ATTACHMENT I to JPN-92-055

PROPOSED TECHNICAL SPECIFICATION CHANGES
REACTOR WATER CLEANUP LEAK DETECTION SYSTEM
TABLE 3.2-1 REVISION

(JPTS-91-020)

New York Power Authority

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

TABLE 3.2-1

INSTRUMENTATION THAT INITIATES PRIMARY CONTAINMENT ISOLATION

Minimum No. of Operable Instrument Channels Per Trip System (1)	Instrument	Trip Level Setting	Total Number of Instrument Channels Provided by Design for Both Trip Systems	Action (2)
2 (6)	Reactor Low Water Level	≥ 177 in. above TAF	4 Inst. Channels	A
1	Reactor High Pressure (Shutdown Cooling Isolation)	≤ 75 psig	2 Inst. Channels	[illegible]
2	Reactor Low-Low-Low Water Level	≥ 18 in. above TAF	4 Inst. Channels	A
2 (6)	High Drywell Pressure	≤ 2.7 psig	4 Inst. Channels	A
2	High Radiation Main Steam Line Tunnel	≤ 3 x Normal Rated Full Power Background (9)	4 Inst. Channels	B
2	Low Pressure Main Steam Line	≥ 825 psig (7)	4 Inst. Channels	B
2	High Flow Main Steam Line	≤ 140% of Rated Steam Flow	4 Inst. Channels	B
2	Main Steam Line Leak Detection High Temperature	≤ 40°F above max ambient	4 Inst. Channels	B
4	Reactor Cleanup System Equipment Area High Temperature	≤ 40°F above max ambient	8 Inst. Channels	C
2	Low Condenser Vacuum Closes MSIV's	≥ 8" Hg. Vac (7)(8)	4 Inst. Channels	B

SAFETY EVALUATION FOR PROPOSED TECHNICAL SPECIFICATION CHANGE REACTOR WATER CLEANUP LEAK DETECTION SYSTEM TABLE 3.2-1 REVISION (JPTS-91-029)

I. DESCRIPTION OF THE PROPOSED CHANGES

This application for an amendment to the James A. FitzPatrick Technical Specifications reflects a plant modification which installed two additional thermocouples (temperature elements), associated cabling, temperature switches and circuitry, in the vicinity of the RWCU 6 inch line at the containment penetration. The changes to the Technical Specifications are addressed below.

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.

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For the "Reactor Cleanup System Equipment Area High Temperature" instrument:

- Change the minimum number of operable instrument channels per trip system from "3" to "4."
- Change the total number of instrument channels provided by design for both trip systems from "6" to "8."

II. PURPOSE OF THE PROPOSED CHANGES

The Authority's program to address NRC IE Bulletin 79-01B "Environmental Qualification of Class IE Equipment" (Reference 3) postulated a high energy line break in a nineteen foot section of RWCU pipe that runs between the containment penetration and the RWCU "A" pump room (Reference 4). As a result, two new temperature elements were added to isolate the RWCU system from the reactor vessel in the event of a line break in this area (Reference 5). Six existing temperature elements monitor other RWCU system areas.

The NRC (in References 1 and 2) identified a discrepancy between the number of RWCU area temperature detectors in the plant and listed in the Technical Specifications. Table 3.2-1 of the Technical Specifications only listed six RWCU area high temperature instrument channels when eight channels were installed in the plant. When these two new temperature elements were installed, the Authority did not revise the Technical Specifications. This proposed change adds these two new channels to Table 3.2-1 to reflect their installation as part of the equipment qualification program.

When approved, the operability requirements of LCO 3.2.A will apply to these new temperature elements. If less than four instrument channels (temperature elements) are operable per trip system, action statment 2.c (Table 3.2-1 on page 65) will require that the RWCU system be isolated.

III. SAFETY IMPLICATIONS OF THE PROPOSED CHANGES

The purpose of the RWCU Leak Detection System, the modification made to this system, the safety implications of that modification and the safety implications of the Technical Specification change are discussed below. These discussions support the conclusion that there are no adverse safety implications.

RWCU Leak Detection System

The purpose of the RWCU Leak Detection System is to close RWCU System primary containment isolation valves when high area temperature indicates a High Energy Line Break (HELB) or leak. The system meets single failure criteria by utilizing two instrument channels to perform the system function. Channel A isolates 12MOV-15, the RWCU suction line isolation valve inside containment. Channel B isolates 12MOV-18, the RWCU suction line isolation valve outside containment, and 12MOV-69, the RWCU return line isolation valve outside containment.

The RWCU system is a six inch line as it leaves primary containment through penetration X-14. The isolation valve inside containment is 12MOV-15. The isolation valve outside containment is 12MOV-18. This six inch line runs for about 19 feet before turning down to penetrate the ceiling of the room containing RWCU pump A. There, the line splits into two-four inch lines running to the suction side of the A and B RWCU pumps. The line to the B pump penetrates a wall separating the two pumps. The discharge of each pump is a three inch line until they join in the B pump room. There the line returns to a four inch size and runs to the room containing the regenerative and non-regenerative heat exchangers.

Prior to the modification adding two temperature channels, the RWCU Leak Detection system provided redundant detection instrumentation in the three equipment rooms (i.e., A and B pump rooms and heat exchanger room) to detect the effect of breaks in the RWCU system. These HELB breaks were postulated in accordance with criteria in the Giambusso letter regarding the postulation of piping failures outside containment (Reference 6). Breaks were postulated in the six inch line in pump A room, in the four inch discharge line in pump B room and close to the inlet of the first regenerative heat exchanger in the heat exchanger room. No breaks are postulated downstream of the first heat exchanger.

Modification

The two temperature elements (12TE-122 A and B) were added to Division I and II (channels A and B) of the RWCU system to provide area temperature monitoring to detect and mitigate the affects of a high energy line break (HELB). A six inch RWCU line break was postulated on top of the RWCU pump A room on elevation 300'. This location is downstream of isolation valve 12MOV-18 before the line enters RWCU pump A room. This break was not defined when addressing Reference 6. It was postulated as part of the response to IE Bulletin 79-01B (References 4, 5 and 7). The added temperature elements are installed in the vicinity of the six inch line. The proximity of the detectors to the assumed break assures that the calculated response time for isolating RWCU isolation valves 12MOV-15 and 12MOV-18 (Reference 8) will be satisfied.

The new detectors were wired to existing spare temperature switches in the control room. The output of the temperature switches is integrated with the logic for the existing isolation function (References 9 and 10). The temperature switches originally used in this modification were replaced. The replacements and the new detectors are Class IE and seismic Category I (Reference 11). They have the required range, reliability, equipment qualification, and accuracy to perform their intended function.

Safety Implications of Modification

The modification increases the number of instrumentation channels used for RWCU isolation. This increases the probability that an inadvertent or spurious isolation of the RWCU system could occur. This lo probability event has minimal effect on the reactor and no safety significant effect. The additional temperature elements will isolate the RWCU piping from the primary system in the event of a pipe break or leak outside the containment. Although a low probability event, the potential effects can be significant if prompt isolation does not occur. Since the instrumentation monitors an additional area where a postulated pipe break could occur, it provides safety benefits with minimal potential for safety effects.

The ability of the system to perform its intended safety function is assured by the codes and standards imposed (seismic Category I and Class IE).

The additional instrumentation channels are included in the existing plant surveillance program (References 12 and 13) to assure operability. The modification did not require revision of the current surveillance procedure other than the addition of the two new temperature channels. The monthly instrument functional test consists of lifting the thermocouple extension leads, injecting a simulated electrical signal into the channel and verifying that the primary relays deenergize. The quarterly calibration follows the same procedure and involves adjustment of the temperature switch to checklist /data sheet value. The temperature element is a dual element design. During calibration, the temperature readings of the portions of the temperature element used for the trip function and for control room temperature indication are compared and must agree within 10°F. An instrument check of the portion of the temperature element used for indication is performed daily. The portion of the temperature element used for the trip function is calibrated with an ice bath at two year intervals (Reference 14). This interval limits personnel radiation exposure.

Safety Implications of Technical Specification Change

This proposed Technical Specification change has no adverse effect on safety. The new instrumentation is tested in accordance with the same surveillance procedure as other parts of the RWCU Leak Detection system. The operability requirements of LCO 3.2.A will apply to these new temperature elements. If less than four instrument channels (temperature elements) are operable per trip system, action statment 2.c (Table 3.2-1 on page 65) will require that the RWCU system be isolated. These two new temperature elements provide additional protection against pipe rupture and do not alter the conclusions of the plant's accident analyses as documented in the FSAR or the NRC staff's SER.

5. NYPA letter, C. A. McNeill, Jr., to Stone and Webster, D. J. Cirrone, JAFP-83-1080 regarding Reactor Building high energy line break, dated October 28, 1983.

6. NRC letter, A. Giambusso, to Licensees and License Applicants, dated December 18, 1972 regarding the postulation of piping failures outside containment.

7. Stone and Webster Report J. O. No. 146?0.19, "High [illegible]rgy Line Break (HELB) Analysis In the JAFNPP Reactor Building For Response to [illegible] Bulletin 79-01B," Revision 2, dated January 20, 1984.

8. James A. FitzPatrick Nuclear Power Plant Calculation 001 "RWCU Thermocouple Response Time Evaluation" Modification F1-86-132, dated November 30, 1987.

9. Gilbert/Commonwealth letter, M.S. Sarmiento to L. Guaquil, dated May 15, 1984, (GAI-NYJF-073), "Modification F1-82-053 Additional Steam Leak Detectors for Actuation of the RWCU and HPCI Isolation Valves - Cost Estimate."

10. Services Systems Engineering Memorandum, JSEM-91-073, "RWCU Leak Detection Switch 12TS-102B Replacement," Revision 1, dated February 8, 1992.

11. NYPA letter, R. J. Converse, to Weed Instrument Company, R. Got[illegible], JAFP-87-0830, regarding Environmental Qualification of Weed temperature sensors, dated October 15, 1987.

12. James A. FitzPatrick Nuclear Power Plant Instrument Surveillance Procedure, ISP-49, "Reactor Water Cleanup-Up Area High Temperature Instrument Functional Test/Calibration," Revision 20, dated August 6, 1991.

13. James A. FitzPatrick Nuclear Power Plant Instrument Maintenance Procedure, IMP-G9, "Temperature Element (Thermocouple Types) and Associated Loop Calibration," dated March 13, 1992.

14. James A. FitzPatrick Nuclear Power Plant Surveillance Test Procedure, ST-40D, "Daily Surveillance and Instrument Check," Revision 51, dated July 25, 1992.

Background documentation not specifically referenced:

1. James A. FitzPatrick Nuclear Power Plant Updated Final Safety Analysis Report Sections 4.9 and 7.3.

2. James A. FitzPatrick Nuclear Power Plant Final Safety Analysis Report, Supplement 25.

3. James A. FitzPatrick Nuclear Power Plant Safety Evaluation Report (SER), dated November 20, 1972.

4. James A. FitzPatrick Nuclear Power Plant Safety Evaluation Report Supplement No. 1, dated February 1, 1973.

5. James A. FitzPatrick Nuclear Power Plant Safety Evaluation Report Supplement No. 2, dated October 4, 1974.

6. James A. FitzPatrick Nuclear Power Plant Safety Evaluation for "Analog Transmitter Trip System (ATTS) Installation" Modification F1-82-053, JAF-SE-84-027, Revision 2, dated October 10, 1984.

ATTACHMENT III to JPN-92-055

PROPOSED TECHNICAL SPECIFICATION CHANGE
REACTOR WATER CLEANUP LEAK DETECTION SYSTEM
TABLE 3.2-1 REVISION
MARKUP OF TECHNICAL SPECIFICATION PAGES

(JPTS-91-029)

New York Power Authority

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

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2	Reactor Low-Low-Low Water Level	≥18 in. above TAF	4 Inst. Channels	A
2 (6)	High Drywell Pressure	≤2.7 psig	4 Inst. Channels	A
2	High Radiation Main Steam Line Tunnel	≤3 x Normal Rated Full Power Background (9)	4 Inst. Channels	B
2	Low Pressure Main Steam Line	≥825 psig (7)	4 Inst. Channels	B
2	High Flow Main Steam Line	≤140% of Rated Steam Flow	4 Inst. Channels	B
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3	Reactor Cleanup System Equipment Area High Temperature	≤40°F above max ambient	6 Inst. Channels	C
2	Low Condenser Vaccum Closes MSIV's	≥8" Hg. Vac (7) (8)	4 Inst. Channels	B

Amendment No. 19, 37, 48, 67, 90, 103, 119, 122,