JPN-88-049

ATTACHMENT I

PROPOSED TECHNICAL SPECIFICATION CHANGES REGARDING DELETION OF REACTOR SCRAM AND MAIN STEAM LINE ISOLATION FUNCTIONS FOR REFUEL AND STARTUP MODES (JPTS-88-010)

New York Power Authority
James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
DPR-59

1.0 (cont'd)

1. Refuel Mode - The reactor is in the refuel mode when the Mode Switch is in the Refuel Mode position. When the Mode Switch is in the Refuel position, the refueling interlocks are in service.

2. Run Mode - In this mode the reactor system pressure is at or above 850 psig and the Reactor Protection System is energized with APRM protection (excluding the 15 percent high flux trip) and the RBM interlocks in service.

3. Shutdown Mode - The reactor is in the shutdown mode when the Reactor Mode Switch is in the Shutdown Mode position.

   a. Hot shutdown means conditions as above with reactor coolant temperature >212°F.

   b. Cold shutdown means conditions as above with reactor coolant temperature ≤212°F. and the reactor vessel vented.

4. Startup/Hot Sta~~by - In this mode the low pressure mai~ ~team line isolation valve closure trip is bypassed, the Reactor Protection System is energized with APRM (15 percent) and IRM neutron monitoring system trips and control rod withdrawal interlocks in service.

J. Operable - A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).

K. Operating - Operating means that a system or component is performing its intended functions in its required manner.

L. Operating Cycle - Interval between the end of one refueling outage and the end of the subsequent refueling outage.

M. Primary Containment Integrity - Primary containment integrity means that the drywell and pressure suppression chamber are intact and all of the following conditions are satisfied:

1. All manual containment isolation valves on lines connected to the Reactor Coolant System or containment which are not required to be open during plant accident conditions are closed. These valves may be

TABLE 3.1-1 (cont'd)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENT

Minimum No. of Operable Instrument Channels per Trip System (1)	Trip Function	Trip Level Setting[1]	Modes in Which Function Must be Operable			Total Number of Instrument Channels Provided by Design for Both Trip Systems	Action (1)
			Refuel (6)	Startup	Run		
2	APRM Downscale	≥ 2.5 indicated on scale (9)			X	6 Instrument Channels	A or B
2	High Reactor Pressure	≤ 1045 psig	X(8)	X	X	4 Instrument Channels	A
2	High Drywell Pressure	≤ 2.7 psig	X(7)	X(7)	X	4 Instrument Channels	A
2	Reactor Low Water Level	≥ 12.5 in. indicated level (≥ 177 in. above the top of active fuel)	X	X	X	4 Instrument Channels	A
3	High Water Level in Scram Discharge Volume	≤ 34.5 gallons per Instrument Volume	X(2)	X	X	8 Instrument Channels	A
2	Main Steam line High Radiation	≤ 3x normal full power background (16)	X	X	X	4 Instrument Channels	A
4	Main Steam Line Isolation Valve Closure	≤ 10% valve closure			X(5)	8 Instrument Channels	A

Amendment No. 16, 43, 61, 75, 81, 96

TABLE 3.1-1 (cont'd)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENT

Minimum No. of Operable Instrument Channels per Trip System (1)	Trip Function	Trip Level Setting	Modes in Which Function Must be Operable			Total Number of Instrument Channels Provided by Design for Both Trip Systems	Action (1)
			Refuel (6))16)	Startup	Run		
4	Turbine Stop Valve Closure	10% valve closure			X(4)(5)	8 Instrument Channels	A or C

NOTES OF TABLE 3.1-1

1. There shall be two operable or tripped trip systems for each function, except as specified in 4.1.D. From and after the time that the minimum number of operable instrument channel for a trip system cannot be met, that affected trip system shall be placed in the safe (tripped) condition, or the appropriate actions listed below shall be taken.

   A. Initiate insertion of operable rods and complete insertion of all operable rods within four hours.

   B. Reduce power level to IRM range and place Mode Switch in the Startup Position within eight hours.

   C. Reduce power to less than 30 percent of rated.

2. Permissible to bypass, if Refuel and Shutdown positions of the Reactor Mode Switch.

3. Deleted.

4. Bypassed when turbine first stage pressure is less than 217 psig or less than 30 percent of rated.

5. The design permits closure of any two lines without a scram being initiated.

6. When the reactor is subcritical and the reactor water temperature is less than 212°F, only the following trip functions need to be operable:
   A. Mode Switch in Shutdown
   B. Manual Scram

Amendment No. 95, 97

TABLE 3.2-1

INSTRUMENTATION THAT INITIATES PRIMARY CONTAINMENT ISOLATION

Minimum Number 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	≥ 12.5 in. Indicated Level (≥177 in. above the top of active fuel)	4 Inst. Channels	A
1	Reactor High Pressure (Shutdown Cooling Isolation)	≤75 psig	2 Inst. Channels	D
2	Reactor Low-Low-Low Water Level	≥ 18 in. above the 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
3	Reactor Cleanup System Equipment Area High Temperature	≤40°F above max ambient	6 Inst. Channels	C
2	Low Condenser Vacuum Closes MSIV's	≥ 8" Hg. Vac (7) (8)	4 Inst. Channels	B

Amendment No. 16, 31, 46, 51, 96, 105

TABLE 3.2-1 (Cont'd)

INSTRUMENTATION THAT INITIATES PRIMARY CONTAINMENT ISOLATION

NOTES FOR TABLE 3.2-1

1. Whenever Primary Containment integrity is required by Section 3.7, there shall be two operable or tripped trip systems for each function.

2. From and after the time it is found that the first column cannot be met for one of the trip systems, that trip system shall be tripped or the appropriate action listed below shall be taken.

   A. Initiate an orderly shutdown and have the reactor in cold shutdown condition in 24 hours.

   B. Initiate an orderly load reduction and have main steam lines isolated within eight hours.

   C. Isolate Reactor Water Cleanup System.

   D. Isolate shutdown cooling.

3. Deleted

4. Deleted

5. Two required for each steam line.

6. These signals also start SBGTS and initiate secondary containment isolation.

7. Only required in run mode (interlocked with Mode Switch).

8. Bypassed when mode switch is not in run mode and turbine stop valves are closed.

9. The trip level setpoint will be maintained at $\leq$3 times normal rated full power background. See note 16 to Table 3.1-1 for re-setting trip level setpoint just prior to the Hydrogen Addition Test, and re-setting of the Main Steam Line Radiation Monitor for power levels below 20%.

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ATTACHMENT II

SAFETY EVALUATION FOR PROPOSED TECHNICAL SPECIFICATION CHANGES REGARDING DELETION OF REACTOR SCRAM AND MAIN STEAM LINE ISOLATION FUNCTIONS FOR REFUEL AND STARTUP MODES (JPTS-88-010)

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SAFETY EVALUATION

I. DESCRIPTION OF THE PROPOSED CHANGES

The proposed changes to the James A. FitzPatrick Technical Specifications amend page 4, Table 3.1-1(pages 41a, 42), and Table 3.2-1 (pages 64 and 65). The changes are as follows:

Page 4: Definition I.4 Startup/Hot Standby
Delete, "the reactor protection scram trips initiated by main steam line isolation valve closure is bypassed when reactor pressure is less than 1005 psig."

Table 3.1-1 Reactor Protection System (SCRAM) Instrumentation Requirement

Page 41a: Main Steam Line Isolation Valve Closure
Delete "X(3)(5)" for refuel and startup modes

Page 42: Notes for Table 3.1-1
Delete Note 3, "Bypassed when reactor pressure is 1005 psig". The symbol <
in front of 1005 psig was inadvertently omitted in a previous amendment.

Table 3.2-1 Instrumentation That Initiates Primary Containment Isolation

Page 64: Low Condenser Vacuum Closes MSIVs
Add Reference to Note "(7)"

Page 65: Notes for Table 3.2-1
Change Note 8 to read, "Bypassed when mode switch is not in run mode and turbine stop valves are closed."

II. PURPOSE OF THE PROPOSED CHANGES

The proposed changes delete reactor scram and main steam line (MSL) isolation functions from Tables 3.1-1 and 3.2-1 respectively for refuel and startup modes. The conditional bypass signals for scram and isolation functions are provided by four pressure switches 02-3PS-51(A-D). These pressure switches were installed after instability was observed in an early European Boiling Water Reactor during its startup. Subsequent startup tests at Browns Ferry, a BWR 4 reactor as is FitzPatrick, showed that the instability observed in the European reactor did not exist in a BWR 4. Furthermore, these switches are set at the normal operating pressure of 1005 psig. During refuel or startup mode, the reactor pressure is below 1003 psig and the scram and isolation functions are bypassed. Therefore, the scram and isolation functions are unnecessary and will be deleted, and the pressure switches will be removed during the 1988 refueling outage.

III. IMPACT OF THE PROPOSED CHANGES

A reactor scram on MSIV closure was installed to provide an automatic means of reducing the severity of the consequences of MSL isolation. The purpose of requiring MSIV isolation on low condenser vacuum is to provide an automatic means of isolating the reactor to limit the release of radioactive steam in the event of a breach of condenser integrity. These scram and isolation functions are bypassed for refuel and startup modes to allow cold testing of the MSIVs and associated logic.

The pressure switches were installed because instability was observed in an early European Boiling Water Reactor during its startup. Startup tests at Browns Ferry, a BWR 4 reactor as is FitzPatrick, did not show any evidence of such instability. Moreover, the pressure setpoint that allows conditional bypass of both scram and isolation functions in the refuel and startup modes is set at the normal reactor operating pressure of 1005 psig. During these modes, the operating pressure is below 1005 psig, and these functions are bypassed. Therefore, in essence, the pressure switches do not serve any useful purpose.

In startup mode, the reactor power is between approximately 0-15% of full power. The peak reactor pressure and the critical power ratio responses will be significantly below the limits established for transients during full power operation. In the startup mode, the Intermediate Range Monitor (IRM) subsystem and the Average Power Range Monitor (APRM) subsystem provide signals to the Reactor Protection System (RPS) to shut down the reactor. If MSIV closure occurs while the reactor is in the startup mode, the reactor will scram on high neutron flux or high reactor pressure. The overpressure protection analysis, for the limiting event of MSIV closure at 100% power terminated by the high neutron flux scram, provides the bounding analysis for the pressure transient.

Thus, removing the pressure switches and deleting the scram and isolation functions during refuel and startup modes will have no impact on plant operation.

IV. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Operation of the FitzPatrick plant in accordance with the proposed changes would not involve a significant hazards consideration as stated 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 these pressure switches were installed after instability was observed in an early European Boiling Water Reactor during its startup. A series of reactivity and pressure perturbation tests were conducted as part of the startup test program at Browns Ferry, a typical BWR 4 design of the FitzPatrick type. The tests showed that following the initial disturbance, all parameters returned to steady state values and the reactor stabilized. In addition, the switches are set for bypass up to the normal reactor operating pressure of 1005 psig. This means that the pressures which would allow the scram on MSIV closure and MSL isolation on LCV when the turbine stop valves are closed are outside the range of pressures for refuel and startup modes. Thus, scram and isolation functions are bypassed and the pressure switches, in essence, are not necessary.

   The consequences of inadvertent MSIV closure in these modes at or below 1005 psig will remain unchanged with the removal of the switches. In the startup mode, the reactor power is between approximately 0-15% of full power. The peak reactor pressure and the critical power ratio responses will be significantly below the limits established for transients during full power operation. In startup mode, the Intermediate Range Monitor (IRM) subsystem and the Average Power Range Monitor (APRM) subsystem provide signals to the Reactor Protection System (RPS) to shutdown the reactor. If MSIV closure occurs while the reactor is in the startup mode, the reactor will scram on high neutron flux or high reactor pressure. The over-pressure protection analysis, for the limiting event of MSIV closure at 100% power terminated by the high neutron flux scram, provides the bounding analysis for the pressure transient. If a loss of condenser vacuum event occurs during refuel or startup modes, the turbine bypass valves would close to isolate the condenser, and operator action can be taken to manually close the MSIVs. Therefore, removal of pressure switches and deletion of scram and isolation functions do not increase the probability or the consequences of an accident.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated, because the purpose for which the pressure switches were installed does not exist as discussed above, and the switches are set for bypass at 1005 psig, which is above the full range of reactor pressures for refuel and startup modes. For this pressure range, scram on MSIV closure and isolation on LCV during refuel and startup modes of operation are bypassed, and the pressure switches are not needed for any safety function. Therefore, no new or different kind of accident can be created by the removal of these switches and deletion of scram and isolation functions.

3. Involve a significant reduction in margin of safety because the current setpoint for the pressure switches allows bypass of the scram and isolation functions for the full range of reactor pressures in the refuel and startup modes. Furthermore, the operating limits of the plant are not determined by the setpoint of these switches. The limiting plant transients are still those initiated from full power operation and not from operation in the refuel or startup modes with the scram and isolation bypass. Therefore, the operating limits and the limiting safety system settings remain unchanged and the margin of safety is not reduced.

V. IMPLEMENTATION OF THE PROPOSED CHANGES

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

VI. CONCLUSION

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

a. will not change the probability nor the consequences of an accident or malfunction of equipment important to safety as previously evaluated in the Safety Analysis Report;

b. will not increase the possibility of an accident or malfunction of a different type from any previously evaluated in the Safety Analysis Report;

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

d. do not constitute an unreviewed safety question; and

e. involve no significant hazards consideration, as defined in 10 CFR 50.92.

VII. REFERENCES

1. James A. FitzPatrick Nuclear Power Plant Final Safety Analysis Report Sections 7.2, 7.3 and 7.5.

2. James A. FitzPatrick Nuclear Power Plant Safety Evaluation Report.

3. General Electric Report EAS-20-0388, "Deletion of the Low Reactor Pressure Bypass Switch for Scram and Isolation for the James A. FitzPatrick Nuclear Power Plant", dated April 1988.