

ATTACHMENT I TO JPN-94-051
PROPOSED TECHNICAL SPECIFICATION
CHANGES REGARDING
SRV TESTING REQUIREMENTS

(JPTS-94-004)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

JAFNPP

3.6 (cont'd)

E. Safety/Relief Valves

1. During reactor power operating conditions and prior to startup from a cold condition, or whenever reactor coolant pressure is greater than atmosphere and temperature greater than 212 °F, the safety mode of at least 9 of 11 safety/relief valves shall be operable. The Automatic Depressurization System valves shall be operable as required by specification 3.5.D.

4.6 (cont'd)

E. Safety/Relief Valves

1. At least 5 of the 11 safety/relief valves shall be bench checked or replaced with bench checked valves once each operating cycle. All valves shall be tested every two operating cycles.* The testing shall demonstrate that each valve tested actuates at 1110 psig $\pm 3\%$. Following testing, lift settings shall be 1110 psig $\pm 1\%$

* The current surveillance interval for bench checking safety/relief valves is extended until the end of R11/C12 refueling outage scheduled for January, 1995. This is a one-time extension, effective only for this surveillance interval. The next surveillance interval will begin after the completion of the bench check testing and after the safety/relief valves are declared operable.

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3.6 (cont'd)

2. If Specification 3.6.E.1 is not met, the reactor shall be placed in a cold condition within 24 hours.
3. Low power physics testing and reactor operator training shall be permitted with inoperable components as specified in Specification 3.6.E.1 above, provided that reactor coolant temperature is ≤ 212 °F and the reactor vessel is vented or the reactor vessel head is removed.
4. The provisions of Specification 3.0.D are not applicable.
5. The safety and safety/relief valves are not required to be operable during hydrostatic pressure and leakage testing with reactor coolant temperatures between 212 °F and 300 °F and irradiated fuel in the reactor vessel provided all control rods are inserted.

4.6 (cont'd)

2. At least one safety/relief valve shall be disassembled and inspected once/operating cycle.*
3. The integrity of the nitrogen system and components which provide manual and ADS actuation of the safety/relief valves shall be demonstrated at least once every 3 months.
4. Manually open each safety/relief valve while bypassing steam to the condenser and observe a $\geq 10\%$ closure of the turbine bypass valves, to verify that the safety/relief valve has opened. This test shall be performed at least once each operating cycle while in the RUN mode and within the first 12 hours after steam pressure and flow are adequate to perform the test.

* The current surveillance interval for disassembling and inspecting at least one safety/relief valve is extended until the end of R11/C12 refueling outage scheduled for January, 1995. This is a one-time extension, effective only for this surveillance interval. The next surveillance interval will begin upon completion of this surveillance.

3.6 and 4.6 BASES (cont'd)

E. Safety/Relief Valves

The safety/relief valves (SRVs) have two modes of operation; the safety mode or the relief mode. In the safety mode (or spring mode of operation) the spring loaded pilot valve opens when the steam pressure at the valve inlet overcomes the spring force holding the pilot valve closed. The safety mode of operation is required during pressurization transients to ensure vessel pressures do not exceed the reactor coolant pressure safety limit of 1,375 psig.

In the relief mode the spring loaded pilot valve opens when the spring force is overcome by nitrogen pressure which is provided to the valve through a solenoid operated valve. The solenoid operated valve is actuated by the ADS logic system (for those SRVs which are included in the ADS) or manually by the operator from a control switch in the main control room or at the remote ADS panel. Operation of the SRVs in the relief mode for the ADS is discussed in the Bases for Specification 3.5.D.

Experiences in safety/relief valve testing have shown that failure or deterioration of safety/relief valves can be adequately detected if at least 5 of the 11 valves are bench tested once per operating cycle so that all valves are tested every two operating cycles. Furthermore, safety/relief valve testing experience has demonstrated that safety/relief valves which actuate within $\pm 3\%$ of the design pressure setpoint are considered operable (see ANSI/ASME OM-1-1981). The safety bases for a single nominal valve opening pressure of 1110 psig are described in NEDC-31697P, "Updated SRV Performance Requirements for the JAFNPP." The single nominal setpoint is set below the reactor vessel design pressure (1250 psig) per the requirements of Article 9 of the ASME Code - Section III, Nuclear Vessels. The setting of 1110 psig preserves the safety margins associated

with the HPCI and RCIC turbine overspeed systems and the Mark I torus loading analyses. Based on safety/relief valve testing experience and the analysis referenced above, the safety/relief valves are bench tested to demonstrate that in-service opening pressures are within the nominal pressure setpoints $\pm 3\%$ and then the valves are returned to service with opening pressures at the nominal setpoints $\pm 1\%$. In this manner, valve integrity is maintained from cycle to cycle.

The analyses with NEDC-31697P also provide the safety basis for which 2 SRVs are permitted inoperable during continuous power operation. With more than 2 SRVs inoperable, the margin to the reactor vessel pressure safety limit is significantly reduced, therefore, the plant must enter a cold condition within 24 hours once more than 2 SRVs are determined to be inoperable. (See reload evaluation for the current cycle).

A manual actuation of each SRV is performed to demonstrate that the valves are mechanically functional and that no blockage exists in the valve discharge line. Valve opening is confirmed by monitoring the response of the turbine bypass valves and the SRV acoustic monitors. Adequate reactor steam dome pressure must be available to avoid damaging the valve. Adequate steam flow is required to ensure that reactor pressure can be maintained during the test. Testing is performed in the RUN mode to reduce the risk of a reactor scram in response to small pressure fluctuations which may occur while opening and reclosing the valves.

Low power physics testing and reactor operator training with inoperable components will be conducted only when the safety/relief valves are

ATTACHMENT II to JPN-94-051

SAFETY EVALUATION FOR PROPOSED
TECHNICAL SPECIFICATION CHANGES
REGARDING SRV TESTING REQUIREMENTS

(JPTS-94-004)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

Docket No. 50-333

DPR-59

SAFETY EVALUATION

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I. DESCRIPTION OF PROPOSED CHANGES

This application for an amendment to the James A. FitzPatrick Technical Specifications proposes to revise the surveillance requirement for Reactor Coolant System (RCS) safety/relief valve testing so that the time allowed for testing does not start before the conditions necessary for these tests exist.

Editorial changes to clarify the intent of specifications involving safety/relief valve testing and performance requirements are also proposed.

Minor changes in format, such as type font, margins or hyphenation, are not described in this submittal. These changes are typographical in nature and do not affect the content of the Technical Specifications.

Plant Conditions for Safety/Relief Valve Testing

1. Page 143, Specification 4.6.4, last sentence, replace the phrase:

"...within the first 12 hours of continuous power operation at a reactor steam dome pressure of ≥ 940 psig."

with:

"...while in the RUN mode and within the first 12 hours after steam pressure and flow are adequate to perform the test."

2. Page 152, Bases 3/4.6.E, fifth paragraph:

Replace the second and third sentences, beginning with "Adequate reactor steam dome pressure..." with the following:

"Valve opening is confirmed by monitoring the response of the turbine bypass valves and the SRV acoustic monitors. Adequate reactor steam dome pressure must be available to avoid damaging the valve. Adequate steam flow is required to ensure that reactor pressure can be maintained during the test. Testing is performed in the RUN mode to reduce the risk of a reactor scram in response to small pressure fluctuations which may occur while opening and reclosing the valves."

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Editorial Changes

1. Page 142a, Specification 4.6.E.1, replace the phrase:

"...the 11 safety/relief valves actuate at 1110 psig $\pm 3\%$."

with:

"...each valve tested actuates at 1110 psig $\pm 3\%$."

2. Page 142a, Specification 4.6.E.1, add new sentence:

"Following testing, lift settings shall be set at 1110 psig $\pm 1\%$."

3. Page 152, fifth paragraph:

Replace the word "verify" in the first sentence with "demonstrate."

4. Page 152, last paragraph. Delete the words "and safety" from the phrase "... safety/relief and safety valves..."

II. PURPOSE OF THE PROPOSED CHANGES

Plant Conditions for Safety/Relief Valve Testing

A 12 hour time limit was recently added (Reference 2) to Surveillance Requirement 4.6.4 to perform the manual testing of the RCS safety/relief valves. The 12 hour time limit, included in the Standard Technical Specifications (Reference 3), establishes a reasonable time limit for plant operators to conduct valve testing. However, as presently worded, the 12 hour time period begins before appropriate plant conditions have been established to perform the test.

One SRV has a steam flow capacity of approximately 700,000 lb/hr with the RCS pressure at 940 psig. This corresponds to a reactor power level of nearly 7%. Conducting SRV testing before an appropriate steaming rate is established will result in a undesirable pressure transient in the RCS. The proposed changes will specify that steam flow, in addition to RCS pressure, is a prerequisite to conducting valve testing. The 12 hour time limit will remain in effect, but will not begin until necessary test conditions are established. The revised specification is consistent with a recent amendment granted by the NRC for another facility (Reference 4).

Editorial Changes

1. Specification 4.6.E.1 describes the surveillance requirement for demonstrating the lift setpoint of the safety/relief valves. Approximately half of the 11 valves are tested each operating cycle. The present wording of the specification could be

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misinterpreted to require that the lift setpoint be demonstrated for all 11 valves each operating cycle. The proposed changes make it clear that the lift setpoint can only be demonstrated for those valves that are tested that cycle.

2. The acceptance criterion for the *as-found* safety/relief valve lift setpoint is different from that allowed for the *as-installed* setpoint. This difference is stated in the Bases Section, 3/4.6.E (third paragraph). The changes proposed add a similar sentence to Surveillance Requirement 4.6.E.1.
3. The word 'verify', as used in the FitzPatrick Technical Specifications, ensures that the associated surveillance tests have been performed with satisfactory results in the specified time interval, while the word 'demonstrate' requires the performance of an actual test. This change was made in other sections of the Technical Specifications by Amendment 148 (Reference 5). The word 'demonstrate' is appropriate in this case, since Specification 4.6.E.4 requires actuation of the safety/relief valves.
4. The proposed change to the last paragraph of Bases Section 3/4.6.E eliminates reference to valves which are no longer installed at FitzPatrick. Amendment 13 updated the Technical Specifications to reflect the replacement of two spring safety valves with Target Rock combination safety/relief valves (Reference 6).

III. SAFETY IMPLICATIONS OF THE PROPOSED CHANGES

Plant Conditions for Safety/Relief Valve Testing

The proposed changes do not adversely affect plant safety. The conditions under which valve safety/relief testing are performed are not being changed. The proposed changes allow the time limit specified to conduct valve testing to start after plant conditions required to support valve testing have been established.

Prior to the issuance of Amendment 217 (Reference 2), the manual testing of the safety/relief valves was performed with no time limit specified. The 12 hour time limit was added to improve consistency with the Standard Technical Specifications. The 12 hour period is a somewhat arbitrary value, based on good judgement and experience, to provide a reasonable length of time for plant operators to perform the valve testing.

The purpose of Specification 4.6.E.4 is to demonstrate that the safety/relief valves are functional and that no blockage is present in the valve discharge piping. The testing is conducted during the early stages of power ascension, with reactor power level less than 25% and at a steaming rate which can be accommodated by the turbine bypass valves. FitzPatrick has 11 safety/relief valves with a total discharge capability greater than 80% of the full power steaming rate. Each safety/relief valve has separate discharge piping to the torus so that no common mode failure exists with respect to blockage of the discharge piping. In addition, at least 5 of the 11 safety/relief valves

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are bench checked once each operating cycle (Specification 4.6.E.1). Bench checking is conducted with live steam and includes verifying, or resetting if needed, the lift setpoint. Consequently, there is a high degree of confidence, even before the manual valve testing is performed, that sufficient safety/relief valve capacity is available to provide Reactor Coolant System overpressure protection.

Editorial Changes

These proposed changes are editorial in nature and clarify the intent of the existing Technical Specifications. The changes have no safety implication.

IV. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Operation of the James A. FitzPatrick Nuclear Power Plant in accordance with the proposed amendment would not involve a significant hazards consideration as defined in 10 CFR 50.92, since it would not:

1. involve a significant increase in the probability or consequences of an accident previously evaluated because the proposed changes do not change the test method or conditions under which valve testing may be performed and there is no affect on assumptions used for previously analyzed accidents. The original operating license for FitzPatrick did not specify any time limit for completing manual testing of the safety/relief valves.
2. create the possibility of a new or different kind of accident from those previously evaluated because the proposed amendment does not involve any modification of plant equipment or changes in plant operating conditions.
3. involve a significant reduction in the margin of safety because the proposed amendment makes no changes to the operability or performance requirements for the safety/relief valves including the ADS function. Valve lift setpoints and the minimum number of operable valves required are not affected.

V. IMPLEMENTATION OF THE PROPOSED CHANGES

Implementation of the proposed changes will be accomplished through changes to the plant procedures for testing the safety/relief valves. There are no physical plant modifications required. The proposed changes will not affect the ALARA, Fire Protection, or Security Programs at the FitzPatrick plant, nor will the changes impact the environment.

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VI. CONCLUSION

The changes, as proposed, do not constitute an unreviewed safety question as defined in 10 CFR 50.59. That is, they:

1. will not increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the Safety Analysis Report;
2. will not increase the possibility of an accident or malfunction of a type different than any previously evaluated in the Safety Analysis Report; and
3. will not reduce the margin of safety as defined in the basis for any technical specification.

The changes therefore involve no significant hazards consideration, as defined in 10 CFR 50.92.

VII. REFERENCES

1. NYPA letter W. A. Jcsiger to NRC (JPN-94-013) dated March 2, 1994; "Proposed Changes to the Technical Specifications Regarding Updated SRV Performance Requirements and Miscellaneous Changes (JPTS-89-017)."
2. NRC letter, J. E. Menning to W. J. Cahill, Jr.; regarding issuance of Amendment 217, dated September 28, 1994.
3. NRC NUREG-1433, "Standard Technical Specifications for General Electric Boiling Water Reactors, (BWR / 4)" Revision 0, dated September 1992.
4. NRC letter, D. Pickett to R. Phares; regarding issuance of Amendment 81 for Clinton Power Station, dated July 15, 1993.
5. NRC letter, D. E. LaBarge to J. C. Brons; regarding issuance of Amendment 148, dated December 26, 1989.
6. NRC letter, R. Reid to G. Berry; regarding issuance of Amendment 13, dated March 5, 1976.

ATTACHMENT III TO JPN-94-051

MARKED UP PAGES FOR
PROPOSED TECHNICAL SPECIFICATION
CHANGES REGARDING
SRV TESTING REQUIREMENTS

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2. If Specification 3.6.E.1 is not met, the reactor shall be placed in a cold condition within 24 hours.
3. Low power physics testing and reactor operator training shall be permitted with inoperable components as specified in Specification 3.6.E.1 above, provided that reactor coolant temperature is ≤ 212 °F and the reactor vessel is vented or the reactor vessel head is removed.
4. The provisions of Specification 3.0.D are not applicable.
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4. Manually open each safety/relief valve while bypassing steam to the condenser and observe a $\geq 10\%$ closure of the turbine bypass valves, to verify that the safety/relief valve has opened. This test shall be performed at least once each operating cycle within the first 12 hours of continuous power operation at a reactor steam dome pressure of ≥ 940 psig while in the RUN mode and within the first 12 hours after steam pressure and flow are adequate to perform the test.

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3.6 and 4.6 BASES (cont'd)

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In the relief mode the spring loaded pilot valve opens when the spring force is overcome by nitrogen pressure which is provided to the valve through a solenoid operated valve. The solenoid operated valve is actuated by the ADS logic system (for those SRVs which are included in the ADS) or manually by the operator from a control switch in the main control room or at the remote ADS panel. Operation of the SRVs in the relief mode for the ADS is discussed in the Bases for Specification 3.5.D.

Experiences in safety/relief valve testing have shown that failure or deterioration of safety/relief valves can be adequately detected if at least 5 of the 11 valves are bench tested once per operating cycle so that all valves are tested every two operating cycles. Furthermore, safety/relief valve testing experience has demonstrated that safety/relief valves which actuate within $\pm 3\%$ of the design pressure setpoint are considered operable (see ANSI/ASME OM-1-1981). The safety bases for a single nominal valve opening pressure of 1110 psig are described in NEDC-31697P, "Updated SRV Performance Requirements for the JAFNPP." The single nominal setpoint is set below the reactor vessel design pressure (1250 psig) per the requirements

of Article 9 of the ASME Code - Section III, Nuclear Vessels. The setting of 1110 psig preserves the safety margins associated with the HPCI and RCIC turbine overspeed systems and the Mark I torus loading analyses. Based on safety/relief valve testing experience and the analysis referenced above, the safety/relief valves are bench tested to demonstrate that in-service opening pressures are within the nominal pressure setpoints $\pm 3\%$ and then the valves are returned to service with opening pressures at the nominal setpoints $\pm 1\%$. In this manner, valve integrity is maintained from cycle to cycle.

The analyses with NEDC-31697P also provide the safety basis for which 2 SRVs are permitted inoperable during continuous power operation. With more than 2 SRVs inoperable, the margin to the reactor vessel pressure safety limit is significantly reduced, therefore, the plant must enter a cold condition within 24 hours once more than 2 SRVs are determined to be inoperable. (See reload evaluation for the current cycle).

A manual actuation of each SRV is performed to ~~verify demonstrate~~ that the valves are mechanically functional and that no blockage exists in the valve discharge line. ~~Adequate reactor steam dome pressure must be available to perform this test, in accordance with the manufacturer's recommendations, to avoid damaging the valve. Therefore, plant start up is allowed and sufficient time is provided after the required pressure is achieved (940 psig) to perform this test.~~ [see insert A]

Low power physics testing and reactor operator training with inoperable components will be conducted only when the safety/relief ~~and safety~~ valves are

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INSERT 'A' for 3/4.6.E

Valve opening is confirmed by monitoring the response of the turbine bypass valves and the SRV acoustic monitors. Adequate reactor steam dome pressure must be available to avoid damaging the valve. Adequate steam flow is required to ensure that reactor pressure can be maintained during the test. Testing is performed in the RUN mode to reduce the risk of a reactor scram in response to small pressure fluctuations which may occur while opening and reclosing the valves.