ATTACHMENT I to JPN-95-007

REVISED TECHNICAL SPECIFICATION PAGES FOR
PROPOSED TECHNICAL SPECIFICATION CHANGES

GENERIC LETTER 89-19
REACTOR VESSEL OVERFILL PROTECTION
TRIP INSTRUMENTATION

JPTS-94-006

New York Power Authority

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

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

LIST OF TABLES

3.2 (cont'd)

E. Drywell Leak Detection

The limiting conditions for operation for the instrumentation that monitors drywell leak detection are given in Table 3.2-5.

F. Feedwater Pump Turbine and Main Turbine Trip

The limiting conditions for operation for the instrumentation that provides a feedwater pump turbine and main turbine trip are given in Table 3.2-6.

G. Recirculation Pump Trip

The limiting conditions for operation for the instrumentation that trip(s) the recirculation pumps as a means of limiting the consequences of a failure to scram during an anticipated transient are given in Table 3.2-7.

H. Accident Monitoring Instrumentation

The limiting conditions for operation for the instrumentation that provides accident monitoring are given in Table 3.2-8.

I. 4kv Emergency Bus Undervoltage Trip

The limiting conditions for operation for the instrumentation that prevents damage to electrical equipment or circuits as a result of either a degraded or loss-of-voltage condition on the emergency electrical buses are given in Table 3.2-2.

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Instrumentation shall be calibrated and checked as indicated in Table 4.2-5.

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Instrumentation shall be tested and calibrated as indicated in Table 4.2-6.

G. Recirculation Pump Trip

Instrumentation shall be functionally tested and calibrated as indicated in Table 4.2-7.

System logic shall be functionally tested as indicated in Table 4.2-7.

H. Accident Monitoring Instrumentation

Instrumentation shall be demonstrated operable by performance of a channel check, channel calibration and functional test as indicated in Table 4.2-8, as applicable.

I. Not Used

3.2 BASES (cont'd)

Surveillance Requirement 4.2.J requires that each remote shutdown transfer / isolation switch and control circuit be periodically tested to demonstrate that it is capable of performing its intended function. The requirements of this section apply to each remote shutdown control circuit on the panels listed in Table 3.2-10 and on panels 25ASP-4, 25ASP-5, and 66HV-3B. This demonstration is performed from the remote shutdown panel and locally, as appropriate. This will ensure that if the control room becomes inaccessible, the plant can be placed and maintained in a shutdown condition from the remote shutdown panel and the local control stations.

Three channels of the Reactor Vessel Water Level - High instrumentation are provided as input to a two-out-of-three initiation logic that trips the two feedwater pump turbines and the main turbine. An event involving excessive feedwater flow results in a rising reactor vessel water level, which upon reaching the reactor vessel water level trip setpoint, results in a trip of both feedwater pump turbines, and the main turbine. The feedwater pump turbine trip under these conditions limits further increase in the reactor vessel water level due to feedwater flow. A trip of the main turbine protects the turbine from damage due to excessive water carryover.

TABLE 3.2-6

FEEDWATER PUMP TURBINE AND MAIN TURBINE TRIP INSTRUMENTATION REQUIREMENTS

Minimum Number of Operable Instrument Channels (Notes 1 & 2)	Trip Function	Trip Level Setting	Applicable Modes
3	Reactor Vessel Water Level - High	$\leq$ 222.5 inches above TAF	Thermal Power $\geq$ 25% RTP

NOTES FOR TABLE 3.2-6

1. There shall be three operable instrument channels, except as provided for below:

   a. With one less than the required minimum number of operable instrument channels, either restore the inoperable instrument channel to operable status, or place the inoperable instrument channel in the tripped condition, within 7 days. Otherwise, reduce reactor power to less than 25% rated thermal power within the next 4 hours.

   b. With two or more channels less than the required minimum number of operable instrument channels, restore the feedwater pump turbine and main turbine trip capability within 2 hours. Otherwise, reduce reactor power to less than 25% rated thermal power within the next 4 hours.

2. When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions for Operation and required actions may be delayed for up to 6 hours provided the associated Trip Function maintains feedwater pump turbine and main turbine trip capability.

TABLE 4.2-6

FEEDWATER PUMP TURBINE AND MAIN TURBINE TRIP INSTRUMENTATION TEST AND CALIBRATION REQUIREMENTS

Instrument Channel	Instrument Functional Test Frequency (Note 2)	Logic System Functional Test Frequency	Calibration Frequency	Instrument Check Frequency
Reactor Vessel Water Level - High	Note 1	Once every 24 months	Once every 24 months	Daily

NOTES FOR TABLE 4.2-6

1. Perform the instrument functional test:

   a. During each refueling outage, and

   b. Each time the plant is in cold shutdown for a period of more than 24 hours, unless performed in the previous 92 days.

2. This instrumentation is exempt from the instrument channel functional test definition. The functional test will consist of injecting a simulated electrical signal into the instrument channel as close to the sensor as practicable.

ATTACHMENT II to JPN-95-007

SAFETY EVALUATION FOR PROPOSED TECHNICAL SPECIFICATION CHANGES

GENERIC LETTER 89-19
REACTOR LEVEL OVERFILL PROTECTION TRIP INSTRUMENTATION

JPTS-94-006

New York Power Authority

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

SAFETY EVALUATION FOR
PROPOSED TECHNICAL SPECIFICATION CHANGES
REACTOR VESSEL OVERFILL PROTECTION TRIP INSTRUMENTATION (JPTS-94-006)

I. DESCRIPTION OF THE PROPOSED CHANGES

The following proposed changes to the James A. FitzPatrick Technical Specifications establish operability and surveillance requirements for the reactor vessel overfill protection instrumentation that initiates feedwater pump turbine trips, and a main turbine trip, on high reactor vessel water level.

Page i

Add limiting conditions for operation 3.2.F, "Feedwater Pump Turbine and Main Turbine Trip" to the Table of Contents.

Page v

Add a title for Table 3.2-6: "Feedwater Pump Turbine and Main Turbine Trip Instrumentation Requirements"

Add a title for Table 4.2-6: "Feedwater Pump Turbine and Main Turbine Trip Instrumentation Test and Calibration Requirements"

Page 53

Add Specification 3.2.F as follows:

"Feedwater Pump Turbine and Main Turbine Trip

The limiting conditions for operation for the instrumentation that provides a feedwater pump turbine and main turbine trip are given in Table 3.2-6"

Add Specification 4.2.F as follows:

"Feedwater Pump Turbine and Main Turbine Trip

Instrumentation shall be tested and calibrated as indicated in Table 4.2-6"

Page 60a

Add the following description of the reactor vessel water level trip function to Section 3.2 Bases:

"Three channels of the Reactor Vessel Water Level - High instrumentation are provided as input to a two-out-of-three initiation logic that trips the two feedwater pump turbines and the main turbine. An event involving excessive feedwater flow results in a rising reactor vessel water level, which upon reaching the reactor vessel water level trip setpoint, results in a trip of both feedwater pump turbines, and the main turbine. The feedwater pump turbine trip under these conditions limits further increase in the reactor vessel water level due to feedwater flow. A trip of the main turbine protects the turbine from damage due to excessive water carryover."

Page 76

Add Table 3.2-6, "Feedwater Pump Turbine and Main Turbine Trip Instrumentation Requirements," as shown on revised TS page 76 in Attachment 1. The table establishes operability requirements for the reactor vessel high water level trip function for the feedwater pump turbines and the main turbine. The addition establishes a minimum number of operable channels of three instrument channels when the reactor power is greater than or equal to 25% rated thermal power, and a trip level setting of less than or equal to 222.5 inches above top of active fuel (TAF). An allowable out-of-service time (AOT) of 7 days is permitted by note 1 with one less than the minimum number of operable instrument channels, before the channel must either be restored to an operable status or placed in the tripped condition. The AOT for two or more inoperable instrument channels is 2 hours. Failure to meet these limiting conditions for operation requires a reduction in reactor power to less than 25% rated thermal power within the next 4 hours. Note 2 provides a 6 hour AOT to perform required surveillances provided the trip function maintains feedwater pump turbine and main turbine trip capability.

New Page 84a

Add Table 4.2-6, "Feedwater Pump Turbine and Main Turbine Trip Instrumentation Test And Calibration Requirements." The table establishes the surveillance requirements for the reactor vessel high water level trip function for the feedwater pump turbines and the main turbine as follow:

Instrument Functional Test Frequency: Note 1

Logic System Functional Test: Once every 24 months

Instrument Calibration Frequency: Once every 24 months

Instrument Check Frequency: Daily

Note 1. Perform the instrument functional test:

a. During each refueling outage, and

b. Each time the plant is in cold shutdown for a period of more than 24 hours, unless performed in the previous 92 days.

Define the instrument functional test with note 2 as follows:

"This instrumentation is exempt from the instrument channel functional test definition. The functional test will consist of injecting a simulated electrical signal into the instrument channel as close to the sensor as practicable."

II. PURPOSE OF THE PROPOSED CHANGES

In Generic Letter 89-19 (Reference 1), the NRC recommended that operability and surveillance requirements for the reactor vessel overfill protection be included in all BWR plant Technical Specifications (TS). The generic letter defined the overfill protection as a trip of the main feedwater pump turbines on a reactor high water level signal. In Reference 2, the NRC concluded that the FitzPatrick plant did "not have appropriate Technical Specifications (TS) governing the availability of the main feedwater overfill protection system instrumentation," and that "the TS should be revised to reflect the plant as-built configuration." The NRC requested that the revised TS "be similar to the General Electric Standard Technical Specifications (STS) that were applicable at the time the staff issued Generic Letter 89-19" (September 20, 1989). The applicable STS for FitzPatrick is NUREG-0123, Rev.3 (Reference 3).

In lieu of the STS presented in NUREG-0123, the Authority elects to model the proposed changes to the TS on the most recent STS approved by the NRC. This is the STS presented in NUREG-1433 (Reference 4).

The FitzPatrick plant utilizes three instrument channels that sense reactor vessel water level, and initiate a trip of the two feedwater pump turbines, and the main turbine, on high reactor vessel water level. The three channels provide input to a two-out-of-three initiation logic.

The proposed changes incorporate operability and surveillance requirements into the TS that conform, with one exception, to the STS (Reference 4). The exception applies to the frequency of the instrument functional test. The STS specifies a quarterly frequency for this test. The design of the FitzPatrick trip system does not permit functional testing of this trip function without lifting electrical leads. Consequently, testing this trip system on-line poses an unacceptable risk of an inadvertent trip of the feedwater pump turbines and main turbine, resulting in a plant transient. The application proposes a frequency that permits the testing to be accommodated during plant shutdowns.

III. SAFETY IMPLICATIONS OF THE PROPOSED CHANGES

This amendment application establishes, for the first time, TS requirements for the design feature that trips the two feedwater pump turbines and the main turbine on high reactor vessel water level. The requirements will assure the operability of a trip function that is designed to preclude equipment damage and potential adverse safety implications associated with a reactor overfill condition due to excessive feedwater flow.

Standard Technical Specification Selection

The most recent NRC approved STS (NUREG-1433) is preferred to the previous STS (NUREG-0123) as the model for this application for the following reasons:

1. The action statement in NUREG-1433 STS requires a reduction in the reactor power to less than 25% of rated thermal power in the event the allowable out-of-service time for the trip function cannot be satisfied. The action statement in NUREG-0123 requires placing the reactor in the startup mode. The action statement of NUREG-1433 STS provides greater operating flexibility since it involves a smaller power reduction, and avoids the risk of a plant transient associated with reactor operating mode transfers.

2. NUREG-1433 STS provides for a six hour surveillance allowable out-of-service time (AOT), which establishes a reasonable time for an instrument channel to be rendered inoperable to perform the required surveillances. No AOT is specified in STS NUREG 0123. The AOT may be entered only if removal of the instrument channel from service will not disable the trip function. Since the trip function operates on a two-out-of-three initiation logic, one channel at a time can be rendered inoperable to perform surveillance tests. In this manner, continued operability of the trip function can be maintained during the performance of the surveillance test. The six hour AOT also conforms to a Licensing Topical Report (Reference 5), and the NRC Safety Evaluation Report approving the Licensing Topical Report (Reference 6, Table 2).

Overall, the provisions of NUREG-1433 STS, utilized as the model for this application, are more conservative for the following reasons:

1. NUREG-1433 STS limits the allowable out-of-service time (AOT) to 2 hours for multiple channel failures. NUREG-0123 STS permits a 72 hour AOT. Multiple failures renders the trip function inoperable. Accordingly, the shorter AOT is more conservative.

2. Unlike NUREG-0123 STS, NUREG-1433 STS requires a daily instrument check which provides a qualitative determination of acceptable operability by observation of the reactor water level instrumentation.

For these reasons, and since NUREG-1433 is recognized by the industry and NRC as an enhancement over previous STS, it is recommended that it serve as the model for the subject changes. Further, the scope of the proposed operability and surveillance requirements has been expanded to apply to the main turbine trip in addition to the feedwater pump turbine trip so as to conform with NUREG-1433, and recognize a trip feature (main turbine trip) that is assumed for an FSAR analysis (FSAR 14.5.9, Feedwater Controller Failure).

The operability requirements (Table 3.2-6) limit inoperability of an instrument channel to 7 days in the case of a single failure, and 2 hours in the case of multiple channel failures. Failure to satisfy the limiting conditions for operation requires a reactor power reduction to less than 25% rated thermal power within four hours. These requirements conform with the STS. The surveillance requirements in Table 4.2-6 assure that the operability status of the trip function is monitored, and except as discussed below, conform with the STS.

Instrument Functional Test

As previously stated, the design of the FitzPatrick trip system does not permit functional testing of this trip function without lifting electrical leads. Consequently, testing this trip system on-line poses an unacceptable risk of an inadvertent trip of the feedwater pump turbines and main turbine, and subsequent scram. The proposed surveillance interval for the instrument functional test will permit testing while the plant is shutdown, avoiding the risk of a plant transient. As proposed, a functional test will be performed each refueling outage, and each time the plant is in cold shutdown for a period of more than 24 hours. The testing requirement during shutdown may be waived if the test has been performed during the previous 92 days. The 92 day limit corresponds to a quarterly frequency as defined in the STS, and avoids the risks of plant transients associated with excessive testing.

The concept of limiting instrument functional testing to plant shutdown opportunities is similar to that approved by the NRC in Generic Letter 91-09 (Reference 7). The generic letter provided an alternative testing schedule to the semiannual surveillance requirement for the electrical protection assemblies used in the power supplies for the reactor protection system. As stated in the generic letter, the recommended alternative is to test the system each time the plant is in cold shutdown for more than 24 hours if the test has not been performed within the previous 6 months.

The feedwater pump turbine and main turbine trip function is currently functionally tested once every operating cycle. The proposed TS will result in more frequent testing of the trip system when considering the likelihood of scheduled and unscheduled mid-cycle outages.

The nature of the instrument functional tests is defined by note 2 on Table 4.2-6 which reads: "The instrumentation is exempt from the instrument channel functional test definition. The functional test will consist of injecting a simulated electrical signal into the instrument channel as close to the sensor as practicable." The testing, as defined by the

note, recognizes the impracticability of injecting a known signal into the reactor vessel level sensors. The note is consistent with Note 5 on page 84 of the FitzPatrick TS which applies to most of the instrument functional test requirements. Further, the note is consistent with the definition of "Channel Functional Test" presented in Section 1.1 of NUREG-1433 STS.

Calibration and LSFT Frequency

NUREG-1433 STS specifies a frequency for the calibration and logic system functional test (LSFT) of the trip system that is consistent with the length of the plant-specific fuel cycle. Since the FitzPatrick fuel cycle is based on a 24 month period, the frequency proposed for the calibration and LSFT has been selected to coincide with this period.

IV. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Operation of the FitzPatrick 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 involve the addition of new operability and surveillance requirements to the Technical Specification regarding the current high reactor water level trip feature for the feedwater pump turbines and main turbine. The changes do not introduce any new modes of plant operation, make any physical changes, or alter any operational setpoints associated with the plants instrumentation and controls. Further, the Fitzpatrick UFSAR, Section 14.5.9, for the Feedwater Controller Failure operational transient does not take credit for the automatic high reactor vessel water level trip of the feedwater pump turbines. The Fitzpatrick UFSAR analysis (Section 14.5.9), for the Feedwater Controller Failure operational transient assumes an automatic high reactor vessel water level trip of the main turbine. Incorporating these requirements into the Technical Specifications provides additional assurance that a trip feature described in the UFSAR remains functional. For these reasons the changes do not increase the probability or consequences of an accident previously evaluated.

2. create the possibility of a new or different kind of accident from those previously evaluated because:

   The proposed changes do not introduce any new accident initiators or failure mechanisms since the changes do not introduce any new modes of plant operation, make any physical changes, or alter any operational setpoints. Accordingly, the changes do not create the possibility of a new or different kind of accident from those previously evaluated.

3. involve a significant reduction in the margin of safety because:

   The proposed changes establish operability and surveillance requirements for the design feature that trips the feedwater pump turbines and main turbine on high reactor vessel water level. The requirements will assure the continued operability of a trip function that is designed to initiate protective measures in the event of excessive feedwater flow. Tripping the feedwater pump turbines and main turbine on high reactor vessel water level, precludes potential adverse safety implications associated with a reactor overfill condition. Accordingly, the proposed changes will enhance the plant safety margin.

V. IMPLEMENTATION OF THE PROPOSED CHANGES

Implementation of the proposed changes will not adversely affect the ALARA or Fire Protection Program at the FitzPatrick plant, nor will the changes impact the environment.

VI. CONCLUSION

This change, as proposed, does not constitute an unreviewed safety question as defined in 10 CFR 50.59. That is, it:

1. will not increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report;

2. will not increase the possibility for an accident or malfunction of a type different from any evaluated previously in the safety analysis report; and

3. will not reduce the margin of safety as defined in the basis for any technical specification.

The change involves no significant hazards consideration, as defined in 10 CFR 50.92.

VII. REFERENCES

1. NRC Generic Letter 89-19, "Request for Action Related to Resolution of Unresolved Safety Issue A-47 'Safety Implication of Control Systems in LWR Nuclear Power Plants' Pursuant to 10 CFR 50.54(f)," dated September 20, 1989.

2. NRC letter, J. E. Menning to W. A. Josiger, NYPA (TAC No. M74943) "James A. FitzPatrick Nuclear Power Plant - Transmittal of the NRC Safety Evaluation for the BWR Owners Group Response to Generic Letter 89-19,"Request for Action Related to Resolution of Unresolved Safety Issue A-47 'Safety Implication of Control Systems in LWR Nuclear Power Plants' Pursuant to 10 CFR 50.54 (f)", and Request for Additional Information, dated June 30, 1994,

3. NUREG-0123 "Standard Technical Specifications in General Electric Boiling Water Reactors (BWR/5)," Revision 3, dated Fall 1980.

4. NUREG-1433, "Standard Technical Specifications for General Electric Boiling Water Reactors (BWR/4)", Revision 0, dated September 1992.

5. GE Topical Report GENE-770-06-1-A, "Bases for Changes to Surveillance Test Intervals and Allowed Out-Of-Service Times For Selected Instrumentation Technical Specifications," December 1992.

6. NRC Safety Evaluation Report, letter from Charles E. Rossi, NRC to R. D. Binz, BWR Owners Group, "General Electric Company Topical Report GENE-770-06-1, Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," July 21, 1992.

7. NRC Generic Letter 91-09, "Modification of Surveillance Interval for the Electrical Protective Assemblies in Power Supplies for the Reactor Protection System," dated June 27, 1991.

ATTACHMENT III to JPN-95-007

MARKED-UP TECHNICAL SPECIFICATION PAGES FOR
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Attachment III to JPN-95-007

INSERT FOR MARKED-UP TECHNICAL SPECIFICATION PAGES

INSERT A

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TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

LIST OF TABLES

1

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SEE INSERT A

SEE REVISED PAGE 76
IN ATTACHMENT 1

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