



Entergy Nuclear Northeast  
Entergy Nuclear Operations, Inc.

James A. FitzPatrick NPP  
P.O. Box 110  
Lycoming, NY 13093

**Pete Dietrich**  
Site Vice President - JAF

JAFP-10-0039  
March 18, 2010

United States Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

**SUBJECT:** Response to Request for Additional Information Re: James A. FitzPatrick Nuclear Power Plant Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (TAC No. ME2810)  
James A. FitzPatrick Nuclear Power Plant  
Docket No. 50-333  
License No. DPR-59

- References:
1. Entergy Letter, JAFP-09-0132, Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (TAC No. ME2810), dated November 23, 2009
  2. NRC Request For Additional Information Regarding James A. FitzPatrick Nuclear Power Plant Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (TAC No. ME2810), dated January 6, 2010

Dear Sir or Madam:

On November 23, 2009 Entergy Nuclear Operations, Inc. (ENO), submitted an application for amendment to the Technical Specifications (TS) for the James A. FitzPatrick Nuclear Power Plant (JAF), that would revise the surveillance testing requirements for safety/relief valves [Reference 1]. On January 6, 2010 JAF received a request for additional information from the Nuclear Regulatory Commission (NRC) staff [Reference 2]. That request was clarified in conference calls with the staff on January 7, 2010 and February 17, 2010.

Based on the clarifying discussions with the staff, ENO is revising the amendment application. This submittal replaces the amendment application, submitted by Reference 1, in its entirety.

Attachment 1 provides a brief response to each request for additional information question; Attachment 2 provides a revised application for amendment to modify the TS requirements on testing of safety/relief valves; Attachment 3 provides the proposed TS changes on marked up pages; Attachment 4 provides the proposed TS changes in final typed format with change bars; and Attachment 5 provides the proposed TS Bases changes on marked up pages.

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The TS Bases changes are provided for NRC information only. The final TS Bases pages will be submitted with a future update in accordance with TS 5.5.11, "Technical Specifications (TS) Bases Control Program."

ENO requests NRC approval of the proposed TS amendment, as revised, by July 31, 2010, with the amendment being implemented within 60 days from approval.

In accordance with 10 CFR 50.91, a copy of this revised application, with the associated attachments, is being provided to the designated New York State official.

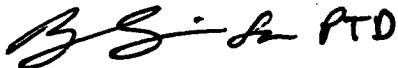
There are no new commitments made in this letter.

Questions concerning this submittal may be addressed to Mr. Joseph Pechacek, Licensing Manager, at (315) 349-6766.

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

Executed on the 18<sup>th</sup> day of March 2010.

Sincerely,



Pete Dietrich  
Site Vice President - JAF

PD/JP/ed

- Attachments:
1. Responses to Request for Additional Information Questions
  2. Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (Revised)
  3. Proposed Technical Specification Changes (Marked up) (Revised)
  4. Proposed Technical Specification Changes (Final typed) (Revised)
  5. Proposed Technical Specification Bases Changes (Marked up) (Information Only) (Revised)

cc: next page

cc:

Regional Administrator, Region I  
U. S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406-1415

Resident Inspector's Office  
U.S. Nuclear Regulatory Commission  
James A. FitzPatrick Nuclear Power Plant  
P.O. Box 136  
Lycoming, NY 13093

Mr. Bhalchandra Vaidya, Project Manager  
Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Mail Stop O-8-C2A  
Washington, DC 20555-0001

Mr. Paul Eddy  
New York State Department of Public Service  
3 Empire State Plaza, 10<sup>th</sup> Floor  
Albany, NY 12223

Mr. Francis J. Murray Jr., President  
New York State Energy and Research Development Authority  
17 Columbia Circle  
Albany, NY 12203-6399

**JAFP-10-0039**

**Attachment 1**

**Responses to Request for Additional Information Questions**

**(2 Pages)**

## Responses to Request for Additional Information Questions

### Question:

“Current TS Surveillance Requirements (SRs) 3.4.3.2 and 3.5.1.13 require that the two solenoid operated valves (SOVs) for each S/RV be tested every 24 months on a staggered basis. Attachment 1 to the license amendment request states that SOV functional tests will be performed once per operating cycle. What license condition will require the SOVs be tested once per operating cycle after TS SRs 3.4.3.2 and 3.5.1.13 are deleted?”

### Response:

The revised application retains SRs 3.4.3.2 and 3.5.1.13. The revised application changes the SR frequency to, “In accordance with the Inservice Testing Program.” The Inservice Testing (IST) Program requires periodic testing of the SOVs, and that testing is part of the overlapping testing credited for meeting these surveillances. The specific testing is described in more detail in the Technical Analysis section (Section 4) of the revised amendment application provided in Attachment 2.

### Question:

“Current TS SRs 3.4.3.2 and 3.5.1.13 require that each S/RV be manually actuated on a 24 month interval. What license condition or series of overlapping license conditions will require that the S/RV main stage and pilot assemblies be capable of manual actuation after TS SRs 3.4.3.2 and 3.5.1.13 are deleted and at what intervals will this be performed?”

### Response:

The revised application retains SRs 3.4.3.2 and 3.5.1.13. The revised application describes the series of overlapping tests that will be used to meet this requirement. Discussion of these tests will also be added to the Technical Specification Bases as shown in the revised mark up included in Attachment 5 to this submittal.

The frequency of the surveillances will be revised to read “In accordance with the Inservice Testing Program.” ASME OM Code Section I-3400, “Disposition After Testing or Maintenance” addresses the testing required on refurbished main steam pressure relief valves with auxiliary actuating devices. Specifically paragraph I-3410 (c) states, “Refurbished equipment shall be subjected to the test(s) specified in I-3310, as applicable. If disassembly includes valve disk (main) components, then valve disk stroke capability shall be verified by mechanical examination or tests.”

## Responses to Request for Additional Information Questions

### Question:

“As stated in the TS Bases for SR 3.4.3.2 (and SR 3.5.1.13), the specified safety function for the S/RVs is to mechanically open to relieve excess pressure when the lift setpoint is exceeded. In order to relieve pressure, an open flow path must exist between the Main Steam lines and the Suppression pool. Among other things, SR 3.4.3.2 (and SR 3.5.1.13) verifies that, mechanically, the valve is functioning properly (as installed) and no blockage exists in the valve discharge line (as installed). The licensee has proposed the deletion of SR 3.4.3.2 (and SR 3.5.1.13) without proposing an alternate method to verify that the S/RVs, as installed, can perform their specified safety function and no blockage exists in the valve discharge line. With proposed deletion of SR 3.4.3.2 (and SR 3.5.1.13), please provide justification as to how the licensee would meet the TS Bases Requirements ‘to verify that the S/RVs, as installed, can perform their specified safety function and no blockage exists in the valve discharge line.’ “

### Response:

The revised application retains SRs 3.4.3.2 and 3.5.1.13. The SRs remain in the Technical Specifications, however, the frequency will be revised to reflect that the SRs are conducted “In accordance with the Inservice Testing Program.”

Additionally, the Technical Specification Bases for these two SRs will be revised to discuss the tests that are used to meet the requirement. The amendment application, as revised, explains how a series of overlapping tests will verify proper functioning of the valves. The maintenance and foreign material exclusion programs will provide assurance that the valves and discharge piping remain free of obstructions.

**JAFP-10-0039**

**Attachment 2**

**Application for Amendment to Modify the Technical Specifications Requirements  
for Testing of Safety/Relief Valves (Revised)  
(7 Pages)**

## Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (Revised)

### 1.0 DESCRIPTION

The proposed amendment would modify the Technical Specifications (TS) requirements for testing of the James A. FitzPatrick Nuclear Power Plant (JAF) Safety/Relief Valves (SRVs) by replacing the current requirement to manually actuate each SRV during plant startup with a requirement to verify that each valve is capable of being opened. The verification of that capability would be satisfied by a series of overlapping tests that demonstrate the required functions of successive valve stages. Elimination of the manual actuation requirement is desirable to decrease the potential for SRV leakage and spurious SRV openings.

The current 24-month frequency for the Surveillance Requirements (SR) would be revised to be "In accordance with the Inservice Testing Program." This frequency would allow crediting IST Program tests that are performed at frequencies other than 24-months.

### 2.0 PROPOSED CHANGES

Current TS Surveillance Requirement (TSSR) 3.4.3.2 states, "Verify each required SRV opens when manually actuated." TSSR 3.5.1.13 likewise states, "Verify each required ADS valve opens when manually actuated." The proposed amendment would change both TSSRs to verify each required valve "is capable of being opened." The current Frequency for both TSSRs is "24 months on a STAGGERED TEST BASIS for each valve solenoid"; this would be changed to state, "In accordance with the Inservice Testing Program."

Both TSSRs are 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 Bases pages are attached for information, but do not require NRC approval.

### 3.0 BACKGROUND

SRVs currently installed at JAF are Target Rock model 7567F two-stage safety/relief valves. JAF plans to replace some or all of these valves with Target Rock model 0867F three-stage SRVs. Eleven SRVs are installed on the main steam lines between the reactor vessel and the inboard main steam isolation valves. Each SRV discharges via a separate tailpipe to a point below the water level in the suppression pool. SRVs open:

- in the safety mode on high reactor pressure, to provide primary overpressure protection to the reactor coolant pressure boundary;
- in the relief mode when actuated by the SRV Electric Lift logic on high reactor pressure, as a backup to the safety mode actuation;



## Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (Revised)

- in the relief mode when manually actuated by individual control switches in the Control Room, or by individual control switches in the Remote Shutdown system; and
- for seven of the eleven SRVs, in the relief mode when actuated by the Automatic Depressurization System (ADS) logic of the Emergency Core Cooling Systems (ECCS). The ADS function is to rapidly reduce reactor pressure to within the capacity of low pressure ECCS pumps in the event of a small or intermediate break Loss of Coolant Accident with the High Pressure Coolant Injection System (HPCI) unable to maintain level due to equipment failure or break size.

Experience in the industry and at JAF has shown that manual actuation of SRVs during plant operation leads to valve seat leakage. In particular, manual actuation testing has been the principle cause of main stage seat leakage at JAF. SRV leakage is routed to the suppression pool; the increased heat and fluid additions to the suppression pool require more frequent suppression pool cooling and pump-down operations. Main stage seat leakage also tends to mask the indications of pilot stage seat leakage; pilot stage leakage can cause maloperation of the SRV, including spurious actuation and/or failure to reclose after actuation. Excessive leakage of either stage requires plant shutdown to replace the leaking SRV.

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 should be avoided. NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," NUREG-0123, "Standard Technical Specifications for General Electric Boiling Water Reactors," and NUREG-0626, "Generic Evaluation of Feedwater Transients and Small Break Loss-of-Coolant Accidents in GE-Designed Operating Plants and Near-Term Operating License Applications" also recommend reducing the number of challenges to the SRVs.

### 4.0 TECHNICAL ANALYSIS

The manual actuation test currently prescribed in TSSRs 3.4.3.2 and 3.5.1.13 provides demonstration of the mechanical operation of the SRVs, and overlaps with other testing to demonstrate that the functions of the SRVs can be performed. The manual actuation test is performed once per operating cycle (two years), on a staggered test basis for the two SRV solenoids, so that each solenoid valve is tested every two cycles (four years).

The proposed testing uses a series of overlapping tests to demonstrate these functions. Specifically:

- The simulated automatic actuation test specified in TSSR 3.5.1.11, and additional surveillances associated with LCOs 3.3.5.1 and 3.3.3.2 demonstrate the ability of various logics and controls to actuate the SRVs up to the point of

**Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (Revised)**

energizing the solenoids. These tests are performed once per operating cycle (two years).

- A solenoid valve (SOV) functional test will be performed in situ for each SRV solenoid valve once per operating cycle. In the SOV functional test for two-stage SRVs, a test rig with a calibrated 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. In the SOV test for three-stage SRVs the SOVs will be connected to the actuator and the test will include a dry lift of the actuator, with observation of actuator stem movement. This test demonstrates that when the solenoid is energized, it applies pneumatic pressure to the SRV actuator.
- An SRV actuator functional test will be performed at an offsite test facility as part of certification testing for each SRV pilot. Certification test intervals are determined in accordance with the Inservice Testing Program, which limits the maximum interval of service to six years under conditions described in JAF Relief Request VRR-06; typically, two-stage pilots are in service for a maximum of one operating cycle (two years). In the actuator functional test, the solenoid valve will be energized, the actuator will stroke, and the actuator pilot rod lift will be measured. Rod movement measurement will be performed using calibrated equipment and will be recorded in the test documentation package. Three-stage pilot testing will be performed in the same manner and at the same frequency, as stated in NRC approved Relief Request VRR-06. This test demonstrates pilot rod movement when actuated in the relief mode.
- Setpoint testing is performed using steam at the offsite test facility as part of certification testing for each SRV pilot, at intervals determined in accordance with the Inservice Testing Program. This test is the existing test required by TSSR 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 actuator functional test to demonstrate that the pilot stage will actuate in the relief mode.
- Main stage certification testing will be performed using steam at the offsite test facility at intervals determined in accordance with the Inservice Testing Program. Currently the Inservice Testing Program requires one-third of the SRV main stages to be replaced each outage. ASME OM Code Section I-3400, "Disposition After Testing or Maintenance" addresses the testing required on refurbished main steam pressure relief valves with auxiliary actuating devices. Specifically paragraph I-3410 (c) states, "Refurbished equipment shall be subjected to the test(s) specified in I-3310, as applicable. If disassembly includes valve disk (main) components, then valve disk stroke capability shall be verified by mechanical examination or tests." Therefore, the operation of the main stages is verified at least every six years per approved JAF Relief Request VRR-06.

This test is the same as the existing certification test. Due to test facility limitations, the main stage is tested with a flow restricting device in the discharge

**Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (Revised)**

path to limit steam flow; this device does not restrict movement of the main stage disc. Main stage certification testing demonstrates that the main stage will open and port steam when actuated by the installed pilot stage.

TSSR 3.0.1 Bases states in part, "Surveillances may be performed by means of any series of sequential, overlapping, or total steps provided the entire Surveillance is performed within the specified frequency." Whereas the above steps demonstrate the required safety functions, and whereas the testing frequency is once per operating cycle unless a longer frequency is specified by the Inservice Testing Program, the proposed testing satisfies this Bases statement.

The current Bases for these SRs state "A manual actuation of each required S/RV is performed while bypassing main steam flow to the condenser and observing  $\geq 10\%$  closure of the turbine bypass valves to verify that, **mechanically, the valve is functioning properly and no blockage exists in the valve discharge line** (emphasis added)." 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 mechanical functioning and unobstructed steam flow capability without periodic actuation testing. JAF has had no instance of test failure due to inadequate steam flow.

Failures of the manual actuation test have been uncommon. 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 646). 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. JAF maintenance practice is to disassemble, refurbish, and retest each main stage following any removal from service; this practice would detect time-based degradation such as that involved in the Hatch event prior to main stage failure. Based on NRC approval of JAF Relief Request VRR-06, the JAF IST Program requires that each SRV be disassembled and refurbished every six years.

The test requirements described above were reviewed by NRC in regard to JAF Relief Request VRR-06. As stated in the associated Safety Evaluation Report (ADAMS Ascension Number ML 092730032), "the NRC staff determines that the proposed alternative described in Relief Request VRR-06, Revision 1, provides an acceptable level of quality and safety and provides reasonable assurance that the SRVs are operationally ready. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i) and 10 CFR 50.55a(f)(4)(iv) for the portions of the later ASME OM Code edition and addenda, and is in compliance with the ASME OM Code's requirements."

The Bases for these SRs state, "...valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME Code requirements, prior to valve installation." The proposed changes are consistent with this statement.

**Application for Amendment to Modify the Technical Specifications Requirements for  
Testing of Safety/Relief Valves (Revised)**

**5.0 REGULATORY SAFETY ANALYSIS**

**5.1 No Significant Hazards Consideration**

- 1. Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?**

**Response: No.**

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 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 and that the valves and discharge lines are free of obstructions. 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 stages 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 Technical Specifications (TS) changes. Therefore, the consequences of accidents mitigated by the SRVs will not increase.

Certain SRV malfunctions are included in the FSAR safety analyses. Specifically, the plant safety analyses include the inadvertent opening of an SRV and a stuck open SRV. By not actuating the SRVs during plant operation for testing and thus reducing the incidence of pilot stage leakage of the SRVs, the proposed testing eliminates 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.

**Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (Revised)**

- 2. Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?**

**Response: No.**

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 or 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 likelihood and consequences of 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.

- 3. Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?**

**Response: No.**

Overpressure protection of the reactor coolant pressure boundary is based on the SRV setpoints and total relief capacity. Setpoint is verified at an offsite testing facility; this requirement is not altered by the proposed change. Relief capacity of each SRV is determined by valve geometry, which is also not altered by the test methods. The margin of safety in the Loss of Coolant Accident analysis due to operation of the Automatic Depressurization System is also based on total relief capacity of the associated SRVs. The proposed change in surveillance test methods demonstrates the operability of the SRVs, but does not alter the critical parameters that affect the margin of safety in analyses involving the SRV functions. Therefore, the proposed change does not involve a significant reduction in any margin of safety.

**5.2 Applicable Regulatory Requirements / Criteria**

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 and 3.5.1 both 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 operation of the SRVs, and therefore, are sufficient to ensure that the limiting conditions for operation are met.

## **Application for Amendment to Modify the Technical Specifications Requirements for Testing of Safety/Relief Valves (Revised)**

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.

### **6.0 ENVIRONMENTAL ASSESSMENT**

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

### **7.0 PRECEDENT**

NUREG-1482 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 (SRVs). Both Appendix I to the ASME OM Code and the plant-specific TS require stroke testing of SRVs after they are reinstalled following maintenance activities. Several licensees have determined that in situ testing of the SRVs 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 ASME OM Code and TS."

The NRC has approved similar testing methods for Hatch, Hope Creek, and Limerick (prior to Limerick's conversion to three-stage SRVs).

Similar testing has 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 high probability of causing unseating or leakage of the pilot stage, which can lead to spurious actuation or failure to reclose of the SRV. JAF will perform a dry lift of the actuator, with observation of actuator stem movement on three-stage Target Rock SRVs.

**JAFP-10-0039**

**Attachment 3**

**Proposed Technical Specification Changes (Marked up) (Revised)**

**Pages**

**FOL Page 3**

**3.4.3-2**

**3.5.1-7**

- (4) ENO 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 without restriction to chemical or physical form, for sample analysis or instrument calibration; or associated with radioactive apparatus, components or tools..
- (5) Pursuant to the Act and 10 CFR Parts 30 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 renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

ENO is authorized to operate the facility at steady state reactor core power levels not in excess of 2536 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A , as revised through Amendment No. 295, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Fire Protection

ENO shall implement and maintain in effect all provisions of the approved fire protections program as described in the Final Safety Analysis Report for the facility and as approved in the SER dated November 20, 1972; the SER Supplement No. 1 dated February 1, 1973; the SER Supplement No. 2 dated October 4, 1974; the SER dated August 1, 1979; the SER Supplement dated October 3, 1980; the SER Supplement dated February 13, 1981; the NRC Letter dated February 24, 1981; Technical Specification Amendments 34 (dated January 31, 1978), 80 (dated May 22, 1984), 134 (dated July 19, 1989), 135 (dated September 5, 1989), 142 (dated October 23, 1989), 164 (dated August 10, 1990), 176 (dated January 16, 1992), 177 (dated February 10, 1992), 186 (dated February 19, 1993), 190 (dated June 29, 1993), 191 (dated July 7, 1993), 206 (dated February 28, 1994) and 214 (dated June 27, 1994); and NRC Exemptions and associated safety evaluations dated April 26, 1983, July 1, 1983, January 11, 1985, April 30, 1986, September 15, 1986 and September 10, 1992 subject to the following provision:



**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.4.3.1      Verify the safety function lift setpoint of the required S/RVs is <math>1145 \pm 34.3</math> psig. Following testing, lift settings shall be within <math>\pm 1\%</math>.</p>	<p>In accordance with the Inservice Testing Program</p>
<p>SR 3.4.3.2      <del>NOTE</del>  <del>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.</del></p> <p>Verify each required S/RV opens when manually actuated <b>is capable of being opened.</b></p>	<p><del>24 months on a STAGGERED TEST BASIS for each solenoid</del>  <u>In accordance with the Inservice Test Program</u></p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.5.1.13</p> <hr/> <p style="text-align: center;"><del>NOTE</del></p> <hr/> <p><del>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.</del></p> <hr/> <p>Verify each required ADS valve opens when manually actuated <u>is capable of being opened.</u></p>	<p><del>24 months on a STAGGERED TEST BASIS for each solenoid</del> <u>In accordance with the Inservice Test Program</u></p>

**JAFP-10-0039**

**Attachment 4**

**Proposed Technical Specification Changes (Final Typed)  
(Revised)**

**Pages**

**FOL Page 3**

**3.4.3-2**

**3.5.1-7**

- (4) ENO 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 without restriction to chemical or physical form, for sample analysis or instrument calibration; or associated with radioactive apparatus, components or tools..
- (5) Pursuant to the Act and 10 CFR Parts 30 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 renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

ENO is authorized to operate the facility at steady state reactor core power levels not in excess of 2536 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A , as revised through Amendment No. , are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Fire Protection

ENO shall implement and maintain in effect all provisions of the approved fire protections program as described in the Final Safety Analysis Report for the facility and as approved in the SER dated November 20, 1972; the SER Supplement No. 1 dated February 1, 1973; the SER Supplement No. 2 dated October 4, 1974; the SER dated August 1, 1979; the SER Supplement dated October 3, 1980; the SER Supplement dated February 13, 1981; the NRC Letter dated February 24, 1981; Technical Specification Amendments 34 (dated January 31, 1978), 80 (dated May 22, 1984), 134 (dated July 19, 1989), 135 (dated September 5, 1989), 142 (dated October 23, 1989), 164 (dated August 10, 1990), 176 (dated January 16, 1992), 177 (dated February 10, 1992), 186 (dated February 19, 1993), 190 (dated June 29, 1993), 191 (dated July 7, 1993), 206 (dated February 28, 1994) and 214 (dated June 27, 1994); and NRC Exemptions and associated safety evaluations dated April 26, 1983, July 1, 1983, January 11, 1985, April 30, 1986, September 15, 1986 and September 10, 1992 subject to the following provision:

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	Verify the safety function lift setpoint of the required S/RVs is $1145 \pm 34.3$ psig. Following testing, lift settings shall be within $\pm 1\%$ .	In accordance with the Inservice Testing Program
SR 3.4.3.2	Verify each required S/RV is capable of being opened.	In accordance with the Inservice Testing Program.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.5.1.13      Verify each required ADS valve is capable of being opened.	In accordance with the Inservice Testing Program

**JAFP-10-0039**

**Attachment 5**

**Proposed Technical Specification Bases Changes (Marked up)  
(Information Only) (Revised)**

**Pages**

**B 3.4.3-4**

**B 3.5.1-16**



## BASES

SURVEILLANCE  
REQUIREMENTS  
(continued)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 S/RV is performed to verify that mechanically the valve is functioning properly. For both two-stage and three-stage S/RVs, this requires that the pilot stage be tested to show that it actuates when required and opens the associated main stage. Likewise, the main stage must be tested to show that it 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, at intervals determined in accordance with the Inservice Testing Program. Maintenance procedures ensure that the S/RV actuators and main stages are correctly installed in the plant, and that the S/RV 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 S/RVs will operate as required, while minimizing the challenges to the S/RVs and the likelihood of leakage or spurious operation. While two-stage actuator assemblies are not tested in-situ due to a high probability of causing unseating or leakage of the pilot stage which can lead to spurious actuation or failure to reclose, installed three-stage actuator assemblies are dry lift tested after installation.

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 S/RV. However, the solenoid valves are also tested in the IST program to support relief mode operation of the S/RVs for other functions.

~~A manual actuation of each required S/RV is performed while bypassing main steam flow to the condenser and observing  $\geq 10\%$  closure of the turbine bypass valves to verify that, mechanically, the valve is functioning properly and no blockage exists in the valve discharge line. This can also be demonstrated by the response of the turbine control 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 S/RVs divert steam flow upon opening. Sufficient time is therefore allowed after the required~~



BASES

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~~pressure and flow are achieved to perform this test. Adequate pressure at which this test is to be performed is 970 psig (the pressure consistent with vendor recommendations). Adequate steam flow is represented by two or more turbine bypass valves open, or total steam flow  $\geq 10^6$  lb/hr. These conditions will require the plant to be in MODE 1, which has been shown to be an acceptable condition to perform this test. This test causes a small neutron flux transient which may cause a scram in MODE 2 while operating close to the Average Power Range Monitors Neutron Flux — High (Startup) Allowable Value. 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 steam pressure and flow are reached is sufficient to achieve stable conditions for testing and provide 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 S/RV is considered OPERABLE.~~

~~The 24 month on a STAGGERED TEST BASIS Frequency ensures that each solenoid for each S/RV is alternately tested. The 24 month Frequency was developed based on the S/RV tests required by the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 7). Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

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(continued)

## BASES

SURVEILLANCE  
REQUIREMENTSSR 3.5.1.12 (continued)

The Frequency of 24 months is acceptable, given plant conditions required to perform the test and the other requirements existing to ensure adequate LPCI inverter performance during the 24 month interval. In addition, the Frequency is intended to be consistent with expected fuel cycle lengths.

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. For both two-stage and three-stage S/RVs, tests are required to demonstrate:

- That each ADS S/RV solenoid valve ports pneumatic pressure to the associated S/RV actuator when energized;
- That each ADS S/RV pilot stage actuates to open the associated main stage when the pneumatic actuator is pressurized; and
- That each ADS S/RV 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, at intervals determined in accordance with the Inservice Testing Program. Maintenance procedures ensure that the S/RV actuators and main stages are correctly installed in the plant, and that the S/RV 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. While two-stage actuator assemblies are not tested in-situ due to a high probability of causing unseating or leakage of the pilot stage which can lead to spurious actuation or failure to reclose, installed three-stage actuator assemblies are dry lift tested after installation. SR 3.5.1.11 and the LOGIC SYSTEM FUNCTIONAL Test performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety



## BASES

**function.**

A manual actuation of each required ADS valve is performed while bypassing main steam flow to the condenser and observing  $\geq 10\%$  closure of the turbine bypass valves to verify that the valve and Solenoid are functioning properly and that no blockage exists in the S/RV discharge lines. This can also be 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  $\geq 970$  psig (the pressure consistent with vendor recommendations). Adequate steam flow is represented by at least two or more turbine bypass valves open or total steam flow  $\geq 10^6$  lb/hr. These conditions will require the plant to be in MODE 1, which has been shown to be an acceptable condition to perform this test. This test causes a small neutron flux transient which may cause a scram in MODE 2 while operating close to the Average Power Range Monitors Neutron Flux—High (Startup) Allowable Value. Reactor startup is allowed prior to performing this SR because valve OPERABILITY and the setpoints for over pressure protection are verified per ASME 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 and flow are reached is sufficient to achieve stable conditions and provide adequate time to complete the Surveillance. SR 3.5.1.11 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.

(continued)