Joseph H. Plona
Site Vice President

6400 N. Dixie Highway, Newport, MI 48166
Tel: 734.586.5910 Fax: 734.586.4172

DTE Energy

10 CFR 50.90

January 10, 2012
NRC-12-0004

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Proposed License Amendment to Modify Technical Specification Surveillance Requirements for Safety Relief Valves

Pursuant to 10 CFR 50.90, Detroit Edison hereby proposes to amend the Fermi 2 Plant Operating License, Appendix A, Technical Specifications (TS) to modify Surveillance Requirement (SR) 3.4.3.2, in TS 3.4.3, "Safety Relief Valves (SRVs)", SR 3.5.1.13, in TS 3.5.1, "ECCS-Operating," and SR 3.6.1.6.1, in TS 3.6.1.6, "Low-Low Set (LLS) Valves." This proposed amendment replaces the current requirement in these TS SRs to verify the SRV opens when manually actuated with an alternate requirement that verifies the SRV is capable of being opened.

Enclosure 1 provides an evaluation of the proposed license amendment, including an analysis of the issue of significant hazards consideration using the standards of 10 CFR 50.92. Detroit Edison has concluded that the change proposed in this submittal does not result in a significant hazards consideration. Enclosure 2 provides marked up pages of the existing Technical Specifications to show the proposed change. Enclosure 3 provides a typed version of the affected Technical Specifications pages with the proposed change incorporated. Enclosure 4 provides a copy of the marked up changes to the Technical Specification Bases pages associated with this change, for information only.

Detroit Edison has reviewed the proposed change against the criteria of 10 CFR 51.22 and has concluded that it meets the criteria provided in 10 CFR 51.22(c)(9) for

a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

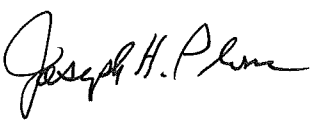
Detroit Edison requests NRC approval of this license amendment by December 14, 2012, with implementation by startup from Refueling Outage (RF) 16, planned for the fall of 2013.

No new commitments are being made in this submittal.

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

Should you have any questions or require additional information, please contact Mr. Rodney W. Johnson of my staff at (734) 586-5076.

Sincerely,



Enclosures:

1. Evaluation of Proposed License Amendment
2. Markup of Existing TS Pages
3. Revised (Clean) TS Pages
4. Markup of Existing TS Bases Pages (For Information Only)

cc: NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 4, Region III
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, Joseph H. Plona, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

Joseph H. Plona
Site Vice President, Nuclear Generation

On this 10th day of January, 2012 before me personally appeared Joseph H. Plona, being first duly sworn and says that he executed the foregoing as his free act and deed.

ANGELA R CRONE
NOTARY PUBLIC - STATE OF MICHIGAN
COUNTY OF MONROE
My Commission Expires April 4, 2013

Angela R Crone
Notary Public

Enclosure 1
To NRC-12-0004

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Proposed License Amendment to Modify the Technical Specification Surveillance Requirements for Safety Relief Valves

Evaluation of the Proposed License Amendment

1.0 Description

The proposed amendment would modify Fermi 2 Plant Operating License, Appendix A, Technical Specifications (TS) to modify Surveillance Requirement (SR) 3.4.3.2, in TS 3.4.3, "Safety Relief Valves (SRVs)", SR 3.5.1.13, in TS 3.5.1, "ECCS-Operating," and SR 3.6.1.6.1, in TS 3.6.1.6, "Low-Low Set (LLS) Valves." This proposed amendment replaces the current requirement in these TS SRs to verify the SRV opens when manually actuated with an alternate requirement that verifies the SRV is capable of being opened. The verification of that capability would be satisfied by a series of overlapping tests, performed during a refueling outage, that demonstrate the required functions of successive valve stages.

2.0 Proposed Change

The current TS SR 3.4.3.2, , in TS 3.4.3, "Safety Relief Valves (SRVs)", states, "Verify each required SRV opens when manually actuated." TS SR 3.5.1.13, in TS 3.5.1, "ECCS-Operating," states, "Verify each ADS valve opens when manually actuated." TS SR 3.6.1.6.1, "Low-Low Set (LLS) Valves," states, "Verify each LLS valve opens when manually actuated." The proposed amendment would change these TS SRs to require verifying that each required valve "is capable of being opened."

These TS SRs are currently modified by a NOTE that states, "Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test." This allowance would no longer be needed, and thus, would be deleted.

TS Bases associated with these Surveillance Requirements will be revised to describe the new testing method as discussed below. Revised TS Bases pages are attached for information, but do not require NRC approval.

3.0 Background

The Boiling Water Reactor Owners' Group (BWROG) Evaluation of NUREG-0737, "Clarification of TMI Action Plan Requirements," Item II.K.3.16, "Reduction of Challenges and Failures of Relief Valves," recommends that the number of SRV openings be reduced as much as possible and that unnecessary challenges to the SRVs be avoided.

SRVs currently installed at Fermi 2 are Target Rock model 7567F two-stage, pilot-operated safety relief valves. Fifteen SRVs are located on the main steam lines between the reactor vessel and the first isolation valve within the drywell. The SRVs can actuate by either of two modes: the safety mode or the relief mode. In the safety mode, the spring loaded pilot valve opens when steam pressure at the valve inlet overcomes the spring force holding the pilot valve closed. Opening the pilot valve allows a pressure differential to develop across the main valve piston and opens the main valve. Each SRV discharges steam through a discharge line to a point below the water level in the suppression pool. The SRVs that provide the relief mode are the Automatic Depressurization System (ADS) valves and the LLS valves. The ADS consists of five of the 15 SRVs and is designed to provide depressurization of the reactor coolant system during a small

break loss of coolant accident if the High Pressure Coolant Injection System fails or is unable to maintain required water level in the Reactor Pressure Vessel (RPV). Two of the 15 SRVs are equipped to provide the LLS function. The LLS logic causes the LLS valves to be opened at a lower pressure than the relief or safety mode pressure setpoints and stay open longer. Therefore, the LLS function prevents numerous short duration SRV cycles with valve actuation at the relief setpoint.

TS surveillance testing of SRVs at Fermi 2 is currently performed at a reactor pressure vessel (RPV) pressure greater than or equal to 850 psig to verify that, mechanically, the valve is functioning properly and no blockage exists in the valve discharge line.

Experience in the industry has shown that manual actuation of SRVs during plant operation may create a potential for SRV seat leakage. Potential SRV leakage is routed to the suppression pool; the increased heat and fluid additions to the suppression pool requires more frequent suppression pool cooling and more frequent pump-down operations to control suppression pool level. Main stage SRV seat leakage also tends to mask the indications of SRV pilot stage seat-leakage; pilot stage leakage could cause spurious SRV actuation and/or SRV failure to reclose after actuation. Excessive leakage would require plant shutdown to replace the leaking SRV.

Eliminating or reducing the number of manual actuations of the SRVs during plant startup minimizes the potential depressurization and cooldown events due to failure to close SRV events as well as minimizing the potential for pilot or main stage leakage of the SRVs. Implementing this change would still maintain the capability to manually open and close SRVs, as necessary, for the In-service Testing (IST) Program or as corrective action for SRVs with excessive leakage.

4.0 Technical Analysis

The manual actuation tests currently prescribed in TS SRs 3.4.3.2, 3.5.1.13, and 3.6.1.6.1 provide demonstration of the mechanical operation of the SRVs, and overlaps with other testing to demonstrate that the functions of the SRVs can be performed. These manual actuation tests are performed once per operating cycle (18 months). The proposed testing uses a series of overlapping tests to demonstrate these functions. Specifically:

- The simulated automatic actuation test specified in SR 3.5.1.12, of TS 3.5.1, ECCS-Operating, and additional surveillances associated with TS 3.3.5.1, ECCS Instrumentation, 3.3.3.2, Remote Shutdown System, and 3.3.6.3, LLS Instrumentation, demonstrate the ability of various logics and controls to actuate the SRVs up to the point of energizing the solenoids. These tests are performed once per operating cycle (18 months).

- A solenoid valve (SOV) functional test will be performed in-situ for each SRV solenoid valve once per operating cycle (18 months). In the SOV functional test, a test rig with a pressure gauge will be connected downstream of the SOV pneumatic manifold in place of the SRV actuator. Each SOV will be energized, and pneumatic pressure at the downstream connection will be recorded and compared with pneumatic header pressure.

- An SRV actuator functional test will be performed at an offsite test facility as part of certification testing for each SRV pilot assembly. The current practice of replacing all 15 SRV pilot assemblies each operating cycle (18 months) will be maintained.

- SRV setpoint testing is performed using steam at the offsite test facility as part of certification testing for each SRV pilot assembly, at intervals determined in accordance with the IST Program. This test is the existing test required by TS SR 3.4.3.1. In addition to demonstrating that the SRV pilot stage will actuate on high steam pressure in the safety mode, this test overlaps with the pilot assembly actuator functional test to demonstrate that the pilot stage will actuate in the relief mode.

- SRV main stage certification testing will be performed using steam at the offsite test facility at intervals determined in accordance with the Inservice Testing Program. The current Fermi 2 Inservice Test Program requires that each SRV be lift-tested every 5 years per ASME OM Code, 2004 Edition, Appendix I. Currently, the Fermi 2 Preventative Maintenance Program requires the SRV main stages to be refurbished within a 6 year period. ASME OM Code, 2004 Edition, Appendix I, Section 1-3400, "Disposition After Testing or Maintenance" addresses the testing required on refurbished main steam pressure relief valves with auxiliary actuating devices. Specifically paragraph 1-3410 (c) states, "Refurbished equipment shall be subjected to the test(s) specified in 1-3310, as applicable. If disassembly includes valve disk (main) components, then valve disk stroke capability shall be verified by mechanical examination or tests." Main stage certification testing demonstrates that the main stage will open and port steam when actuated by the installed pilot stage.

The current TS Bases for SRs 3.4.3.2 states the following (TS Bases 3.5.1.13, and 3.6.1.6.1 are similar):

> "A manual actuation of each required SRV is performed to verify that, mechanically, the valve is functioning properly and no blockage exists in the valve discharge line. This can be demonstrated by the response of the turbine control valves or bypass valves, by a change in the measured steam flow, or by any other method suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the SRVs divert steam flow upon opening.
>
> Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this test. Adequate pressure at which this test is to be performed is $\geq$ 850 psig (the pressure recommended by the valve manufacturer). Adequate steam flow is represented by turbine bypass valves open at least 20 %...."
>
> Following the initial demonstration during plant startup testing, improper valve functioning or blockage would arise only through assembly errors or the introduction of foreign material into the piping system. Specific SRV maintenance procedures and plant Foreign Material

Exclusion procedures and practices are sufficient to ensure proper functioning and unobstructed steam flow capability without periodic actuation testing.

The Fermi 2 maintenance procedure for SRV Removal and Installation contains instructions to establish Foreign Material Exclusion (FME) controls and to install protective FME covers over component and system openings. The area above and around the open pipe flanges require full FME tool and materials control. The area is roped off and lanyards are required on all tools.

The Fermi 2 administrative procedure for Foreign Material Exclusion has minimum FME requirements for the Drywell, including regular briefings and the implementation of a drop log. These are in addition to the FME requirements contained in the maintenance procedure. Fermi 2 has had no instance of test failure due to loss of FME controls.

Failures of the SRV manual actuation test have been uncommon. Recent events are discussed below.

In April 2002, Hatch Unit 1 experienced an SRV failure to fully open and failure to reclose due to deterioration of the main stage piston-to-stem joint (Information Notice 03-001 and General Electric Service Information Letter (SIL) 646, References 2 and 3). The deterioration involved a loss of joint preload followed by vibration induced wear that created a groove in the piston guide in which the piston hung up. This wear had occurred over a period of several cycles. The Fermi 2 Preventative Maintenance Program for SRVs fully meets the intent of SIL 646; this would detect time-based degradation such as that involved in the Hatch event prior to main stage failure. The Fermi 2 Inservice Test Program requires that each SRV be lift tested every five years.

On August 5, 2010, with Laguna Verde Unit 1 at 12 percent power, an uncontrolled depressurization of the reactor vessel and automatic reactor scram occurred when an SRV did not reclose following a post maintenance functional test (Reference 1). Reactor vessel pressure decreased from 920 psig to approximately 50 psig in approximately one hour, resulting in a rapid cool down that exceeded technical specification limits. The SRV failure was caused by inadequate post maintenance verification of the valve configuration. Inadequate maintenance practices and procedures resulted in a safety-related component being installed in an inoperable configuration. A plastic FME cap was left on the SRV solenoid pilot valve exhaust port following maintenance. At Fermi 2 the Maintenance Procedure for SRV Removal and Installation contains a step to remove FME covers from the SRV Base and Pilot assemblies when the Pilot Assembly is moved to the installation area.

10 CFR 50.55a(f) requires that the licensee's IST Program meet the requirements of the ASME OM Code. The current Fermi 2 IST Program has been prepared to meet the requirements of the ASME OM Code, 2004 Edition. A major difference between the current TS required SRV manual actuation requirements and the ASME OM Code requirements is that the ASME OM

Code allows a series of overlapping tests to individually test SRV components. Furthermore, the ASME OM Code, 2004 Edition, no longer requires in-situ SRV testing following maintenance.

- Section 1-3410(d) of the ASME OM Code, 2001 through 2003 Edition, required that SRVs with auxiliary actuating devices that have been maintained or refurbished in place, removed for maintenance and testing, or both, and reinstalled be remotely actuated at reduced or normal system pressure to verify open and close capability of the valve before resumption of electric power generation. Section 1-3410(d) was revised in the ASME OM Code, 2004 Edition, and no longer requires that SRVs be opened and closed at reduced or normal system pressure following maintenance. Section 1-3410(d) in the ASME OM Code, 2004 Edition, requires that each SRV that has been removed for maintenance or testing and reinstalled shall have the electrical and pneumatic connections verified either through mechanical/electrical inspection or test. The ASME OM Code, 2004 Edition, does not require that an SRV be tested as a unit. For example, the auxiliary actuating device can be tested independently of the main disk assembly.

Technical Analysis Conclusion

This evaluation provides the technical basis to support a revision of Fermi 2 TS SRs 3.4.3.2, 3.5.1.13, and 3.6.1.6.1 with a series of overlapping tests that verify each SRV valve actuator strokes when manually actuated. The 2004 Edition of the ASME OM Code has been revised to specifically allow overlapping tests of SRV components.

5.0 Regulatory Safety Analysis

5.1 No Significant Hazards Consideration

The proposed amendment would modify Fermi 2 Plant Operating License, Appendix A, Technical Specifications (TS) to modify Surveillance Requirement (SR) 3.4.3.2, in TS 3.4.3, "Safety Relief Valves (SRVs)", SR 3.5.1.13, in TS 3.5.1, "ECCS-Operating," and SR 3.6.1.6.1, in TS 3.6.1.6, "Low-Low Set (LLS) Valves." This proposed amendment replaces the current requirement in these TS SRs to verify the SRV opens when manually actuated with an alternate requirement that verifies the SRV is capable of being opened. The verification of that capability would be satisfied by a series of overlapping tests, performed during a refueling outage, that demonstrate the required functions of successive valve stages. In accordance with 10 CFR 50.92, Detroit Edison has made a determination that the proposed amendment involves no significant hazards consideration. The proposed change to Fermi 2 TS SRs 3.4.3.2, 3.5.1.13, and 3.6.1.6.1 do not involve a significant hazards consideration for the following reasons:

1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed change does not modify the method of demonstrating the operability of the Safety Relief Valves (SRVs) in both the safety and relief modes of operation. As currently

stated in the Technical Specification (TS) Bases "...valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME Code requirements, prior to valve installation." The proposed change does modify the method for demonstrating the proper mechanical functioning of the SRVs. The SRVs are required to function in the safety mode to prevent overpressurization of the reactor vessel and reactor coolant system pressure boundary during various analyzed transients, including Main Steam Isolation Valve closure. SRVs associated with the Automatic Depressurization System are also required to function in the relief mode to reduce reactor pressure to permit injection by low pressure Emergency Core Cooling System (ECCS) pumps during certain reactor coolant pipe break accidents. The current testing method demonstrates the proper mechanical functioning of the SRVs in both modes through manual actuation of the SRVs. The proposed new testing method demonstrates both operability and proper mechanical functioning using a series of overlapping tests that demonstrate proper functioning of the SRV and supporting control components. This proposed testing method results in acceptable demonstration of the SRV functions in both the safety and relief modes, and therefore provides assurance that the probability of SRV failure will not increase. None of the accident safety analyses is affected by the requested TS changes. Therefore, the consequences of accidents mitigated by the SRVs will not increase.

Certain SRV malfunctions are included in the UFSAR safety analyses. Specifically, the plant safety analyses include the inadvertent opening of an SRV and a stuck open SRV. By reducing or not actuating the SRVs during plant operation for testing and thus reducing the potential incidence of pilot stage leakage of the SRVs, the proposed testing reduces a contributor to these events.

Based on these considerations, the proposed test method does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

   The proposed change modifies the method of testing of the SRVs, but does not alter the functions or functional capabilities of the SRVs. Testing under the proposed method is performed in offsite test facilities and in the plant during outage periods when the SRV functions are not required. Existing analyses address events involving an SRV inadvertently opening or failing to reclose. Analyses also address the failure of one or more SRVs to open. The proposed change does not introduce any new failure mode, and therefore, does not create the possibility of a new or different kind of accident from any accident previously evaluated.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed change does not involve a significant reduction in the margin of safety.

   The proposed amendment provides for an alternative means of testing the SRVs. The proposed changes will provide a complete verification of the functional capability of the SRVs by performing a series of tests, inspections, and maintenance activities without opening the valves with reactor steam while installed in the plant. The alternative testing and associated programmatic controls will provide an equivalent level of assurance that the SRVs are capable of performing their intended accident mitigation safety functions. The proposed amendment does not affect the valve setpoints or adversely affect any other operational criteria assumed for accident mitigation. No changes are proposed that alter the setpoints at which protective actions are initiated, and there is no change to the operability requirements for equipment assumed to operate for accident mitigation. Moreover, it is expected that the alternative testing methodology will increase the margin of safety by reducing the potential for SRV leakage resulting from testing the SRVs with reactor steam pressure while installed in the plant.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Detroit Edison has determined that the proposed license amendment does not involve a significant hazards consideration.

5.2 Applicable Regulatory Requirements

10 CFR 50.36 requires in part that the operating license of a nuclear production facility include technical specifications. Paragraph (c)(2)(ii) of that part requires that a limiting condition for operation (LCO) of a nuclear reactor must be established for each item meeting one or more of four criteria. The SRV functions identified in LCOs 3.4.3, 3.5.1, and 3.6.1.6 meet Criterion 3, "A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier." Paragraph (c)(3) further requires the establishment of surveillance requirements, "relating to test, calibration, or inspection to assure.. .that the limiting conditions for operation will be met." As discussed above, the proposed changes in the surveillance requirements for the SRVs are sufficient to demonstrate the safety and relief modes of operation for the SRVs, and therefore, are sufficient to ensure that the limiting conditions for operation are met.

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

5.3 Precedent

NUREG-1482, Revision 1, Paragraph, 4.3.2.1 states, "In recent years, the NRC staff has received numerous requests for relief and/or TS changes related to the stroke testing requirements for BWR dual-function main steam safety/relief valves (S/RVs). Both Appendix I to the ASME OM Code and the plant-specific TSs require stroke testing of S/RVs after they are reinstalled following maintenance activities. Several licensees have determined that in-situ testing of the S/RVs can contribute to undesirable seat leakage of the valves during subsequent plant operation and have received approval to perform testing at a laboratory facility coupled with in-situ tests and other verifications of actuation systems as an alternative to the testing required by the OM Code and TSs."

The NRC has approved similar license amendment requests for Fitzpatrick and Hope Creek (ADAMS Accession Numbers ML101750325 and ML011770047 respectively).

Similar license amendment requests have also been approved for Dresden, Quad Cities, and Peach Bottom, which use three-stage Target Rock SRVs rather than two-stage SRVs. Testing approved for plants that use three-stage Target Rock SRVs included an in-situ actuator test without steam (dry lift test). The dry lift test is not suitable for two-stage SRVs because it has a probability of causing unseating or leakage of the pilot stage, which can lead to spurious actuation or failure to reclose of the SRV.

6.0 Environmental Considerations

Detroit Edison has reviewed the proposed change against the criteria of 10 CFR 51.22 for environmental considerations. The proposed change does not involve a significant hazards consideration, nor does it significantly change the types or significantly increase the amounts of effluents that may be released offsite. The proposed change does not significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed change meets the criteria provided in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

7.0 References

1. INPO Event Report, Level 3, 11-24, "Maintenance Error Results in Uncontrolled Reactor Vessel Depressurization," dated July 26, 2011.

2. NRC Information Notice 2003-01, "Failure of a Boiling Water Reactor Target Rock Main Steam Safety/Relief Valve," dated January 15, 2003.

3. General Electric Nuclear Energy Service Information Letter, "Target Rock safety relief valve failure to open," dated December 20, 2002.

Enclosure 2
To NRC-12-0004

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Proposed License Amendment to Modify the Technical Specification Surveillance Requirements for Safety Relief Valves

Markup of Existing TS Pages

3.4-8
3.5-7
3.6-21

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify the safety function lift setpoints of the required SRVs are as follows: Number of SRVs / Setpoint (psig) 5 / 1135 ± 34.05 5 / 1145 ± 34.35 5 / 1155 ± 34.65 Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program
SR 3.4.3.2	~~---------- NOTE ----------~~ ~~Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.~~ ~~----------~~ Verify each required SRV ~~opens when manually actuated.~~ is capable of being opened.	18 months

FERMI - UNIT 2 3.4-8 Amendment No. 134

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.11	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	18 months
SR 3.5.1.12	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the ADS actuates on an actual or simulated automatic initiation signal.	18 months
SR 3.5.1.13	~~----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----------~~ Verify each ADS valve ~~opens when manually actuated.~~ is capable of being opened.	18 months
SR 3.5.1.14	----------NOTE---------- ECCS instrumentation response times are not required to be measured. ---------- Verify ECCS RESPONSE TIME is within limits.	18 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	~~----------NOTE----------~~ ~~Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.~~ ---------- Verify each LLS valve ~~opens when manually actuated.~~ is capable of being opened.	18 months
SR 3.6.1.6.2	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the LLS System actuates on an actual or simulated automatic initiation signal.	18 months

Enclosure 3
To NRC-12-0004

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Proposed License Amendment to Modify the Technical Specification Surveillance Requirements for Safety Relief Valves

Revised (Clean) TS Pages

3.4-8
3.5-7
3.6-21

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify the safety function lift setpoints of the required SRVs are as follows: Number of SRVs / Setpoint (psig) 5 / 1135 ± 34.05 5 / 1145 ± 34.35 5 / 1155 ± 34.65 Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program
SR 3.4.3.2	Verify each required SRV is capable of being opened.	18 months

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.5.1.11	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	18 months
SR 3.5.1.12	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the ADS actuates on an actual or simulated automatic initiation signal.	18 months
SR 3.5.1.13	Verify each ADS valve is capable of being opened.	18 months
SR 3.5.1.14	----------NOTE---------- ECCS instrumentation response times are not required to be measured. ---------- Verify ECCS RESPONSE TIME is within limits.	18 months

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.6.1	Verify each LLS valve is capable of being opened.	18 months
SR 3.6.1.6.2	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the LLS System actuates on an actual or simulated automatic initiation signal.	18 months

Enclosure 4
To NRC-12-0004

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Proposed License Amendment to Modify the Technical Specification Surveillance Requirements for Safety Relief Valves

Markup of Existing TS Bases Pages
(For Information Only)

B 3.4.3-4
B 3.4.3-5
B 3.5.1-16
B 3.5.1-17
B 3.5.1-18
B 3.6.1.6-3
B 3.6.1.6-4

SURVEILLANCE REQUIREMENTS (continued)

The Frequency is required by the Inservice Testing Program and is consistent with the fact that Surveillance must be performed during shutdown conditions.

SR 3.4.3.2

Valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME Code requirements, prior to valve installation. Actuation of each required SRV is performed to verify that mechanically the valve is functioning properly. This requires that the pilot stage be tested to show:

- That each SRV pilot stage actuates when required and opens the associated main stage when the pneumatic actuator is pressurized; and
- That each SRV main stage opens and passes steam when the associated pilot stage actuates.

The actuators and main stages are bench tested, together or separately, as part of the certification process. Maintenance procedures ensure that the SRV actuators and main stages are correctly installed in the plant, and that the SRV and associated piping remain clear of foreign material that might obstruct valve operation or full steam flow. This approach provides adequate assurance that the required SRVs will operate as required, while minimizing the challenges to the SRVs and the likelihood of leakage or spurious operation. Two-stage actuator assemblies are not tested in-situ due to a probability of causing unseating or leakage of the pilot stage which can lead to spurious actuation or failure to reclose.

For the purpose of this test, pilot actuation in the safety mode or relief mode is acceptable to satisfy the test requirements. Testing of the related solenoid valves is not required because they do not affect the safety mode operation of the SRV. However, the solenoid valves are also tested in the IST program to support relief mode operation of the SRVs for other functions.

This SR does not preclude manually opening SRVs; for example, in accordance with the IST Program or as corrective action for an SRV with excessive leakage.

~~A manual actuation of each required SRV is performed to verify that, mechanically, the valve is functioning properly and no blockage exists in the valve discharge line. This can be demonstrated by the response of the turbine control valves or bypass valves, by a change in the measured steam flow, or by any other method suitable to verify steam flow.~~

~~Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the SRVs divert steam flow upon opening.~~

~~Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this test. Adequate pressure at which this test is to be performed is $\geq$ 850 psig (the pressure recommended by the valve manufacturer). Adequate steam flow is represented by turbine bypass valves open at least 20%. Plant startup is allowed prior to performing this test because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME Code requirements, prior to valve installation. Therefore, this SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for manual actuation after the required pressure is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR. If a valve fails to actuate due only to the failure of the solenoid but is capable of opening on overpressure, the safety function of the SRV is considered OPERABLE.~~

The 18 month Frequency was developed based on the SRV tests required by the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 3). Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. UFSAR, Section 5.2.2.3.5.

2. UFSAR, Chapter 15.

3. ASME, Boiler and Pressure Vessel Code, Section XI.

SURVEILLANCE REQUIREMENTS (continued)

This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance.

SR 3.5.1.12

The ADS designated SRVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to demonstrate that the mechanical portions of the ADS function (i.e., solenoids) operate as designed when initiated either by an actual or simulated initiation signal, causing proper actuation of all the required components. SR 3.5.1.13 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The 18 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation. ~~, since value actuation is addressed in SR 3.5.1.13.~~

SR 3.5.1.13

Valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME Code requirements, prior to valve installation. Actuation of each required ADS valve is performed to verify that mechanically the valve is functioning properly. Tests are required to demonstrate:

- That each ADS SRV solenoid valve ports pneumatic pressure to the associated SRV actuator when energized;
- That each ADS SRV pilot stage actuates to open the associated main stage when the pneumatic actuator is pressurized; and

- That each ADS SRV main stage opens and passes steam when the associated pilot stage actuates.

The solenoid valves are functionally tested once per cycle as part of the Inservice Testing Program. The actuators and main stages are bench tested, together or separately, as part of the certification process. Maintenance procedures ensure that the SRV actuators and main stages are correctly installed in the plant, and that the SRV and associated piping remain clear of foreign material that might obstruct valve operation or full steam flow. This approach provides adequate assurance that the required ADS valves will operate when actuated, while minimizing the challenges to the valves and the likelihood of leakage or spurious operation. Two-stage actuator assemblies are not tested in-situ due to a probability of causing unseating or leakage of the pilot stage which can lead to spurious actuation or failure to reclose. SR 3.5.1.12 and the LOGIC SYSTEM FUNCTIONAL Test performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

This SR does not preclude manually opening SRVs; for example, in accordance with the IST Program or as corrective action for an SRV with excessive leakage.

~~A manual actuation of each ADS valve is performed to verify that the valve and solenoid are functioning properly and that no blockage exists in the SRV discharge lines. This is demonstrated by the response of the turbine control or bypass valve or by a change in the measured flow or by any other method suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the ADS valves divert steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this SR. Adequate pressure at which this SR is to be performed is ≥ 850 psig (the pressure recommended by the valve manufacturer). Adequate steam flow is represented by turbine bypass valves open at least 20%. Reactor startup is allowed prior to performing this SR because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements, prior to valve installation. Therefore, this SR is modified~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for manual actuation after the required pressure and flow are reached is sufficient to achieve stable conditions and provides adequate time to complete the Surveillance. SR 3.5.1.12 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.~~

The Frequency is based on the need to perform the Surveillance under the conditions that apply just prior to or during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.5.1.14

This SR ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis. Response time testing acceptance criteria are included in Reference 15. This SR is modified by a Note stating that the ECCS instrumentation response times are not required to be measured. The contribution of the instrument response times to the overall ECCS response time are assumed based on guidance of Reference 16.

The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency.

REFERENCES

1. UFSAR, Section 6.3.2.2.3.
2. UFSAR, Section 6.3.2.2.4.
3. UFSAR, Section 6.3.2.2.1.

BASES

ACTIONS (continued)

B.1 and B.2

If both LLS valves are inoperable or if the inoperable LLS valve cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.1

Valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME Code requirements, prior to valve installation. Actuation of each required LLS valve is performed to verify that mechanically the valve is functioning properly. Tests are required to demonstrate:

- That each LLS SRV solenoid valve ports pneumatic pressure to the associated SRV actuator when energized;
- That each LLS SRV pilot stage actuates to open the associated main stage when the pneumatic actuator is pressurized; and
- That each LLS SRV main stage opens and passes steam when the associated pilot stage actuates.

The solenoid valves are functionally tested once per cycle as part of the Inservice Testing Program. The actuators and main stages are bench tested, together or separately, as part of the certification process. Maintenance procedures ensure that the SRV actuators and main stages are correctly installed in the plant, and that the SRV and associated piping remain clear of foreign material that might obstruct valve operation or full steam flow. This approach provides adequate assurance that the required LLS valves will operate when actuated, while minimizing the challenges to the valves and the likelihood of leakage or spurious operation. Two-stage actuator assemblies are not tested in-situ due to a probability of causing unseating or leakage of the pilot stage which can lead to spurious actuation or failure to reclose.

BASES

SURVEILLANCE REQUIREMENTS (continued)

This SR does not preclude manually opening SRVs; for example, in accordance with the IST Program or as corrective action for an SRV with excessive leakage.

~~A manual actuation of each LLS valve is performed to verify that the valve and solenoids are functioning properly and no blockage exists in the valve discharge line. This can be demonstrated by the response of the turbine control or bypass valve, by a change in the measured steam flow, or by any other method that is suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Adequate pressure at which this test is to be performed is ≥ 850 psig (the pressure recommended by the valve manufacturer). Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the LLS valves divert steam flow upon opening. Adequate steam flow is represented by turbine bypass valves open at least 20%.~~ The 18 month Frequency was based on the SRV tests required by the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 2). Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

~~Since steam pressure is required to perform the Surveillance, however, and steam may not be available during a unit outage, the Surveillance may be performed during the startup following a unit outage. Unit startup is allowed prior to performing the test because valve OPERABILITY and the setpoints for overpressure protection are verified by Reference 2 prior to valve installation. After adequate reactor steam dome pressure and flow are reached, 12 hours is allowed to prepare for and perform the test.~~

SR 3.6.1.6.2

The LLS designated SRVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to verify that the mechanical portions (i.e., solenoids) of the LLS function operate as designed when initiated either by an actual or simulated automatic initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.3.4 overlaps this SR to provide complete testing of the safety function.