREMENTS

- NOTES-----
1. Refer to Table 3.3.6.2-1 to determine which SRs apply for each Secondary Containment Isolation Function.
 2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains secondary containment isolation capability.
-

SURVEILLANCE	FREQUENCY
SR 3.3.6.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.3 Verify the trip unit setpoint.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.4 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.5 Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.6.3-1 to determine which SRs apply for each Function.

SURVEILLANCE	FREQUENCY
SR 3.3.6.3.1 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3.2 Perform CHANNEL FUNCTIONAL TEST for portion of the channel outside primary containment.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3.3 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3.4 Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.7.1-1 to determine which SRs apply for each CREF Function.
 2. For Functions 1, 2, and 3, when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains CREF initiation capability.
-

SURVEILLANCE	FREQUENCY
SR 3.3.7.1.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.1.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.1.3 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.1.4 Verify the trip unit setpoint.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.1.5 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.7.1.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.8.1-1 to determine which SRs apply for each LOP Function.

SURVEILLANCE	FREQUENCY
SR 3.3.8.1.1 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.1.2 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.1.3 Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.3.8.2.1NOTE..... Only required to be performed prior to entering MODE 2 or 3 from MODE 4, when in MODE 4 for ≥ 24 hours. Perform CHANNEL FUNCTIONAL TEST.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.8.2.2 Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Overvoltage ≤ 132 V. b. Undervoltage ≥ 108 V. c. Underfrequency ≥ 57 Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.3.8.2.3 Perform a system functional test.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

Recirculation Loops Operating
3.4.1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Recirculation jet pump loop flow mismatch not within limits.	A.1 Declare recirculation loop with lower flow: "not in operation."	2 hours
B. No recirculation loops operating.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.1.1NOTE..... Not required to be performed until 24 hours after both recirculation loops are in operation. Verify recirculation loop jet pump flow mismatch with both recirculation loops in operation is:</p> <p>a. $\leq 10\%$ of rated core flow when operating at $< 70\%$ of rated core flow; and</p> <p>b. $\leq 5\%$ of rated core flow when operating at $\geq 70\%$ of rated core flow.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.2.1NOTES.....</p> <ol style="list-style-type: none"> 1. Not required to be performed until 4 hours after associated recirculation loop is in operation. 2. Not required to be performed until 24 hours after > 25% RTP. <p>.....</p> <p>Verify at least two of the following criteria (a, b, or c) are satisfied for each operating recirculation loop:</p> <ol style="list-style-type: none"> a. Recirculation loop drive flow versus recirculation pump speed differs by $\leq 10\%$ from established patterns. b. Recirculation loop drive flow versus total core flow differs by $\leq 10\%$ from established patterns. c. Each jet pump diffuser to lower plenum differential pressure differs by $\leq 20\%$ from established patterns, or each jet pump flow differs by $\leq 10\%$ from established patterns. 	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify the safety function lift setpoints of the required SRVs are as follows:	In accordance with the Inservice Testing Program
	<u>Number of SRVs</u>	
	<u>Setpoint (psig)</u>	
	5	
	5	
	5	
	1135 ± 34.05	
	1145 ± 34.35	
	1155 ± 34.65	
	Following testing, lift settings shall be within ± 1%.	
SR 3.4.3.2	Verify each required SRV is capable of being opened.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Unidentified LEAKAGE increase not within limit.	B.1 Reduce LEAKAGE to within limits.	4 hours
	<u>OR</u> B.2 Verify source of unidentified LEAKAGE increase is not service sensitive type 304 or type 316 austenitic stainless steel.	4 hours
C. Required Action and associated Completion Time of Condition A or B not met. <u>OR</u> Pressure boundary LEAKAGE exists.	C.1 Be in MODE 3.	12 hours
	<u>AND</u> C.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.4.1 Verify RCS unidentified and total LEAKAGE and unidentified LEAKAGE increase are within limits.	In accordance with the Surveillance Frequency Control Program

RCS Leakage Detection Instrumentation
3.4.6

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3.	12 hours
	<u>AND</u> F.2 Be in MODE 4.	36 hours
G. All required leakage detection systems inoperable.	G.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.6.1 Perform a CHANNEL CHECK of required primary containment atmosphere gaseous radioactivity monitoring system.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.2 Perform a CHANNEL FUNCTIONAL TEST of required leakage detection instrumentation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.6.3 Perform a CHANNEL CALIBRATION of required leakage detection instrumentation.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> Reactor Coolant specific activity > 4.0 $\mu\text{Ci/gm}$ Dose EQUIVALENT I-131.	B.1 Determine DOSE EQUIVALENT I-131.	Once per 4 hours
	<u>AND</u>	
	B.2.1 Isolate all main steam lines.	12 hours
	<u>OR</u>	
	B.2.2.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	B.2.2.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.7.1NOTE..... Only required to be performed in MODE 1. Verify reactor coolant DOSE EQUIVALENT I-131 specific activity is $\leq 0.2 \mu\text{Ci/gm}$.	In accordance with the Surveillance Frequency Control Program

RHR Shutdown Cooling System—Hot Shutdown
3.4.8

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	<p>-----NOTE-----</p> <p>Not required to be met until 4 hours after reactor steam dome pressure is less than the RHR cut in permissive pressure.</p> <p>-----</p> <p>Verify one RHR shutdown cooling subsystem or recirculation pump is operating.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

RHR Shutdown Cooling System—Cold Shutdown
3.4.9

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. <u>AND</u> No recirculation pump in operation.	B.1 Initiate action to restore one RHR shutdown cooling subsystem or one recirculation pump to operation.	Immediately
	<u>AND</u>	
	B.2 Verify reactor coolant circulating by an alternate method.	1 hour from discovery of no reactor coolant circulation
	<u>AND</u>	
	B.3 Monitor reactor coolant temperature.	Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.9.1 Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. -----NOTE----- Required Action C.2 shall be completed if this Condition is entered. ----- Requirements of the LCO not met in other than MODES 1, 2, and 3.	C.1 Initiate action to restore parameter(s) to within limits. <u>AND</u> C.2 Determine RCS is acceptable for operation.	Immediately Prior to entering MODE 2 or 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	<p>-----NOTE----- Only required to be performed as applicable during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. -----</p> <p>Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.</p>	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.4.10.7 -----NOTE----- Only required to be performed when tensioning the reactor vessel head bolting studs. -----</p> <p>Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR when the reactor vessel head bolt studs are under tension.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.4.10.8 -----NOTE----- Not required to be performed until 30 minutes after RCS temperature $\leq 80^{\circ}\text{F}$ in MODE 4. -----</p> <p>Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.4.10.9 -----NOTE----- Not required to be performed until 12 hours after RCS temperature $\leq 100^{\circ}\text{F}$ in MODE 4. -----</p> <p>Verify reactor vessel flange and head flange temperatures are within the limits specified in the PTLR.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Reactor Steam Dome Pressure

LCO 3.4.11 The reactor steam dome pressure shall be ≤ 1045 psig.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor steam dome pressure not within limit.	A.1 Restore reactor steam dome pressure to within limit.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.11.1 Verify reactor steam dome pressure is ≤ 1045 psig.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.1.1 Verify correct voltage and breaker alignment to the LPCI swing bus.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2 -----NOTE----- When LPCI is placed in an inoperable status solely for performance of this SR, or when the LPCI swing bus automatic throwover scheme is inoperable due to EDG-12 being paralleled to the bus for required testing, entry into associated Conditions and Required Actions may be delayed up to 12 hours for completion of the required testing. ----- Perform a functional test of the LPCI swing bus automatic throwover scheme.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3 Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.5.1.4NOTE..... Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the Residual Heat Removal (RHR) cut-in permissive pressure in MODE 3, and for 4 hours after exceeding the RHR cut-in permissive pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable. Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.5.1.5 Verify primary containment pneumatic supply pressure is ≥ 75 psig.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.5.1.6 Verify the RHR System power operated cross tie valve is open.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.5.1.7 Verify each recirculation pump discharge valve cycles through one complete cycle of full travel or is de-energized in the closed position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE				FREQUENCY
SR 3.5.1.8	Verify the following ECCS pumps develop the specified flow rate against a system head corresponding to the specified reactor pressure.			In accordance with the Inservice Testing Program
	<u>SYSTEM</u>	<u>FLOW RATE</u>	<u>NO. OF PUMPS</u>	
			<u>SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF</u>	
	Core			
	Spray	≥ 5725 gpm	2	≥ 100 psig
	LPCI	≥ 10,000 gpm	1	≥ 20 psig
SR 3.5.1.9	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.</p> <p>-----</p> <p>Verify, with reactor pressure ≤ 1045 and ≥ 945 psig, the HPCI pump can develop a flow rate ≥ 5000 gpm against a system head corresponding to reactor pressure.</p>			In accordance with the Inservice Testing Program
SR 3.5.1.10	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.</p> <p>-----</p> <p>Verify, with reactor pressure ≤ 215 psig, the HPCI pump can develop a flow rate ≥ 5000 gpm against a system head corresponding to reactor pressure.</p>			In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.5.1.11 -----NOTE----- Vessel injection/spray may be excluded. -----</p> <p>Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.5.1.12 -----NOTE----- Valve actuation may be excluded. -----</p> <p>Verify the ADS actuates on an actual or simulated automatic initiation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.5.1.13 Verify each ADS valve opens when manually actuated.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.5.1.14 -----NOTE----- ECCS instrumentation response times are not required to be measured. -----</p> <p>Verify ECCS RESPONSE TIME is within limits.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action C.2 and associated Completion Time not met.	D.1 Initiate action to restore secondary containment to OPERABLE status.	Immediately
	<u>AND</u>	
	D.2 Initiate action to restore one standby gas treatment subsystem to OPERABLE status.	Immediately
	<u>AND</u>	
	D.3 Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.2.1 Verify, for each required low pressure coolant injection (LPCI) subsystem, the suppression pool water level is \geq -66 inches.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.5.2.2 Verify, for each required core spray (CS) subsystem, the:</p> <p> a. Suppression pool water level is \geq -66 inches; or</p> <p> b. -NOTE-..... Only one required CS subsystem may take credit for this option during OPDRVs. </p> <p> Condensate storage tank water level is \geq 19 ft.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.5.2.3 Verify correct voltage and breaker alignment to the LPCI swing bus.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.5.2.4 Verify, for each required ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE				FREQUENCY																
SR 3.5.2.5	-----NOTE----- LPCI subsystem(s) may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable. ----- Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.			In accordance with the Surveillance Frequency Control Program																
SR 3.5.2.6	Verify each required ECCS pump develops the specified flow rate against a system head corresponding to the specified reactor pressure. <table><tr><td></td><td></td><td>NO. OF PUMPS</td><td>SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF</td></tr><tr><td><u>SYSTEM</u></td><td><u>FLOW RATE</u></td><td></td><td></td></tr><tr><td>CS</td><td>≥ 5725 gpm</td><td>2</td><td>≥ 100 psig</td></tr><tr><td>LPCI</td><td>≥ 10,000 gpm</td><td>1</td><td>≥ 20 psig</td></tr></table>					NO. OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF	<u>SYSTEM</u>	<u>FLOW RATE</u>			CS	≥ 5725 gpm	2	≥ 100 psig	LPCI	≥ 10,000 gpm	1	≥ 20 psig	In accordance with the Inservice Testing Program
		NO. OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF																	
<u>SYSTEM</u>	<u>FLOW RATE</u>																			
CS	≥ 5725 gpm	2	≥ 100 psig																	
LPCI	≥ 10,000 gpm	1	≥ 20 psig																	
SR 3.5.2.7	-----NOTE----- Vessel injection/spray may be excluded. ----- Verify each required ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.			In accordance with the Surveillance Frequency Control Program																

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.3.1 Verify the RCIC System piping is filled with water from the pump discharge valve to the injection valve.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.2 Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.3 -----NOTE----- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----- Verify, with reactor pressure ≤ 1045 psig and ≥ 945 psig, the RCIC pump can develop a flow rate ≥ 600 gpm against a system head corresponding to reactor pressure.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.4 -----NOTE----- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----- Verify, with reactor pressure ≤ 200 psig, the RCIC pump can develop a flow rate ≥ 600 gpm against a system head corresponding to reactor pressure.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.5.3.5NOTE..... Vessel injection may be excluded. Verify the RCIC System actuates on an actual or simulated automatic initiation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.1.2 Verify drywell to suppression chamber differential pressure does not decrease at a rate > 0.2 inch water gauge per minute tested over a 10 minute period at an initial differential pressure of 1 psid.</p>	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>-----NOTE----- Only required after two consecutive tests fail and continues until two consecutive tests pass -----</p> <p>9 months</p>
<p>SR 3.6.1.1.3 -----NOTE----- Only required to be performed after safety/relief valve operation with the suppression chamber average water temperature $\geq 160^{\circ}\text{F}$ and reactor coolant system pressure > 200 psig. -----</p> <p>Perform an external visual examination of the suppression chamber.</p>	<p>Once prior to entry into MODE 2 or 3 from MODE 4</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	D.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.2.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.1. <p>-----</p> <p>Perform required primary containment air lock leakage rate testing in accordance with the Primary Containment Leakage Rate Testing Program.</p>	In accordance with the Primary Containment Leakage Rate Testing Program
<p>SR 3.6.1.2.2 Verify only one door in the primary containment air lock can be opened at a time.</p>	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.3.1 -----NOTE----- Not required to be met when the isolation valves for one purge or containment pressure control supply line and one purge or containment pressure control exhaust line are open for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. ----- Verify each drywell and suppression chamber purge system and containment pressure control isolation valve is closed.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.1.3.2 -----NOTES----- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. ----- Verify each primary containment isolation manual valve and blind flange that is located outside primary containment and is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.3.3</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. <p>-----</p> <p>Verify each primary containment isolation manual valve and blind flange that is located inside primary containment and is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.</p>	<p>Prior to entering MODE 2 or 3 from MODE 4 if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days</p>
<p>SR 3.6.1.3.4</p> <p>Verify continuity of the traversing incore probe (TIP) shear isolation valve explosive charge.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.1.3.5</p> <p>Verify the isolation time of each power operated automatic PCIV, except for MSIVs, is within limits.</p>	<p>In accordance with the Inservice Testing Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.6	Perform leakage rate testing for each primary containment purge valve with resilient seals.	In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 92 days after opening the valve
SR 3.6.1.3.7	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.3.9	Verify a representative sample of reactor instrumentation line EFCVs actuates on a simulated instrument line break to restrict flow.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.3.10	Remove and test the explosive squib from each shear isolation valve of the TIP System.	In accordance with the Surveillance Frequency Control Program

(continued)

Primary Containment Pressure
3.6.1.4

3.6 CONTAINMENT SYSTEMS

3.6.1.4 Primary Containment Pressure

LCO 3.6.1.4 Primary containment pressure shall be ≥ -0.10 psig and $\leq +2.0$ psig.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment pressure not within limit.	A.1 Restore primary containment pressure to within limit.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours
	<u>AND</u> B.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.4.1 Verify primary containment pressure is within limit.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.1.5 Drywell Air Temperature

LCO 3.6.1.5 Drywell average air temperature shall be $\leq 145^{\circ}\text{F}$.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell average air temperature not within limit.	A.1 Restore drywell average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours
	<u>AND</u> B.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.5.1 Verify drywell average air temperature is within limit.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	Verify each LLS valve opens when manually actuated.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.6.2	<p>-----NOTE----- Valve actuation may be excluded. -----</p> <p>Verify the LLS System actuates on an actual or simulated automatic initiation signal.</p>	In accordance with the Surveillance Frequency Control Program

Reactor Building-to-Suppression Chamber Vacuum Breakers
3.6.1.7

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.7.1	<p>.....NOTES.....</p> <ol style="list-style-type: none"> 1. Not required to be met for vacuum breakers that are open during Surveillances. 2. Not required to be met for vacuum breakers open when performing their intended function. <p>.....</p> <p>Verify each vacuum breaker is closed.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.7.2	Perform a functional test of each vacuum breaker.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.7.3	Verify the opening setpoint of each vacuum breaker is ≤ 0.5 psid.	In accordance with the Surveillance Frequency Control Program

Suppression Chamber-to-Drywell Vacuum Breakers
3.6.1.8

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.8.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Not required to be met for vacuum breakers that are open during Surveillances. 2. Not required to be met for vacuum breakers open when performing their intended function. <p>-----</p> <p>Verify each vacuum breaker is closed.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.1.8.2 Perform a functional test of each vacuum breaker.</p>	<p>Prior to entering MODE 2 or 3 from MODE 4 if not performed in the previous 92 days</p> <p><u>AND</u></p> <p>Within 12 hours after any discharge of steam to the suppression chamber from the SRVs</p>
<p>SR 3.6.1.8.3 Verify the opening setpoint of each vacuum breaker is ≤ 0.5 psid.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

Suppression Pool Average Temperature
3.6.2.1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Suppression pool average temperature > 120°F.	E.1 Depressurize the reactor vessel to < 200 psig.	12 hours
	<u>AND</u>	
	E.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.2.1.1 Verify suppression pool average temperature is within the applicable limits.	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>5 minutes when performing testing that adds heat to the suppression pool</p>

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Suppression pool water level shall be ≥ -2 inches and $\leq +2$ inches.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression pool water level not within limits.	A.1 Restore suppression pool water level to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours
	<u>AND</u> B.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.2.2.1 Verify suppression pool water level is within limits.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.2.3.1 Verify each RHR suppression pool cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.3.2 Verify each RHR pump develops a flow rate $\geq 10,000$ gpm through the associated heat exchanger while operating in the suppression pool cooling mode.	In accordance with the Inservice Testing Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.4.1	Verify each RHR suppression pool spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.4.2	Verify each RHR pump develops a flow rate ≥ 500 gpm through the heat exchanger and suppression pool spray sparger while operating in the suppression pool spray mode.	In accordance with the Inservice Testing Program

Primary Containment Oxygen Concentration
3.6.3.1

3.6 CONTAINMENT SYSTEMS

3.6.3.1 Primary Containment Oxygen Concentration

LCO 3.6.3.1 The primary containment oxygen concentration shall be
 < 4.0 volume percent.

APPLICABILITY: MODE 1 during the time period:

- a. From 24 hours after THERMAL POWER is > 15% RTP following startup, to
- b. 24 hours prior to reducing THERMAL POWER to < 15% RTP prior to the next reactor shutdown.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment oxygen concentration not within limit.	A.1 Restore oxygen concentration to within limit.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to \leq 15% RTP.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.3.1.1 Verify primary containment oxygen concentration is within limits.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Secondary containment inoperable during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.NOTE..... LCO 3.0.3 is not applicable.	
	D.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment.	Immediately
	<u>AND</u> D.2 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.4.1.1 Verify secondary containment vacuum is ≥ 0.125 inch of vacuum water gauge.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.6.4.1.2 -----NOTE----- Not required to be met for one railroad bay access door until: a. 4 hours after opening for entry, exit, or testing; and b. 12 hours after opening for new fuel receipt activities provided the other door remains OPERABLE and closed. -----</p> <p>Verify all secondary containment equipment hatches, pressure relief doors and railroad bay access doors are closed and sealed.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.4.1.3 Verify one secondary containment access door in each access opening is closed.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.4.1.4 Verify steam tunnel blowout panels are closed.</p>	<p>Prior to entering MODE 2 or 3 from MODE 4 if not performed in the previous 31 days</p>
<p>SR 3.6.4.1.5 Verify each standby gas treatment (SGT) subsystem will draw down the secondary containment to ≥ 0.25 inch of vacuum water gauge in ≤ 12 minutes.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.4.1.6 Verify each SGT subsystem can maintain ≥ 0.25 inch of vacuum water gauge in the secondary containment for 1 hour at a flow rate ≤ 3000 cfm.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.4.2.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for SCIVs that are open under administrative controls. <p>-----</p> <p>Verify each secondary containment isolation manual valve and blind flange not locked, sealed, or otherwise secured that is required to be closed during accident conditions is closed.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.6.4.2.2 Verify the isolation time of each power operated automatic SCIV is within limits.</p>	<p>In accordance with the Inservice Testing Program</p>
<p>SR 3.6.4.2.3 Verify each automatic SCIV actuates to the isolation position on an actual or simulated actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ 10 continuous hours with heaters operating.	In accordance with the Surveillance Frequency Control Program
SR 3.6.4.3.2	Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each SGT subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.4.3.4	Verify each SGT filter cooler bypass damper can be opened and the fan started.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 -----NOTE----- LCO 3.0.4.a is not applicable when entering MODE 3. ----- Be in MODE 3.	12 hours
E. Both RHRSW subsystems inoperable for reasons other than Condition B.	E.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.4.8 for RHR shutdown cooling made inoperable by RHRSW System. ----- Restore one RHRSW subsystem to OPERABLE status.	8 hours
F. Required Action and associated Completion Time of Condition E not met.	F.1 Be in MODE 3. <u>AND</u> F.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.1.1 Verify each RHRSW manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met. <u>OR</u> Both EECW/EESW subsystems inoperable for reasons other than Condition A. <u>OR</u> UHS inoperable for reasons other than Conditions A and B.	D.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	D.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	Verify the water level of each UHS reservoir, and the average water level of each of the two reservoirs, are ≥ 25 ft.	In accordance with the Surveillance Frequency Control Program
SR 3.7.2.2	Verify the average water temperature of each reservoir, and combined average water temperature of the two reservoirs, are $\leq 80^{\circ}\text{F}$.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.7.2.3NOTE..... Fast speed testing not required to be performed during icing periods.</p> <p>Operate each cooling tower fan on slow speed and on fast speed, each for ≥ 15 minutes.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.2.4NOTE..... Isolation of EECW flow to individual components does not render EECW System inoperable.</p> <p>Verify each EECW/EESW subsystem and UHS manual, power operated, and automatic valve in the flow paths servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.2.5 Verify each EECW/EESW subsystem actuates on an actual or simulated initiation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.3.1 Operate each CREF subsystem for ≥ 15 continuous minutes with heaters operating.	In accordance with the Surveillance Frequency Control Program
SR 3.7.3.2NOTE..... When the CREF system is made inoperable in MODE 1, 2, or 3 solely for VFTP required surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours. Perform required CREF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.3.3 Verify each CREF subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.3.4 Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition B not met during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.	-----NOTE----- LCO 3.0.3 is not applicable -----	
	E.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment.	Immediately
	<u>AND</u> E.2 Initiate actions to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.4.1 Verify the control room air temperature is $\leq 95^{\circ}\text{F}$.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.1NOTE..... Not required to be performed until 31 days after any main steam line not isolated and SJAE in operation. Verify the gross radioactivity rate of the noble gases is ≤ 340 mCi/second after decay of 30 minutes.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.7.5.2 Verify the gross radioactivity rate of the noble gases is ≤ 340 mCi/second after decay of 30 minutes.</p>	<p>Once within 4 hours after a $\geq 50\%$ increase in the nominal steady state fission gas release after factoring out increases due to changes in THERMAL POWER level</p>

Main Turbine Bypass System and Moisture Separator Reheater
3.7.6

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify each main turbine bypass valve opens at least 5%.	In accordance with the Surveillance Frequency Control Program
SR 3.7.6.2	Verify one complete cycle of each main turbine bypass valve.	Once after each entry into MODE 4
SR 3.7.6.3	Perform a system functional test.	In accordance with the Surveillance Frequency Control Program
SR 3.7.6.4	Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program

Spent Fuel Storage Pool Water Level
3.7.7

3.7 PLANT SYSTEMS

3.7.7 Spent Fuel Storage Pool Water Level

LCO 3.7.7 The spent fuel storage pool water level shall be ≥ 22 ft over the top of irradiated fuel assemblies seated in the spent fuel storage pool racks.

APPLICABILITY: During movement of irradiated fuel assemblies in the spent fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent fuel storage pool water level not within limit.	<p>A.1 -----NOTE----- LCO 3.0.3 is not applicable. -----</p> <p>Suspend movement of irradiated fuel assemblies in the spent fuel storage pool.</p>	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.7.1 Verify the spent fuel storage pool water level is ≥ 22 ft over the top of irradiated fuel assemblies seated in the spent fuel storage pool racks.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.8 Emergency Diesel Generator Service Water (EDGSW) System

LCO 3.7.8 Four EDGSW subsystems shall be OPERABLE.

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more EDGSW subsystems inoperable.	A.1 Declare associated EDG(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.8.1 Verify each EDGSW subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.8.2 Verify each EDGSW subsystem pump starts automatically when the associated EDG starts.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.1.1 Verify correct breaker alignment and indicated power availability for each offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2 NOTES..... 1. All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2. A modified EDG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. Verify each EDG starts and achieves steady state voltage ≥ 3950 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.3 NOTES..... 1. EDG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients below the load limit do not invalidate this test. 3. This Surveillance shall be conducted on only one EDG at a time. Verify each EDG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2500 kW.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.4 Verify each day tank contains \geq one hour supply of fuel oil.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5 Check for and remove accumulated water from each day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6 Verify each fuel oil transfer system operates to automatically transfer fuel oil from storage tanks to the day tanks.	In accordance with the Surveillance Frequency Control Program
<p>SR 3.8.1.7NOTE..... All EDG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. </p> <p>Verify each EDG starts from standby condition and achieves:</p> <p>a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and</p> <p>b. Steady state voltage ≥ 3950 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.8 Verify each EDG rejects a load greater than or equal to its associated single largest post-accident load, and following load rejection, the frequency is ≤ 66.75 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.9 Verify each EDG does not trip and voltage is maintained ≤ 5267 V during and following a load rejection of ≥ 2850 kW.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.10 NOTE..... All EDG starts may be preceded by an engine prelube period. Verify on simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. EDG auto-starts and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected shutdown loads through load sequencer, 3. maintains steady state voltage ≥ 3950 V and ≤ 4580 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11NOTE..... All EDG starts may be preceded by an engine prelube period.</p> <p>Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each EDG auto-starts and:</p> <ul style="list-style-type: none"> a. In ≤ 10 seconds after auto-start and during tests, achieves voltage ≥ 3950 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 3950 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and c. Operates for ≥ 5 minutes. 	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.12 Verify each EDG's automatic trips are bypassed on an actual or simulated emergency start signal except:</p> <ul style="list-style-type: none"> a. Engine overspeed; b. Generator differential current; c. Low lube oil pressure; d. Crankcase overpressure; and e. Failure to start. 	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13NOTE..... Momentary transients outside the load range do not invalidate this test. Verify each EDG operates for ≥ 24 hours: a. For all but the final ≥ 2 hours loaded ≥ 2500 kW and ≤ 2600 kW; and b. For the final ≥ 2 hours of the test loaded ≥ 2800 kW and ≤ 2900 kW.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.14NOTES..... 1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated ≥ 2 hours loaded ≥ 2500 kW or until operating temperatures have stabilized. Momentary transients below the load limit do not invalidate this test. 2. All EDG starts may be preceded by an engine prelube period. Verify each EDG starts and achieves: a. In ≤ 10 seconds, voltage ≥ 3950 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3950 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.15 Verify each EDG:</p> <ul style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to standby status. 	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.16 Verify interval between each sequenced load block is within $\pm 10\%$ of design interval for each load sequencer timer.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.17NOTE..... All EDG starts may be preceded by an engine prelube period.</p> <p>Verify, on simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal:</p> <ul style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. EDG auto-starts and: <ul style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage ≥ 3950 V and ≤ 4580 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.18NOTE..... All EDG starts may be preceded by an engine prelube period.</p> <p>Verify, when started simultaneously each EDG achieves, in ≤ 10 seconds, frequency ≥ 58.8 Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

Diesel Fuel Oil and Starting Air
3.8.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more required EDGs with diesel fuel oil, or starting air subsystem not within limits for reasons other than Condition A, B, or C.</p>	D.1 Declare associated EDG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.3.1 Verify each required EDG fuel oil storage tank contains \geq a 7 day supply of fuel.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2 Verify each required EDG fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Emergency Diesel Generator Fuel Oil Testing Program.	In accordance with the Emergency Diesel Generator Fuel Oil Testing Program

(continued)

Diesel Fuel Oil and Starting Air
3.8.3

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.3	Verify each required EDG air start receiver pressure is \geq 215 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.4	Check for and remove accumulated water from each required EDG fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.4.1 Verify battery terminal voltage is ≥ 125.7 V on float charge.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.2 Verify no visible corrosion at battery terminals and connectors. <u>OR</u> Verify each battery: a. Cell-to-cell and terminal connection resistance is $\leq 1.5E-4$ ohm; and b. Total cell-to-cell and terminal connection resistance is $\leq 2.7E-3$ ohm.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.3 Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.4 Remove visible corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.5 Verify each battery: a. Cell-to-cell and terminal connection resistance is $\leq 1.5E-4$ ohm; and b. Total cell-to-cell and terminal connection resistance is $\leq 2.7E-3$ ohm.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.4.6 Verify each required battery charger supplies ≥ 100 amps at ≥ 124.7 V for ≥ 4 hours.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.7 -----NOTE----- The performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7. ----- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the actual or simulated emergency loads for the design duty cycle when subjected to a battery service test.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.8 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ----- Verify battery capacity is $\geq 80\%$ of the manufacturer's rating when subjected to a performance discharge test.</p>	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>12 months when battery shows degradation or has reached 85% of expected life with capacity $< 100\%$ of manufacturer's rating</p> <p><u>AND</u></p> <p>24 months when battery has reached 85% of the expected life with capacity $\geq 100\%$ of manufacturer's rating</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>One or more batteries with average electrolyte temperature of the representative cells not within limits.</p> <p><u>OR</u></p> <p>One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 Category C values.</p>	<p>B.1 Declare associated battery inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.6.1 Verify battery cell parameters meet Table 3.8.6-1 Category A limits.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

Battery Cell Parameters
3.8.6

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.6.2 Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 24 hours after battery discharge < 105 V <u>AND</u> Once within 24 hours after battery overcharge > 145 V
SR 3.8.6.3 Verify average electrolyte temperature of representative cells is > 70°F.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more required DC electrical power distribution subsystems inoperable.	B.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status.	2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 -----NOTE----- LCO 3.0.4.a is not applicable when entering MODE 3. ----- Be in MODE 3.	 12 hours
D. Two or more required electrical power distribution subsystems inoperable that result in a loss of function.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.7.1 Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

Distribution Systems-Shutdown
3.8.8

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	<u>AND</u>	
	A.2.4 Initiate actions to restore required AC and DC electrical power distribution subsystems to OPERABLE status.	Immediately
	<u>AND</u>	
	A.2.5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.8.1 Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

Refueling Equipment Interlocks
3.9.1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: <ul style="list-style-type: none"> a. All-rods-in, b. Refuel platform position, c. Refuel platform fuel grapple, fuel loaded, d. Refuel platform fuel grapple not fully retracted position, e. Refuel platform frame mounted hoist, fuel loaded, and f. Refuel platform monorail mounted hoist, fuel loaded. 	In accordance with the Surveillance Frequency Control Program

Refuel Position One-Rod-Out Interlock
3.9.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	Verify reactor mode switch locked in Refuel position.	In accordance with the Surveillance Frequency Control Program
SR 3.9.2.2	<p>-----NOTE----- Not required to be performed until 1 hour after any control rod is withdrawn. -----</p> <p>Perform CHANNEL FUNCTIONAL TEST.</p>	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.3 Control Rod Position

LC0 3.9.3 All control rods shall be fully inserted.

APPLICABILITY: When loading fuel assemblies into the core.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rods not fully inserted.	A.1 Suspend loading fuel assemblies into the core.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.3.1 Verify all control rods are fully inserted.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.5 Control Rod OPERABILITY-Refueling

LCO 3.9.5 Each withdrawn control rod shall be OPERABLE.

APPLICABILITY: MODE 5,

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more withdrawn control rods inoperable.	A.1 Initiate action to fully insert inoperable withdrawn control rods.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.5.1NOTE..... Not required to be performed until 7 days after the control rod is withdrawn. Insert each withdrawn control rod at least one notch.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2 Verify each withdrawn control rod scram accumulator pressure is ≥ 940 psig.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.6 Reactor Pressure Vessel (RPV) Water Level

LCO 3.9.6 RPV water level shall be \geq 20 ft 6 inches above the top of the RPV flange.

APPLICABILITY: During movement of irradiated fuel assemblies within the RPV,
 During movement of new fuel assemblies or handling of control rods within the RPV, when irradiated fuel assemblies are seated within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of fuel assemblies and handling of control rods within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 Verify RPV water level is \geq 20 ft 6 inches above the top of the RPV flange.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1 Suspend loading irradiated fuel assemblies into the RPV.	Immediately
	<u>AND</u>	
	B.2 Initiate action to restore secondary containment to OPERABLE status.	Immediately
	<u>AND</u>	
	B.3 Initiate action to restore one standby gas treatment subsystem to OPERABLE status.	Immediately
	<u>AND</u>	
	B.4 Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.7.1 Verify the RHR shutdown cooling subsystem is capable of decay heat removal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program
SR 3.9.8.2	Verify each RHR shutdown cooling subsystem is capable of decay heat removal.	In accordance with the Surveillance Frequency Control Program

Reactor Mode Switch Interlock Testing
3.10.2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.1 Place the reactor mode switch in the shutdown position.	1 hour
	<p style="text-align: center;"><u>OR</u></p> <p>A.3.2 -----NOTE----- Only applicable in MODE 5. -----</p> <p>Place the reactor mode switch in the refuel position.</p>	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.10.2.1 Verify all control rods are fully inserted in core cells containing one or more fuel assemblies.	In accordance with the Surveillance Frequency Control Program
SR 3.10.2.2 Verify no CORE ALTERATIONS are in progress.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.10.3.1 Perform the applicable SRs for the required LCOs.	According to the applicable SRs
SR 3.10.3.2NOTE..... Not required to be met if SR 3.10.3.1 is satisfied for LCO 3.10.3.d.1 requirements. Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed.	In accordance with the Surveillance Frequency Control Program
SR 3.10.3.3 Verify all control rods, other than the control rod being withdrawn, are fully inserted.	In accordance with the Surveillance Frequency Control Program

Single Control Rod Withdrawal—Cold Shutdown
3.10.4

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more of the above requirements not met with the affected control rod not insertable.	B.1 Suspend withdrawal of the control rod and removal of associated CRD.	Immediately
	<u>AND</u>	
	B.2.1 Initiate action to fully insert all control rods.	Immediately
	<u>OR</u>	
	B.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.10.4.1 Perform the applicable SRs for the required LCOs.	According to the applicable SRs
SR 3.10.4.2NOTE..... Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.c.1 requirements. Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed.	In accordance with the Surveillance Frequency Control Program

(continued)

Single Control Rod Withdrawal—Cold Shutdown
3.10.4

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.10.4.3 Verify all control rods, other than the control rod being withdrawn, are fully inserted.	In accordance with the Surveillance Frequency Control Program
SR 3.10.4.4 NOTE..... Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.b.1 requirements. Verify a control rod withdrawal block is inserted.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.10.5.1 Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, are fully inserted.	In accordance with the Surveillance Frequency Control Program
SR 3.10.5.2 Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, in a five by five array centered on the control rod withdrawn for the removal of the associated CRD, are disarmed.	In accordance with the Surveillance Frequency Control Program
SR 3.10.5.3 Verify a control rod withdrawal block is inserted.	In accordance with the Surveillance Frequency Control Program
SR 3.10.5.4 Perform SR 3.1.1.1.	According to SR 3.1.1.1
SR 3.10.5.5 Verify no CORE ALTERATIONS are in progress.	In accordance with the Surveillance Frequency Control Program

Multiple Control Rod Withdrawal—Refueling
3.10.6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.1 Initiate action to fully insert all control rods in core cells containing one or more fuel assemblies.	Immediately
	OR A.3.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.10.6.1 Verify the four fuel assemblies are removed from core cells associated with each control rod or CRD removed.	In accordance with the Surveillance Frequency Control Program
SR 3.10.6.2 Verify all other control rods in core cells containing one or more fuel assemblies are fully inserted.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.10.7.1 Perform the MODE 2 applicable SRs for LCO 3.3.1.1, Functions 2.a, 2.d, and 2.e of Table 3.3.1.1-1.	According to the applicable SRs
SR 3.10.7.2NOTE..... Not required to be met if SR 3.10.7.3 satisfied. Perform the MODE 2 applicable SRs for LCO 3.3.2.1, Function 2 of Table 3.3.2.1-1.	According to the applicable SRs
SR 3.10.7.3NOTE..... Not required to be met if SR 3.10.7.2 satisfied. Verify movement of control rods is in compliance with the approved control rod sequence for the SDM test by a second licensed operator or other qualified member of the technical staff.	During control rod movement
SR 3.10.7.4 Verify no other CORE ALTERATIONS are in progress.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.10.7.5 Verify each withdrawn control rod does not go to the withdrawn overtravel position.</p>	<p>Each time the control rod is withdrawn to "full out" position</p> <p><u>AND</u></p> <p>Prior to satisfying LCO 3.10.7.c requirement after work on control rod or CRD System that could affect coupling</p>
<p>SR 3.10.7.6 Verify CRD charging water header pressure \geq 940 psig.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

T4803F601, Nitrogen Inerting Drywell Air Purge Inlet Supply Valve
3.10.8

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.10.8.1 Verify penetration X26 outboard isolation valves T4800F407 and T4800F408 are closed and deactivated.</p>	<p>-----NOTE----- SR 3.0.2 is not applicable. -----</p> <p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.10.8.2 -----NOTE----- Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.1. -----</p> <p>Perform leakage rate testing for primary containment purge valves with resilient seals on penetration X26.</p>	<p>-----NOTE----- SR 3.0.2 is not applicable. -----</p> <p>In accordance with the Surveillance Frequency Control Program</p>

5.5 Programs and Manuals

5.5.14 Control Room Envelope Habitability Program (continued)

- d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one subsystem of the CREF System, operating at the flow rate required by the VFTP, at a Frequency of 18 months on a STAGGERED TEST BASIS. The results shall be trended and assessed every 18 months.
- e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by the testing described in paragraph c. The unfiltered air leakage limit for radiological challenges is the leakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air leakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.
- f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered leakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

5.5.15 Surveillance Frequency Control Program

This program provides controls for the Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

- a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.
 - b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with the NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.
 - c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 201 TO FACILITY OPERATING LICENSE NO. NPF-43

DTE ELECTRIC COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By application dated September 16, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14259A564), as supplemented by letter dated April 17, 2015 (ADAMS Accession No. ML15107A407), DTE Electric Company (DTE, the licensee) requested changes to the Technical Specifications (TSs) for Fermi 2. The proposed change would modify the Fermi 2 TSs by relocating specific surveillance frequencies to a licensee controlled program in accordance with Nuclear Energy Institute (NEI) 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies" (ADAMS Accession No. ML071360456). The proposed change is consistent with the adoption of Nuclear Regulatory Commission-approved Technical Specification Task Force (TSTF) Standard Technical Specifications (STS) Change Traveler TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control—RITSTF [Risk-Informed TSTF] Initiative 5b" (ADAMS Accession No. ML090850642). When implemented, TSTF-425 relocates most periodic frequencies of TS surveillances to a licensee controlled program, the Surveillance Frequency Control Program (SFCP), and provides requirements for the new program in the administrative controls section of the TSs. All surveillance frequencies can be relocated except:

- Frequencies that reference other approved programs for the specific interval (such as the In-Service Testing Program or the Primary Containment Leakage Rate Testing Program);
- Frequencies that are purely event-driven (e.g., "each time the control rod is withdrawn to the 'full out' position");
- Frequencies that are event-driven, but have a time component for performing the surveillance on a one-time basis once the event occurs (e.g., "within 24 hours after thermal power reaching $\geq 95\%$ RTP"); and
- Frequencies that are related to specific conditions (e.g., battery degradation, age and capacity) or conditions for the performance of a surveillance requirement (e.g., "drywell to

suppression chamber differential pressure decrease”).

A new program is added to TSs Section 5.5, “Programs and Manuals” as TS 5.5.15. The new program is called the SFCP and describes the requirements for the program to control changes to the relocated surveillance frequencies. The TS Bases for affected surveillances are revised to state that the frequency is controlled under the SFCP. The proposed licensee changes to Section 5.5 of the TSs to incorporate the SFCP include a specific reference to NEI 04-10, Revision 1, as the basis for making any changes to the surveillance frequencies once they are relocated out of the TSs.

In a letter dated September 19, 2007 (ADAMS Accession No. ML072570267), the Nuclear Regulatory Commission (NRC) staff approved NEI Topical Report (TR) NEI 04-10, Revision 1, as acceptable for referencing in licensing actions to the extent specified and under the limitations delineated in NEI 04-10, Revision 1, and the safety evaluation (SE) providing the basis for NRC acceptance of NEI 04-10, Revision 1.

The supplement dated April 17, 2015, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC of the Commission) staff’s original proposed no significant hazards consideration determination as published in the *Federal Register* on November 12, 2014 (79 FR 67199).

2.0 REGULATORY EVALUATION

2.1 Applicable Commission Policy Statements

In the “Final Policy Statement: Technical Specifications for Nuclear Power Plants” published in the *Federal Register* on July 22, 1993 (58 FR 39132), the NRC addressed the use of Probabilistic Safety Analysis (PSA, currently referred to as Probabilistic Risk Assessment or PRA) in STS. In this 1993 publication, the NRC states, in part:

The Commission believes that it would be inappropriate at this time to allow requirements which meet one or more of the first three criteria [of 10 CFR 50.36]¹ to be deleted from Technical Specifications based solely on PSA (Criterion 4). However, if the results of PSA indicate that Technical Specifications can be relaxed or removed, a deterministic review will be performed.

The Commission Policy in this regard is consistent with its Policy Statement on “Safety Goals for the operation of Nuclear Power Plants,” 51 FR 30028, published on August 21, 1986. The Policy Statement on Safety Goals states in part, “* * * probabilistic results should also be reasonably balanced and supported through use of deterministic arguments. In this way, judgments can be made * * * about the degree of confidence to be given to these [probabilistic]² estimates and assumptions. This is a key part of the process for determining the degree of regulatory conservatism that may be warranted for particular decisions.

¹ This clarification is not part of the original policy statement.

² The Federal Register Notice 58 FR 39135 (Alteration in Original) explains the brackets.

This defense-in-depth approach is expected to continue to ensure the protection of public health and safety.”

The Commission will continue to use PSA, consistent with its policy on Safety Goals, as a tool in evaluating specific line item improvements to Technical Specifications, new requirements, and industry proposals for risk-based Technical Specification changes.

Approximately two years later the NRC provided additional detail concerning the use of PRA in the “Final Policy Statement: Use of Probabilistic Risk Assessment in Nuclear Regulatory Activities” published in the FR (60 *FR* 42622, August 16, 1995). In this publication, the NRC states, in part:

The Commission believes that an overall policy on the use of PRA methods in nuclear regulatory activities should be established so that the many potential applications of PRA can be implemented in a consistent and predictable manner that would promote regulatory stability and efficiency. In addition, the Commission believes that the use of PRA technology in NRC regulatory activities should be increased to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC’s deterministic approach.

PRA addresses a broad spectrum of initiating events by assessing the event frequency. Mitigating system reliability is then assessed, including the potential for multiple and common cause failures. The treatment therefore goes beyond the single failure requirements in the deterministic approach. The probabilistic approach to regulation is, therefore, considered an extension and enhancement of traditional regulation by considering risk in a more coherent and complete manner.

Therefore, the Commission believes that an overall policy on the use of PRA in nuclear regulatory activities should be established so that the many potential applications of PRA can be implemented in a consistent and predictable manner that promotes regulatory stability and efficiency. This policy statement sets forth the Commission’s intention to encourage the use of PRA and to expand the scope of PRA applications in all nuclear regulatory matters to the extent supported by the state-of-the-art in terms of methods and data.

Therefore, the Commission adopts the following policy statement regarding the expanded NRC use of PRA:

- (1) The use of PRA technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC’s deterministic approach and supports the NRC’s traditional defense-in-depth philosophy.
- (2) PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where

practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements, regulatory guides, license commitments, and staff practices. Where appropriate, PRA should be used to support the proposal for additional regulatory requirements in accordance with 10 CFR 50.109 (Backfit Rule). Appropriate procedures for including PRA in the process for changing regulatory requirements should be developed and followed. It is, of course, understood that the intent of this policy is that existing rules and regulations shall be complied with unless these rules and regulations are revised.

- (3) PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review.
- (4) The Commission's safety goals for nuclear power plants and subsidiary numerical objectives are to be used with appropriate consideration of uncertainties in making regulatory judgments on the need for proposing and backfitting new generic requirements on nuclear power plant licensees.

2.2 Applicable Regulations

In Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, the NRC established its regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) Surveillance Requirements; (4) design features; and (5) administrative controls. As stated in 10 CFR 50.36(c)(3), "Surveillance requirements are requirements relating 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."

These categories will remain in the TSs. The new TS SFCP provides the necessary administrative controls to require that surveillances relocated to the SFCP are conducted at a frequency 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. Changes to surveillance frequencies in the SFCP are made using the methodology contained in NEI 04-10, Revision 1, including qualitative considerations, results of risk analyses, sensitivity studies and any bounding analyses, and recommended monitoring of structures, systems, and components (SSCs), and are required to be documented.

Existing regulatory requirements, such as 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and 10 CFR 50, Appendix B, Criterion XVI (corrective action program), require licensee monitoring of surveillance test failures and implementing corrective actions to address such failures. One of these actions may be to consider increasing the frequency at which a surveillance test is performed. In addition, the SFCP implementation guidance in NEI 04-10, Revision 1, requires monitoring the performance of SSCs for which surveillance frequencies are decreased to assure reduced testing does not adversely impact the SSCs.

2.3 Applicable Regulatory Guidelines and Review Plans

Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (ADAMS Accession No. ML100910006), describes a risk-informed approach, acceptable to the NRC, for assessing the nature and impact of proposed permanent licensing-basis changes by considering engineering issues and applying risk insights. This regulatory guide also provides risk acceptance guidelines for evaluating the results of such evaluations.

RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications" (ADAMS Accession No. ML100910008), describes an acceptable risk-informed approach specifically for assessing proposed TS changes.

RG 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (ADAMS Accession No. ML090410014), describes an acceptable approach for determining whether the quality of the PRA, in total or the parts that are used to support an application, is sufficient to provide confidence in the results, such that the PRA can be used in regulatory decision making for light water-reactors.

General guidance for evaluating the technical basis for proposed risk-informed changes is provided in Chapter 19, Section 19.2, "Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance," of the NRC Standard Review Plan (SRP), NUREG-0800 (ADAMS Accession No. ML071700658). Guidance on evaluating PRA technical adequacy is provided in Chapter 19, Section 19.1, "Determining the Technical Adequacy of Probabilistic Risk Assessment for Risk-Informed License Amendment Requests After Initial Fuel Load" (ADAMS Accession No. ML12193A107). More specific guidance related to risk-informed TS changes is provided in SRP Section 16.1, "Risk-Informed Decisionmaking: Technical Specifications," (ADAMS Accession No. ML070380228), which includes changes to surveillance test intervals (i.e., surveillance frequencies) as part of risk-informed decisionmaking. Section 19.2 of the SRP references the same criteria as RG 1.177 and RG 1.174 and states that a risk-informed application should be evaluated to ensure that the proposed changes meet the following key principles:

- The proposed change meets the current regulations, unless it explicitly relates to a requested exemption.
- The proposed change is consistent with the defense-in-depth philosophy.
- The proposed change maintains sufficient safety margins.
- When proposed changes result in an increase core damage frequency or risk, the increase(s) should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.
- The impact of the proposed change should be monitored using performance measurement strategies.

3.0 TECHNICAL EVALUATION

The licensee's adoption of TSTF-425, Revision 3, provides for administrative relocation of applicable surveillance frequencies, and provides for the addition of the SFCP to the administrative controls of TSs. TSTF-425, Revision 3, also requires the application of NEI 04-10, Revision 1, for any changes to surveillance frequencies within the SFCP. The licensee's application for the changes proposed in TSTF-425, Revision 3, included documentation regarding the PRA technical adequacy consistent with the requirements of RG 1.200. In accordance with NEI 04-10, Revision 1, PRA methods are used, in combination with plant performance data and other considerations, to identify and justify modifications to the surveillance frequencies of equipment at nuclear power plants. This is in accordance with guidance provided in RG 1.174 and RG 1.177 in support of changes to surveillance test intervals.

3.1 Review Methodology

RG 1.177 identifies five key safety principles required for risk-informed changes to TSs. Each of these principles is addressed by NEI 04-10, Revision 1.

3.1.1 The Proposed Change Meets Current Regulations

10 CFR 50.36(c)(3) provides that TSs will include surveillances which are "requirements relating to test, calibration, or inspection to assure that 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 licensee is required by its TSs to perform surveillance tests, calibration, or inspection on specific safety-related equipment (e.g., reactivity control, power distribution, electrical, and instrumentation) to verify system operability. Surveillance frequencies, currently identified in TSs, are based primarily upon deterministic methods such as engineering judgment, operating experience, and manufacturer's recommendations. The licensee's use of NRC-approved methodologies identified in NEI 04-10, Revision 1, provides a way to establish risk-informed surveillance frequencies that complements the deterministic approach and supports the NRC's traditional defense-in-depth philosophy.

The surveillances themselves would remain in the TSs, as required by 10 CFR 50.36(c)(3). This change is analogous with other NRC-approved TS changes in which the surveillance requirements are retained in TSs, but the related surveillance frequencies are relocated to licensee-controlled documents, such as surveillances performed in accordance with the In-Service Testing Program and the Primary Containment Leakage Rate Testing Program. Thus, this proposed change complies with 10 CFR 50.36(c)(3) by retaining the requirements relating 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 regulatory requirements in 10 CFR 50.65 and 10 CFR 50, Appendix B, and the monitoring required by NEI 04-10, Revision 1, ensure that surveillance frequencies are sufficient to assure that the requirements of 10 CFR 50.36 are satisfied and that any performance deficiencies will be identified and appropriate corrective actions taken. The licensee's SFCP ensures that surveillance requirements specified in the TSs are performed at intervals sufficient to assure the

above regulatory requirements are met. Thus, this proposed change meets the first key safety principle of RG 1.177 by complying with current regulations.

3.1.2 The Proposed Change Is Consistent With the Defense-in-Depth Philosophy

The defense-in-depth philosophy, the second key safety principle of RG 1.177, is maintained if:

- A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation.
- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided.
- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers). (Because the scope of the proposed methodology is limited to revision of surveillance frequencies, the redundancy, independence, and diversity of plant systems are not impacted.)
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed.
- Independence of barriers is not degraded.
- Defenses against human errors are preserved.
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A, is maintained.

TSTF-425, Revision 3, requires the application of NEI 04-10, Revision 1, for any changes to surveillance frequencies within the SFCP. NEI 04-10, Revision 1, uses both the core damage frequency (CDF) and the large early release frequency (LERF) metrics to evaluate the impact of proposed changes to surveillance frequencies. The guidance of RG 1.174 and RG 1.177 for changes to CDF and LERF is achieved by evaluation using a comprehensive risk analysis, which assesses the impact of proposed changes including contributions from human errors and common cause failures (CCFs). Defense-in-depth is also included in the methodology explicitly as a qualitative consideration outside of the risk analysis, as is the potential impact on detection of component degradation that could lead to an increased likelihood of CCFs. Both the quantitative risk analysis and the qualitative considerations assure a reasonable balance of defense-in-depth is maintained to ensure protection of public health and safety, satisfying the second key safety principle of RG 1.177.

3.1.3 The Proposed Change Maintains Sufficient Safety Margins

The engineering evaluation that will be conducted by the licensee under the SFCP when frequencies are revised will assess the impact of the proposed frequency change to assure that sufficient safety margins are maintained. The guidelines used for making that assessment will include ensuring the proposed surveillance test frequency change is not in conflict with approved industry codes and standards or adversely affects any assumptions or inputs to the safety analysis, or, if such inputs are affected, justification is provided to ensure sufficient safety margin will continue to exist.

The design, operation, testing methods, and acceptance criteria for SSCs, specified in applicable codes and standards (or alternatives approved for use by the NRC) will continue to be met as described in the plant licensing basis (including the Updated Final Safety Analysis

Report and bases to TSs), since these are not affected by changes to the surveillance frequencies. Similarly, there is no impact to safety analysis acceptance criteria as described in the plant licensing basis. Thus, safety margins are maintained by the proposed methodology, and the third key safety principle of RG 1.177 is satisfied.

3.1.4 When Proposed Changes Result in an Increase in CDF or Risk, the Increases Should Be Small and Consistent with the Intent of the Commission's Safety Goal Policy Statement

RG 1.177 provides a framework for evaluating the risk impact of proposed changes to surveillance frequencies which requires identification of the risk contribution from impacted surveillances, determination of the risk impact from the change to the proposed surveillance frequency, and performance of sensitivity and uncertainty evaluations. TSTF-425, Revision 3, requires application of NEI 04-10, Revision 1, in the SFCP. NEI 04-10, Revision 1, satisfies the intent of RG 1.177 requirements for evaluation of the change in risk, and for assuring that such changes are small by providing the technical methodology to support risk informed technical specifications for control of surveillance frequencies.

3.1.4.1 Quality of the PRA

The quality of the licensee's PRA must be commensurate with the safety significance of the proposed TS change and the role the PRA plays in justifying the change. That is, the higher change in risk or the greater the uncertainty in that risk from the requested TS change, or both, the more rigor that must go into ensuring the quality of the PRA.

RG 1.200 provides regulatory guidance for assessing the technical adequacy of a PRA. The current revision (Revision 2) of this RG endorses (with comments and qualifications) the use of the American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) RA-Sa-2009, "Addenda to ASME RA-S-2008 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," NEI 00-02, "PRA Peer Review Process Guidelines" (ADAMS Accession No. ML061510619 and ML063390593), and NEI 05-04, "Process for Performing Follow-On PRA Peer Reviews Using the ASME PRA Standard" (ADAMS Accession No. ML083430462).

The licensee has performed an assessment of the PRA models used to support the SFCP using the guidance of RG 1.200 to assure that the PRA models are capable of determining the change in risk due to changes to surveillance frequencies of SSCs, using plant-specific data and models. Capability Category II of the endorsed PRA standard is the target capability level for supporting requirements for the internal events PRA for this application. Any identified deficiencies to those requirements are assessed further to determine any impacts to proposed decreases to surveillance frequencies, including the use of sensitivity studies where appropriate, in accordance with NEI 04-10, Revision 1.

Based on Enclosure 2 to the application dated September 16, 2014, and as clarified in the response to Request for Additional Information (RAI) 3 and 5 dated April 17, 2015, development of the Fermi 2 internal events PRA is summarized below:

- From February 2010 to August 2012, the internal events PRA was upgraded (as defined

in Section 1-5.4 of ASME/ANS RA-Sa-2009) to meet the RG 1.200 requirements for all model aspects including initiating events, success criteria, component data, system modeling, human reliability analysis (HRA), internal flooding, and Level 2/LERF. The resulting model was identified as the draft FermiV9 PRA.

- In August 2012, an industry PRA certification peer review of the draft FermiV9 PRA was performed using the NEI 05-04 PRA peer review process, PRA standard ASME/ANS RA-Sa-2009, and RG 1.200, Revision 2. This peer review was a full-scope review of all supporting requirements of the PRA standard. Table 2 of Enclosure 2 to the application dated September 16, 2014, lists the findings and observations (F&Os) from this peer review that did not meet Capability Category II.
- In April 2013, a PRA model update (version FermiV9) was completed to resolve the F&Os identified by the peer review in August 2012. No PRA upgrades were instituted into the FermiV9 model following the August 2012 peer review. All changes made to the model to resolve the F&Os identified in Table 2 of Enclosure 2 to the application were defined as PRA maintenance, because there were no new methodologies or significant changes in scope or capability that affected the significant accident sequences. Therefore, no further peer reviews were required on the FermiV9 model. The NRC staff finds that all F&Os were properly assessed and dispositioned in regard to this application.
- In February 2014, the licensee completed upgrading the HRA dependency analysis using a new methodology to support development of the Fermi 2 fire PRA and seismic PRA. The resulting model was identified as the FermiV10 PRA. In February 2014, a focused-scope peer review of the HRA dependency analysis in the FermiV10 PRA was performed using PRA standard ASME/ANS RA-Sb-2009 and Regulatory Guide 1.200, Revision 2. The peer review team found that the HRA dependency analysis met Capability Category II for all evaluated supporting requirements.

Based on the licensee's assessments using the currently applicable PRA standard and revision of RG 1.200, combined with the evaluation and disposition of the F&Os, the NRC staff concludes that the level of PRA quality is sufficient to support the evaluation of changes proposed to surveillance frequencies within the SFCP, and is consistent with Regulatory Position 2.3.1 of RG 1.177.

3.1.4.2 Scope of the PRA

The licensee is required to evaluate each proposed change to a relocated surveillance frequency using the guidance contained in NEI 04-10, Revision 1, to determine its potential impact on risk (CDF and LERF) from internal events, fires, seismic, other external hazards, and shutdown conditions. In cases where a PRA of sufficient scope or quantitative risk models were unavailable, the licensee uses bounding analyses, or other conservative quantitative evaluations. A qualitative screening analysis may be used when the surveillance frequency impact on plant risk is shown to be negligible or zero.

The licensee has an internal events PRA (which includes internal flooding) for Fermi 2. As discussed in the previous section, the internal events PRA is of sufficient quality to support the

SFCP. The licensee will use this model to perform quantitative evaluations to support the development of changes to surveillance frequencies in the SFCP in accordance with NEI 04-10, Revision 1.

The licensee is currently developing an internal fire PRA for Fermi 2 that will meet the guidance in RG 1.200. Until the fire PRA is completed, internal fire events will be addressed using the Fire-Induced Vulnerability Evaluation (FIVE) consistent with NEI 04-10, Revision 1. The FIVE was developed in the Fermi 2 Individual Plant Examination of External Events (IPEEE) submitted in response to the NRC Generic Letter 88-20, Supplement 4, "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities" (Legacy ADAMS Accession No. 9106270324). The NRC staff's review of the Fermi 2 IPEEE is described in an SE dated July 5, 2000 (ADAMS Accession No. ML15168A200), and concluded that the licensee's IPEEE process is capable of identifying the most likely severe accidents and severe accident vulnerabilities. The licensee's approach to evaluate surveillance frequency changes relative to internal fires is acceptable in accordance with NEI 04-10, Revision 1.

The licensee is currently developing a seismic PRA for Fermi 2 that will meet the guidance in RG 1.200. Until the seismic PRA is completed, seismic events will be addressed using the Seismic Margins Analysis (SMA) consistent with NEI 04-10, Revision 1. The SMA was developed in the Fermi 2 IPEEE submitted in response to NRC Generic Letter 88-20, Supplement 4. The NRC staff's review of the Fermi 2 IPEEE is described in an SE dated July 5, 2000, and concluded that the licensee's IPEEE process is capable of identifying the most likely severe accidents and severe accident vulnerabilities. The licensee's approach to evaluate surveillance frequency changes relative to seismic events is acceptable in accordance with NEI 04-10, Revision 1.

Other external hazards (including high winds, tornados, external floods, transportation accidents, nearby facility accidents, and release of onsite chemicals) will be addressed using the licensee's external hazards analysis for Fermi 2 consistent with NEI 04-10, Revision 1. The external hazards analysis was peer reviewed in April 2014 using PRA standard ASME/ANS RA-Sb-2009 and RG 1.200, Revision 2, and found to meet Capability Category II for all evaluated supporting requirements. The licensee's approach to evaluate surveillance frequency changes relative to other external hazards is acceptable in accordance with NEI 04-10, Revision 1.

By letter dated April 17, 2015, the licensee responded to an RAI regarding shutdown events. In response to RAI 2, the licensee explained that Fermi 2 does not currently have a shutdown PRA. However, the licensee explained that the guidance in NEI 04-10, Revision 1, will also be applied for shutdown events. This includes the use of the Fermi 2 shutdown safety program developed in support of NUMARC 91-06 (ADAMS Accession No. ML14365A203) consistent with NEI 04-10, Revision 1. This is an acceptable approach in accordance with NEI 04-10, Revision 1.

Through the application of NEI 04-10, Revision 1, the licensee's evaluation methodology is sufficient to ensure the scope of the risk contribution of each surveillance frequency change is properly identified for evaluation, and is consistent with Regulatory Position 2.3.2 of RG 1.177.

3.1.4.3 PRA Modeling

The licensee's methodology includes the determination of whether the SSCs affected by a proposed change to a surveillance frequency are modeled in the PRA. Where the SSC is directly or implicitly modeled, a quantitative evaluation of the risk impact may be carried out. The methodology adjusts the failure probability of the impacted SSCs, including any impacted CCF modes, based on the proposed change to the surveillance frequency. Where the SSC is not modeled in the PRA, bounding analyses are performed to characterize the impact of the proposed change to the surveillance frequency. Potential impacts on the risk analyses due to screening criteria and truncation levels are addressed by the requirements for PRA technical adequacy consistent with guidance contained in RG 1.200, and by sensitivity studies identified in NEI 04-10, Revision 1.

Thus, through the application of NEI 04-10, Revision 1, the Fermi 2 PRA modeling is sufficient to ensure an acceptable evaluation of risk for the proposed changes in surveillance frequency, and is consistent with Regulatory Position 2.3.3 of RG 1.177.

3.1.4.4 Assumptions for Time Related Failure Contributions

The failure probabilities of SSCs modeled in PRAs may include a standby time-related contribution and a cyclic demand-related contribution. For those SSCs that are impacted by the surveillance test interval change, the licensee assumes their failure probabilities to be standby time-related in order to obtain the maximum test-limited risk contribution. This is consistent with RG 1.177, Section 2.3.3, which permits separation of the failure rate contributions into demand and standby for evaluation of surveillance requirements. If the available data do not support distinguishing between the standby time-related failures and demand failures, then the total failure probability is conservatively assumed to be standby time-related.

The SSC failure rate (per unit time) is assumed to be unaffected by the change in test frequency, and will be confirmed by the required monitoring and feedback implemented after the change in surveillance frequency is implemented. The process requires consideration of qualitative sources of information with regards to potential impacts of test frequency on SSC performance, including industry and plant-specific operating experience, vendor recommendations, industry standards, and code-specified test intervals. Thus, the process is not reliant upon risk analyses as the sole basis for the proposed changes.

The potential benefits of reduced surveillance frequency, including reduced downtime, lesser potential for restoration errors, reduction of potential for test-caused transients, and reduced test-caused wear of equipment, are identified qualitatively, but not quantitatively assessed. Thus, through the application of NEI 04-10, Revision 1, the licensee has employed reasonable assumptions with regard to extensions of surveillance test intervals, and is consistent with Regulatory Position 2.3.4 of RG 1.177.

3.1.4.5 Sensitivity and Uncertainty Analyses

NEI 04-10, Revision 1, requires sensitivity studies to assess the impact of uncertainties from key assumptions of the PRA, uncertainty in the failure probabilities of the affected SSCs, impact on the frequency of initiating events, and any identified deviations from Capability Category II of the

PRA standard. Where the sensitivity analyses identify a potential impact on the proposed change, revised surveillance frequencies are considered, along with any qualitative considerations that may bear on the results of such sensitivity studies. Required monitoring and feedback of SSC performance once the revised surveillance frequencies are implemented will also be performed. Thus, through the application of NEI 04-10, Revision 1, the licensee has appropriately considered the possible impact of PRA model uncertainty and sensitivity to key assumptions and model limitations, and is consistent with Regulatory Position 2.3.5 of RG 1.177.

3.1.4.6 Acceptance Guidelines

The licensee will quantitatively evaluate the change in total risk (including internal and external events contributions) in terms of CDF and LERF for both the individual risk impact of a proposed change in surveillance frequency and the cumulative impact from all individual changes to surveillance frequencies using the guidance contained in NRC-approved NEI 04-10, Revision 1, in accordance with the TS SFCP. Each individual change to surveillance frequency must show a risk impact below $1\text{E-}6$ per year for change to CDF, and below $1\text{E-}7$ per year for change to LERF. These are consistent with the acceptance criteria of RG 1.174 for very small changes in risk. Where the RG 1.174 acceptance criteria are not met, the process either considers revised surveillance frequencies which are consistent with RG 1.174 or the process terminates without permitting the proposed changes. Where quantitative results are unavailable for comparison with the acceptance guidelines, appropriate qualitative analyses are required to demonstrate that the associated risk impact of a proposed change to surveillance frequency is negligible or zero. Otherwise, bounding quantitative analyses are required which demonstrate the risk impact is at least one order of magnitude lower than the RG 1.174 acceptance guidelines for very small changes in risk. In addition to assessing each individual SSC surveillance frequency change, the cumulative impact of all changes must result in a risk impact less than $1\text{E-}5$ per year for change to CDF, and less than $1\text{E-}6$ per year for change to LERF, and the total CDF and total LERF must be reasonably shown to be less than $1\text{E-}4$ per year and $1\text{E-}5$ per year, respectively.

These values are consistent with the acceptance criteria of RG 1.174, as referenced by RG 1.177 for changes to surveillance frequencies. The NRC staff interprets this assessment of cumulative risk as a requirement to calculate the change in risk from a baseline model utilizing failure probabilities based on the surveillance frequencies prior to implementation of the SFCP, compared to a revised model with failure probabilities based on changed surveillance frequencies. The NRC staff further notes that the licensee includes a provision to exclude the contribution to cumulative risk from individual changes to surveillance frequencies associated with insignificant risk increases (less than $5\text{E-}8$ CDF and $5\text{E-}9$ LERF) once the baseline PRA models are updated to include the effects of the revised surveillance frequencies.

The quantitative acceptance guidance of RG 1.174 is supplemented by qualitative information to evaluate the proposed changes to surveillance frequencies, including industry and plant-specific operating experience, vendor recommendations, industry standards, the results of sensitivity studies, and SSC performance data and test history. The final acceptability of the proposed change is based on all of these considerations and not solely on the PRA results. Post implementation performance monitoring and feedback are also required to assure continued reliability of the components. The licensee's application of NEI 04-10, Revision 1, provides

acceptable methods for evaluating the risk increase associated with proposed changes to surveillance frequencies, consistent with Regulatory Position 2.4 of RG 1.177. Therefore, the proposed methodology satisfies the fourth key safety principle of RG 1.177 by assuring any increase in risk is small consistent with the intent of the Commission's Safety Goal Policy Statement.

3.1.5 The Impact of the Proposed Change Should Be Monitored Using Performance Measurement Strategies

The licensee's adoption of TSTF-425, Revision 3, requires application of NEI 04-10, Revision 1, in the SFCP. NEI 04-10, Revision 1, requires performance monitoring of SSCs whose surveillance frequency has been revised as part of a feedback process to assure that the change in test frequency has not resulted in degradation of equipment performance and operational safety. The monitoring and feedback includes consideration of maintenance rule monitoring of equipment performance. In the event of degradation of SSC performance, the surveillance frequency will be reassessed in accordance with the methodology, in addition to any corrective actions which may apply as part of the maintenance rule requirements. The performance monitoring and feedback specified in NEI 04-10, Revision 1, is sufficient to reasonably assure acceptable SSC performance and is consistent with Regulatory Position 3.2 of RG 1.177. Thus, the fifth key safety principle of RG 1.177 is satisfied.

3.2 Addition of Surveillance Frequency Control Program to Administrative Controls

The proposed amendment would add the SFCP to the TSs Section 5.5, "Programs and Manuals." Specifically, new TS 5.5.15, "Surveillance Frequency Control Program," would read as follows:

Surveillance Frequency Control Program

This program provides controls for the Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

- a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.
- b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.
- c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The proposed program is consistent with the model application of TSTF-425. The NRC staff concludes that the proposed addition of this section in the TS adequately identifies the scope of

the SFCP and defines the methodology to be used in a revision of SR frequencies. Therefore, the proposed TS change is acceptable.

3.3 TS Bases Changes

DTE's application dated September 16, 2014, provided proposed changes to the TS Bases to be implemented with the associated TS changes. These pages were provided for information only and will be revised in accordance with the Technical Specifications Bases Control Program (Section 5.5.10) of the Fermi 2 TS.

3.4 Summary and Conclusions

The NRC staff has reviewed the licensee's proposed relocation of some surveillance frequencies to a licensee-controlled document, and controlling changes to surveillance frequencies in accordance with a new program, the SFCP, identified in Section 5.5, "Programs and Manuals," of the TSs. The SFCP and TS Section 5.5 references NEI 04-10, Revision 1, which provides a risk-informed methodology using plant-specific risk insights and performance data to revise surveillance frequencies within the SFCP. This methodology supports relocating surveillance frequencies from TSs to a licensee-controlled document, provided those frequencies are changed in accordance with NEI 04-10, Revision 1.

The proposed licensee adoption of TSTF-425, Revision 3, and risk-informed methodology of NEI 04-10, Revision 1, as referenced in Section 5.5 of the TSs, satisfies the key principles of risk-informed decision making applied to changes to TSs as delineated in RG 1.177 and RG 1.174, in that:

- The proposed change meets current regulations;
- The proposed change is consistent with defense-in-depth philosophy;
- The proposed change maintains sufficient safety margins;
- Increases in risk resulting from the proposed change are small and consistent with the Commission's Safety Goal Policy Statement; and
- The impact of the proposed change is monitored with performance measurement strategies.

The regulation in 10 CFR 50.36(c) discusses the categories that will be included in TSs. The regulation in 10 CFR 50.36(c)(3) discusses the specific category of Surveillance Requirements and states: "Surveillance requirements are requirements relating 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 NRC staff finds that with the proposed relocation of surveillance frequencies to an owner-controlled document and administratively controlled in accordance with the TS SFCP, the licensee continues to meet the regulatory requirement of 10 CFR 50.36, and specifically, 10 CFR 50.36(c)(3), Surveillance Requirements.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes the surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (79 FR 67199). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that 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.

Principal Contributor: T. Hilsmeier

Date: July 14, 2015

July 14, 2015

Mr. Paul Fessler
Senior Vice President and Chief Nuclear Officer
DTE Electric Company
Fermi 2 - 210 NOC
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI 2 - ISSUANCE OF AMENDMENT RE: REVISE TECHNICAL SPECIFICATIONS BY RELOCATING SURVEILLANCE FREQUENCIES TO LICENSEE CONTROL IN ACCORDANCE WITH TECHNICAL SPECIFICATION TASK FORCE TRAVELER 425, REVISION 3 (TAC NO. MF4859)

Dear Mr. Fessler:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 201 to Facility Operating License No. NPF-43 for the Fermi 2 facility. The amendment consists of changes to the technical specifications (TSs) in response to your application dated September 16, 2014, as supplemented by letter dated April 17, 2015.

The amendment revises the TS by relocating specific surveillance frequencies to a licensee-controlled program. The changes are based on U.S. Nuclear Regulatory Commission approved TS Task Force (TSTF) Change Traveler TSTF – 425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF [Risk-Informed TSTF] Initiative 5b."

A copy of our safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Jennivine K. Rankin, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosures:

1. Amendment No. 201 to NPF-43
2. Safety Evaluation

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