ATTACHMENT I to JPN-91-064

PROPOSED TECHNICAL SPECIFICATION CHANGES
ASME SECTION XI AND ESW PUMP SURVEILLANCE TESTING

(JPTS-90-023)

New York Power Authority

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

JAFNPP

TECHNICAL SPECIFICATIONS

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3.0 Continued

D. Entry into an OPERATIONAL CONDITION (mode) shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted. This provision shall not prevent passage through OPERATIONAL CONDITIONS (modes) required to comply with ACTION requirements.

E. When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied, the unit shall be placed in COLD SHUTDOWN within the following 24 hours. This specification is not applicable when in Cold Shutdown or Refuel Mode.

4.0 Continued

D. Entry into an OPERATIONAL CONDITION (mode) shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the applicable surveillance interval or as otherwise specified.

E. Surveillance Requirements for inservice inspection and testing of components shall be applicable as follows:

1. Inservice inspection of components and inservice testing of pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been requested of the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

4.0 Continued

2. Surveillance intervals specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda for the inservice inspection and testing activities required by the ASME Boiler and Pressure Vessel Code and applicable Addenda shall be applicable as follows in these Technical Specifications:

ASME Boiler and Pressure Vessel Code and applicable Addenda terminology for inservice inspection and testing activities	Required frequencies for performing inservice inspection and testing activities
Weekly	At least once per 7 days
Monthly	At least once per 31 days
Quarterly or every 3 months	At least once per 92 days
Semiannually or every 6 months	At least once per 184 days
Every 9 months	At least once per 276 days
Yearly or annually	At least once per 366 days

3. The provisions of Specification 4.0.B are applicable to the above required frequencies for performing inservice inspection and testing activities

4. Performance of the above inservice inspection and testing activities shall be in addition to other specified Surveillance Requirements.

5. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any Technical Specification.

3.0 BASES

A. This specification states the applicability of each specification in terms of defined OPERATIONAL CONDITION (mode) and is provided to delineate specifically when each specification is applicable.

B. This specification defines those conditions necessary to constitute compliance with the terms of an individual Limiting Condition for Operation and associated ACTION requirement.

C. This specification delineates the ACTION to be taken for circumstances not directly provided for in the ACTION statements and whose occurrence would violate the intent of the specification. Under the terms of Specification 3.0, the facility is to be placed in COLD SHUTDOWN within the following 24 hours. It is assumed that the unit is brought to the required OPERATIONAL CONDITION (mode) within the required times by promptly initiating and carrying out the appropriate ACTION statement.

D. This specification provides that entry into an OPERABLE CONDITION (mode) must be made with (a) the full complement of required systems, equipment or components OPERABLE and (b) all other parameters as specified in the Limiting Conditions for Operation being met without regard for allowable deviations and out of service provisions contained in the ACTION statements.

D. Continued

The intent of this provision is to insure that facility operation is not initiated with either required equipment or systems inoperable or other limits being exceeded.

Exceptions to this provision may be made for a limited number of specifications when startup with inoperable equipment would not affect plant safety. These exceptions are stated in the ACTION statements of the appropriate specifications.

E. This specification delineates what additional conditions must be satisfied to permit operation to continue, consistent with the ACTION statements for power sources, when a normal or emergency power source is not OPERABLE. It specifically prohibits operation when one division is inoperable because its normal or emergency power source is inoperable and a system, subsystem, train, component or device in another division is inoperable for another reason.

The provisions of this specification permit the ACTION statements associated with individual systems, subsystems, trains, components or devices to be consistent with the ACTION statement of the associated electrical power source. It allows operation to be governed by the time

3.0 BASES - Continued

E. Continued

limits of the ACTION statement associated with the Limiting Condition for Operation for the normal or emergency power source, and not by the individual ACTION statements for each system, subsystem, train, component or device that is determined to be inoperable solely because of the inoperability of its normal or emergency power source.

For example, Specification 3.9.A. requires in part that both emergency diesel generator systems be OPERABLE. The ACTION statement provides for a 7 day out-of-service time when emergency diesel generator system A or B is not OPERABLE. If the definition of OPERABLE were applied without consideration of Specification 3.0.E., all systems, subsystems, trains, components and devices supplied by the inoperable emergency power source, diesel generator system A or B, would also be inoperable. This would dictate invoking the applicable ACTION statements for each of the applicable Limiting Conditions for Operation. However, the provisions of Specification 3.0.E. permit the time limits for continued operation to be consistent with the ACTION statement for the inoperable emergency diesel generator system instead, provided the other specified conditions are satisfied. If they are not satisfied, shutdown is required in accordance with this specification.

E. Continued

As a further example, Specification 3.9.A. requires in part that two 115KV lines and reserve station transformers be available. The ACTION statement provides a 7 day out-of-service time when both required offsite circuits are not OPERABLE. If the definition of OPERABLE were applied without consideration of Specification 3.0.E., all systems, subsystems, trains, components and devices supplied by the inoperable normal power sources, both of the offsite circuits, would also be inoperable. This would dictate invoking the applicable ACTION statements for each of the applicable LCOs. However, the provisions of Specification 3.0.E. permit the time limits for continued operation to be consistent with the ACTION statement for the inoperable normal power sources instead, provided the other specified conditions are satisfied. In this case, this would mean that for one division the emergency power source must be OPERABLE (as must be the components supplied by the emergency power source) and all redundant systems, subsystems, trains, components and devices in the other division must be OPERABLE, or likewise satisfy Specification 3.0.E. (i.e., be capable of performing their design functions and have an emergency power source OPERABLE). In other words, both emergency power sources A and B must be OPERABLE and all redundant systems, subsystems, trains, components and devices in both divisions

3.0 BASES - Continued

E. Continued

must also be OPERABLE. If these conditions are not satisfied, shutdown is required in accordance with this specification.

In Cold Shutdown and Refuel Modes, Specification 3.0.E. is not applicable, and thus the individual ACTION statement for each applicable Limiting Condition for Operation in these OPERATIONAL CONDITIONS (modes) must be adhered to.

4.0 BASES

A. This specification provides that surveillance activities necessary to insure the Limiting Conditions for Operation are met and will be performed during the OPERATIONAL CONDITIONS (modes) for which the Limiting Conditions for Operation are applicable. Provisions for additional surveillance activities to be performed without regard to the applicable OPERATIONAL CONDITIONS (modes) are provided in the individual Surveillance Requirements.

B. The provisions of this specification provide allowable tolerances for performing surveillance activities beyond those specified in the normal surveillance interval. These tolerances are necessary to provide operational flexibility because of scheduling and performance considerations.

C. The provisions of this specification set forth the criteria for determination of compliance with the OPERABILITY requirements of the Limiting Conditions for Operation. Under this criteria, equipment, systems or components are assumed to be OPERABLE if the associated surveillance activities have been satisfactorily performed within the specified time interval. Nothing in this provision is to be construed as defining equipment, systems or components OPERABLE, when such items are found or known to be inoperable although still meeting the Surveillance Requirements.

D. This specification ensures that surveillance activities associated with a Limiting Condition for Operation have been performed within the specified time interv prior to entry into an applicable OPERATIONAL CONDITION (mode). The intent of this provision is to ensure that surveillance activities have been satisfactorily demonstrated on a current basis as required to meet the OPERABILITY requirements of the Limiting Condition for Operation.

Under the terms of this specification, for example, during initial plant start-up or following extended plant outage, the applicable surveillance activities must be performed within the stated surveillance interval prior to placing or returning the system or equipment into OPERABLE status.

E. This specification ensures that inservice inspection of components and inservice testing of pumps and valves will be performed in accordance with a periodically updated version of the plant "Inservice Testing Program" and the "Weld and Support Inservice Inspection Program" to comply with Section XI of the ASME Boiler and Pressure Vessel Code and Addenda as required by 10 CFR 50.55a. The plant programs identify classifications required by the ASME code. Request for relief from any of the above requirements is provided in writing to the Commission and is not a part of these Technical Specifications.

This specification includes a clarification of the frequencies for performing the inservice inspection and testing activities required by Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda. This clarification is provided to ensure consistency in surveillance intervals throughout these Technical Specifications and to remove any ambiguities relative to the frequencies for performing the required inservice inspection and testing activities.

4.0 Continued

Under the terms of this specification, the more restrictive requirements of the Technical Specifications take precedence over the ASME Boiler and Pressure Vessel Code and applicable Addenda. For example, the requirements of Specification 4.0.D to perform surveillance activities prior to entry into an OPERATIONAL CONDITION or other specified applicability condition takes precedence over the ASME Boiler and Pressure Vessel Code provision which allows pumps to be tested up to one week after return to normal operation. And for example, the Technical Specification definition of OPERABLE does not grant a grace period before a device that is not capable of performing its specified function is declared inoperable and takes precedence over the ASME Boiler and Pressure Vessel provision which allows a valve to be incapable of performing its specified function for up to 24 hours before being declared inoperable.

3.1 LIMITING CONDITIONS FOR OPERATION

3.1 REACTOR PROTECTION SYSTEM

Applicability:

Applies to the instrumentation and associated devices which initiate the reactor scram.

Objective:

To assure the operability of the Reactor Protection System.

Specification:

A. The setpoints, minimum number of trip systems, minimum number of instrument channels that must be operable for each position of the reactor mode switch shall be as shown on Table 3.1-1. The design system response time from the opening of the sensor contact to and including the opening of the trip actuator contacts shall not exceed 50 msec.

B. Minimum Critical Power Ratio (MCPR)

During reactor power operation, the MCPR operating limit shall not be less than that shown in the Core Operating Limits Report.

1. During Reactor power operation with core flow less than 100% of rated, the MCPR operating limit shall be multiplied by the appropriate K_f as specified in the Core Operating Limits Report.

4.1 SURVEILLANCE REQUIREMENTS

4.1 REACTOR PROTECTION SYSTEM

Applicability:

Applies to the surveillance of the instrumentation and associated devices which initiate reactor scram.

Objective:

To specify the type of frequency of surveillance to be applied to the protection instrumentation.

Specification:

A. Instrumentation systems shall be functionally tested and calibrated as indicated in Tables 4.1-1 and 4.1-2 respectively.

B. Maximum Fraction of Limiting Power Density (MFLPD)

The MFLPD shall be determined daily during reactor power operation at $\geq$25% rated thermal power and the APRM high flux scram and Rod Block trip settings adjusted if necessary as specified in the Core Operating Limits Report.

3.4 LIMITING CONDITIONS FOR OPERATION

3.4 STANDBY LIQUID CONTROL SYSTEM

Applicability:

Applies to the operating status of the Standby Liquid Control System.

Objective:

To assure the availability of a system with the capability to shut down the reactor and maintain the shutdown condition without control rods.

Specification:

A. Normal Operation

During periods when fuel is in the reactor and prior to startup from a cold condition, the Standby Liquid Control System shall be operable except as specified in 3.4.B below. This system need not be operable when the reactor is in the cold condition, all rods are fully inserted and Specification 3.3.A is met.

4.4 SURVEILLANCE REQUIREMENTS

4.4 STANDBY LIQUID CONTROL SYSTEM

Applicability:

Applies to the periodic testing requirements for the Standby Liquid Control System.

Objective

To verify the operability of the Standby Liquid Control System.

Specification:

A. Normal Operation

The operability of the Standby Liquid Control System shall be verified by performance of the following tests:

1. At least once every three months -

   Demineralized water shall be recycled to the test tank. Pump minimum flow rate of 50 gpm shall be demonstrated against a system head of $\geq$ 1,275 psig.

2. At least once during each operating cycle -

   Manually initiate the system, except the explosive valves and

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ATWS requirements are satisfied at all concentrations above 10 weight percent for a minimum enrichment of 34.7 atom percent of B-10.

Figure 3.4-1 shows the permissible region of operation on a sodium pentaborate solution volume versus concentration graph. This curve was developed for 34.7% enriched B-10 and a pumping rate of 50 gpm. Each point on this curve provides a minimum of 660 ppm of equivalent natural boron in the reactor vessel upon injection of SLC solution. At a solution volume of 2200 gallons, a weight concentration of 13% sodium pentaborate, enriched to 34.7% boron-10 is needed to meet shutdown requirements. The maximum storage volume of the solution is 4780 gallons which is the net overflow volume in the SLC tank.

Boron concentration, isotopic enrichment of boron-10, solution temperature, and volume are checked on a frequency adequate to assure a high reliability of operation of the system should it ever be required.

The only practical time to test the Standby Liquid Control System is during a refueling outage and by initiation from local stations. Components of the system are checked periodically as described above and make a functional test of the entire system on a frequency of more than once each refueling outage unnecessary. A test of explosive charges from one manufacturing batch is made to assure that the charges are satisfactory. A continuous check of the firing circuit continuity is provided by pilot lights in the control room.

The relief valves in the Standby Liquid Control System protect the system piping and positive displacement pumps, which are nominally designed for 1,500 psig, from overpressure. The pressure relief valves discharge back to the standby liquid control pump suction line.

B. Operation with Inoperable Components

Only one of two standby liquid control pumping circuits is needed for operation. If one circuit is inoperable, there is no immediate threat to shutdown capability, and reactor operation may continue during repairs. Assurance that the remaining system will perform its function is obtained by verifying pump operability in the operable circuit at least daily.

C. Sodium Pentaborate Solution

To guard against precipitation, the solution, including that in the pump suction piping, is kept at least 10°F above saturation temperature. Figure 3.4-2 shows the saturation temperature including 10°F margin as a function of sodium pentaborate solution concentration. Tank heater and heat tracing system are provided to assure compliance with this requirement. The set points for the automatic actuation of the tank heater and heat tracing system are established based on the solution concentration. Temperature and liquid level alarms for the system annunciate in the control room. Pump operability is checked on a frequency to assure a high reliability of operation of the system should it ever be required.

3.5 (cont'd)

4.5 (cont'd)

b.	Flow Rate Test - Core spray pumps shall deliver at least 4,625 gpm against a system head corresponding to a reactor vessel pressure greater than or equal to 113 psi above primary containment pressure.	Once/3 months
c.	Core Spray Header Δp Instrumentation Check Calibrate Test	 Once/day Once/3 months Once/3 months
d.	Logic System Functional Test	Once/operating cycle
e.	Testable Check Valves	Tested for operability any time the reactor is in the cold condition exceeding 48 hours, if operability tests have not been performed during the preceding 92 days.

3.5 (cont'd)

2. From and after the date that one of the Core Spray Systems is made or found inoperable for any reason, continued reactor operation is permissible during the succeeding 7 days unless the system is made operable earlier, provided that during the 7 days all active components of the other Core Spray System and the LPCI System shall be operable.

3. Both LPCI subsystems of the RHR System shall be operable whenever irradiated fuel is in the reactor and prior to reactor startup from a cold condition, except as specified below.

   a. From the time that one of the LPCI subsystems is made or found to be inoperable for any reason, continued reactor operation is permissible during the succeeding 7 days unless that subsystem is made operable earlier provided that during these 7 days the operable LPCI subsystem and both Core Spray Systems shall be operable.

4.5 (cont'd)

2. When it is determined that one Core Spray System is inoperable, the operable Core Spray System, and both LPCI subsystems, shall be verified to be operable immediately. The remaining Core Spray System shall be verified to be operable daily thereafter.

3. LPCI System testing shall be as specified in 4.5.A.1.a, b, d, and e except that each RHR pump shall deliver at least 8,910 gpm against a system head corresponding to a reactor vessel to primary containment differential pressure of greater than or equal to 20 psid.

   a. When it is determined that one LPCI subsystem is inoperable, the operable LPCI subsystem and both Core Spray Systems shall be verified to be operable immediately and daily thereafter.

3.5 (cont'd)

5. All recirculation pump discharge valves shall be operable prior to reactor startup (or closed if permitted elsewhere in these specifications).

S. If the requirements of 3.5.A cannot be met, the reactor shall be placed in the cold condition within 24 hrs.

B. Containment Cooling Mode (of the RHR System)

1. Both subsystems of the containment cooling mode, each including two RHR and two RHRSW pumps, shall be operable whenever there is irradiated fuel in the reactor vessel, prior to startup from a cold condition, and reactor coolant temperature $\geq$212°F except as specified below.

4.5 (cont'd)

5. All recirculation pump discharge valves shall be tested for operability any time the reactor is in the cold condition exceeding 48 hours, if operability tests have not been performed during the preceding 92 days.

B. Containment Cooling Mode (of the RHR System)

1. Subsystems of the containment cooling mode shall be demonstrated operable by performing:

   a. a pump operability and flow rate test on the RHR pumps per Surveillance Requirement 4.5.A.3.

   b. a flow rate test at least once every 3 months demonstrating a flow rate of 4000 gpm for each RHRSW pump and a total flow rate of 8000 gpm for two RHRSW pumps operating in parallel.

   c. During each five-year period, an air test shall be performed on the containment spray headers and nozzles.

3.5 (cont'd)

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C. HIGH PRESSURE COOLANT INJECTION (HPCI SYSTEM)

1. The HPCI System shall be operable whenever the reactor pressure is greater than 150 psig and reactor coolant temperature is greater than 212°F and irradiated fuel is in the reactor vessel, except as specified below:

4.5 (cont'd)

C. HIGH PRESSURE COOLANT INJECTION (HPCI SYSTEM)

Surveillance of HPCI System shall be performed as follows provided a reactor steam supply is available. If steam is not available at the time the surveillance test is scheduled to be performed, the test shall be performed within 10 days of continuous operation from the time steam becomes available.

1. HPCI System testing shall be as specified in 4.5.A.1.a, b, d and e except that the HPCI pump shall deliver at least 4,250 gpm against a system head corresponding to a reactor vessel pressure of 1,120 psig to 150 psig.

3.5 (Cont'd)

E. Reactor Core Isolation Cooling (RCIC) System

1. The RCIC System shall be operable whenever there is irradiated fuel in the reactor vessel and the reactor pressure is greater than 150 psig and reactor coolant temperature is greater than 212°F except from the time that the RCIC System is made or found to be inoperable for any reason, continued reactor power operation is permissible during the succeeding 7 days unless the system is made operable earlier provided that during these 7 days the HPCI System is operable.

2. If the requirements of 3.5.E cannot be met, the reactor shall be placed in the cold condition and pressure less than 150 psig within 24 hours.

3. Low power physics testing and reactor operator training shall be permitted with inoperable components as specified in 3.5.E.2 above, provided that reactor coolant temperature is $\leq$212°F.

4.5 (Cont'd)

E. Reactor Core Isolation Cooling (RCIC) System

1. RCIC System testing shall be performed as follows provided a reactor steam supply is available. If steam is not available at the time the surveillance test is scheduled to be performed, the test shall be performed within ten days of continuous operation from the time steam becomes available.

	Item	Frequency
a.	Simulated Automatic Actuation (and Restart*) Test	Once/operating cycle
b.	Flow Rate Test - The RCIC pump shall deliver at least 400 gpm at a system head corresponding to a reactor pressure of 1120 psig to 150 psig.	Once/3 months
c.	Testable Check Valves	Tested for operability any time the reactor is in the cold condition exceeding 48 hours, if operability tests have not been performed during the preceding 92 days.
d.	Logic System Functional Test	Once/operating cycle

* Automatic restart on a low water level signal which is subsequent to a high water level trip.

3.5 (cont'd)

4.5 (cont'd)

2. When it is determined that the RCIC System is inoperable at a time when it is required to be operable, the HPCI System shall be verified to be operable immediately and daily thereafter.

3.5 (cont'd)

F. ECCS-Cold Condition

1. A minimum of two low pressure Emergency Core Cooling subsystems shall be operable whenever irradiated fuel is in the reactor, the reactor is in the cold condition, and work is being performed with the potential for draining the reactor vessel.

2. A minimum of one low pressure Emergency Core Cooling subsystem shall be operable whenever irradiated fuel is in the reactor, the reactor is in the cold condition, and no work is being performed with the potential for draining the reactor vessel.

3. Emergency Core Cooling subsystems are not required to be operable provided that the reactor vessel head is removed, the cavity is flooded, the spent fuel pool gates are removed, and the water level above the fuel is in accordance with Specification 3.10.C.

4. With the requirements of 3.5.F.1, 3.5.F.2, or 3.5.F.3 not satisfied, suspend core alterations and all operations with the potential for draining the reactor vessel. Restore at least one system to operable status within 4 hours or establish Secondary Containment Integrity within the next 8 hours.

4.5 (cont'd)

F. ECCS-Cold Condition

Surveillance of the low pressure ECCS systems required by 3.5.F.1 and 3.5.F.2 shall be as follows:

1. Perform a flowrate test at least once every 3 months on the required Core Spray pump(s) and/or the RHR pump(s). Each Core Spray pump shall deliver at least 4,625 gpm against a system head corresponding to a reactor vessel pressure greater than or equal to 113 psi above primary containment pressure. Each RHR pump shall deliver at least 9900 gpm against a system head corresponding to a reactor vessel to primary containment differential pressure of $\geq$ 20 psid.

2. Once each shift verify the suppression pool water level is greater than or equal to 10.33 ft. whenever the low pressure ECCS subsystems are aligned to the suppression pool.

3. Once each shift verify a minimum of 324 inches of water is available in the Condensate Storage Tanks (CST) whenever the Core Spray System(s) is aligned to the tanks.

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3.5 (cont'd)

G. Maintenance of Filled Discharge Pipe

Whenever core spray subsystems, LPCI subsystems, HPCI, or RCIC are required to be operable, the discharge piping from the pump discharge of these systems to the last block valve shall be filled.

1. From and after the time that the pump discharge piping of the HPCI, RCIC, LPCI, or Core Spray Systems cannot be maintained in a filled

4.5 (cont'd)

G. Maintenance of Filled Discharge Pipe

The following surveillance requirements shall be adhered to, in order to assure that the discharge piping of the core spray subsystem, LPCI subsystem, HPCI, and RCIC are filled:

1. Prior to the testing of the LPCI subsystem and core spray subsystem, the discharge piping of these systems shall be vented from the high point, and water flow observed.

4.5 BASES

The testing interval for the Core and Containment Cooling Systems is based on a quantitative reliability analysis, industry practice, judgement, and practicality. The Emergency Core Cooling Systems have not been designed to be fully testable during operation. For example, the core spray final admission valves do not open until reactor pressure has fallen to 450 psig; thus, during operation even if high drywell pressure were simulated, the final valves would not open. In the case of the HPCI, automatic initiation during power operation would result in pumping cold water into the reactor vessel which is not desirable.

The systems will be automatically actuated during a refueling outage. In the case of the Core Spray System, condensate storage tank water will be pumped to the vessel to verify the operability of the core spray header. Individual components of the Core and Containment Cooling Systems (e.g., instrumentation, pumps, valve operators, etc.) are tested more frequently. The instrumentation is functionally tested each month. The pumps and motor-operated valves are tested once every 3 months to assure their operability. The combination of automatic actuation tests and quarterly tests of the pumps and valve operators is adequate to demonstrate availability of these systems.

With components or subsystems out-of-service, overall core and containment cooling reliability is maintained by verifying the operability of the remaining cooling equipment. Consistent with the definition of operable in Section 4.0.C, demonstrate means conduct a test to show; verify means that the associated surveillance activities have been satisfactorily performed within the specified time interval.

The surveillance requirements to ensure that the discharge piping of the core spray, LPCI mode of the RHR, HPCI, and RCIC Systems are filled provides for a visual observation that water flows from a high point vent. This ensures that

3.6 (cont'd)

F. Structural Integrity

The structural integrity of the Reactor Coolant System shall be maintained at the level required by the original acceptance standards throughout the life of the Plant.

G. Jet Pumps

Whenever the reactor is in the startup/hot standby or run modes, all jet pumps shall be operable. If it is determined that a jet pump is inoperable, the reactor shall be placed in a cold condition within 24 hours.

4.6 (cont'd)

F. Structural Integrity

1. The requirements of Specification 4.0.E are applicable.

2. An augmented inservice inspection program is required for those high stressed circumferential piping joints in the main steam and feedwater lines larger than 4 inches in diameter, where no restraint against pipe whip is provided. The augmented in-service inspection program shall consist of 100 percent inspection of these welds per inspection interval.

3. An Inservice Inspection Program for piping identified in the NRC Generic Letter 88-01 shall be implemented in accordance with NRC staff positions on schedules, methods, personnel, and sample expansion included in this Generic Letter, or in acordance with alternate measures approved by the NRC staff.

G. Jet Pumps

Whenever there is recirculation flow with the reactor in the startup/hot standby or run modes, jet pump operability shall be checked daily by verifying that the following conditions do not occur simultaneously:

3.7 (cont'd)

breaker is sooner made operable, provided that the repair procedure does not violate primary containment integrity.

5. Pressure Suppression Chamber - Drywell Vacuum Breakers

a. When primary containment integrity is required, all drywell suppression chamber vacuum breakers shall be operable and positioned in the fully closed position except during testing and as specified in 3.7.A.5.b below.

b. One drywell suppression chamber vacuum breaker may be non-fully closed so long as it is determined to be not more than 1° open as indicated by the position lights.

c. One drywell suppression chamber vacuum breaker may be determined to be inoperable for opening.

d. If specifications 3.7.A.5.a, b, and c cannot be met, an orderly shutdown will be initiated, and the reactor shall be placed in a cold condition.

4.7 (cont'd)

5. Pressure Suppression Chamber - Drywell Vacuum Breakers

a. Each drywell suppression chamber vacuum breaker shall be exercised through an opening - closing cycle quarterly.

b. When it is determined that one vacuum breaker is inoperable for fully closing when operability is required, the operable breakers shall be exercised immediately, and every 15 days thereafter until the inoperable valve has been returned to normal service.

c. Once each operating cycle, each vacuum breaker valve shall be visually inspected to insure proper maintenance and operation.

d. A leak test of the drywell to suppression chamber structure shall be conducted once per operating cycle; the acceptable leak rate is $\leq$0.25 in. water/min, over a 10 min period, with the drywell at 1 psid.

3.7 (cont'd)

e. Leakage between the drywell and suppression chamber shall not exceed a rate of 71 scfm as monitored via the suppression chamber 10 min pressure transient of 0.25 in. water/min.

f. The self actuated vacuum breakers shall open when subjected to a force equivalent to 0.5 psid acting on the valve disc.

g. From and after the date that one of the pressure suppression chamber/drywell vacuum breakers is made or found to be inoperable for any reason, the vacuum breaker shall be locked closed and reactor operation is permissible only during the succeeding seven days unless such vacuum breaker is sooner made operable, provided that the repair procedure does not violate primary containment integrity.

4.7 (cont'd)

e. Not applicable

f. Not applicable

g. During each refueling outage each vacuum breaker shall be tested to determine that the force required to open the vacuum breaker does not exceed the force specified in Specification 3.7.A.5.f.

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3.11 (cont'd)

D. Emergency Service Water System

1. To ensure adequate equipment and area cooling, both ESW systems shall be operable when the requirements of specification 3.5.A and 3.5.B must be satisfied, except as specified below in specification 3.11.D.2.

4.11 (cont'd)

D. Emergency Service Water System

1. Surveillance of the ESW system shall be performed as follows:

Item	Frequency
a. Simulated Automatic Actuation Test	Once/operating cycle
b. Flow Rate Test - Each ESW pump shall deliver at least 1607 gpm to its respective loop against a total developed system head equal to or greater than the ASME Section XI action level on the pump curve.	Once/3 months
c. ESW Instrumentation	
Check	Once/day
Calibrate	Once/3 months
Test	Once/3 months
d. Logic System Functional Test	Once/operating cycle

3.11 (cont'd)

2. From and after the time that one Emergency Service Water System is made or found to be inoperable for any reason continued reactor operation is permissible for a period not to exceed 7 days total for any calendar month, provided that:

   - the operable Emergency Diesel Generator System is demonstrated to be operable immediately and daily thereafter; and
   - all Emergency Diesel Generator System emergency loads are verified operable immediately and daily thereafter.

3. If specification 3.11.D.2 cannot be met an orderly shut down shall be initiated and the reactor shall be placed in a cold condition within 24 hours.

4.11 (cont'd)

2. ESW will not be supplied to RBCLC system during testing.

3.11 & 4.11 BASES

A. Main Control Room Ventilation System

One main control room emergency ventilation air supply fan provides adequate ventilation flow under accident conditions. Should one emergency ventilation air supply fan and/or fresh air filter train be out of service during reactor operation, a repair time of 14 days is allowed because during that time, a redundant 100% capacity train is required to be operable.

The 3 month test interval for the main control room emergency ventilation air supply fan and dampers is sufficient since two redundant trains are provided and neither is normally in operation.

A pressure drop test across each filter and across the filter system is a measure of filter system condition. DOP injection measures particulate removal efficiency of the high efficiency particulate filters. A Freon-112 test of the leakage test. Since the filters have charcoal of known efficiency and holding capacity for elemental iodine and/or methyl iodine, the test also gives an indication of the relative efficiency of the installed system. Laboratory analysis of a sample of the charcoal filters positively demonstrates halogen removal efficiency. These tests are conducted in accordance with manufacturers' recommendations.

The purpose of the emergency ventilation air supply system capacity test is to assure that sufficient air is supplied to the main control room so that a slight positive pressure can be maintained, thereby minimizing in-leakage.

B. Crescent Area Ventilation

Engineering analyses indicate that the temperature rise in safeguards compartments without adequate ventilation flow or cooling is such that continued operation of the safeguards equipment or associated auxiliary equipment cannot be assured.

C. Battery Room Ventilation

Engineering analyses indicate that the temperature rise and hydrogen buildup in the battery, and battery charger compartments without adequate ventilation is such that continuous operation of equipment in these compartments cannot be assured.

D. Emergency Service Water System

The ESWS has two 100 percent cooling capacity pumps, each powered from a separate standby power supply. The ESWS supplies lake water to the cooling systems of the emergency diesel generators and other components required to function following an accident. The system can also supply components of the RBCLCS. Performance of the Surveillance Requirement flow rate test will demonstrate pump hydraulic capability when meeting the ASME Section XI requirements.

SAFETY EVALUATION FOR PROPOSED TECHNICAL SPECIFICATION CHANGES ASME SECTION XI AND ESW PUMP SURVEILLANCE TESTING (JPTS-90-023)

I. DESCRIPTION OF THE PROPOSED CHANGES

This application for an amendment to the James A. FitzPatrick Technical Specifications addresses three associated issues: Emergency Service Water (ESW) pump surveillance testing; incorporation of ASME Section XI, and; editorial corrections.

A. ESW Pump Surveillance Requirements/Flow Rate

1. On page 240, Surveillance Requirement 4.11.D.1.b, replace:

> "Flow Rate Test - ESW pumps shall deliver at least 3,250 gpm against a system head corresponding to a total pump head of $\geq$80 psi, as determined from the pump certification curve by measuring the pump shutoff head which shall be $\geq$117 psi."

with

> "Flow Rate Test - Each ESW pump shall deliver at least 1607 gpm to its respective loop against a total developed system head equal to or greater than the ASME Section XI action level on the pump curve."

2. On page 243, Bases Section 3.11 & 4.11 D., replace:

> "The ESWS utilizes lake water to the cooling system of the emergency diesel generators. The system will also supply water to those components of the RBCLCS which are required for emergency conditions during a loss of power condition. These include ECCS pumps and area unit coolers"

with

> "The ESWS supplies lake water to the cooling systems of the emergency diesel generators and other components required to function following an accident. The system can also supply components of the RBCLCS. Performance of the Surveillance Requirement flow rate test will demonstrate pump hydraulic capability when meeting the ASME Section XI requirements."

B. Incorporation of ASME Section XI

1. Revise page i to show Specification 3.1, Reactor Protection System, located on page 30h to reflect the renumbering of pages in item 2.

2. Renumber existing pages 30b, 30c, 30d, 30e, and 30f to read 30c, 30d, 30e, 30f, and 30h, respectively. The changes described in the following items 3 and 4 refer to these renumbered pages and indicate where new pages are inserted.

3. Add a new Surveillance Requirement 4.0.E by revising page 30a and adding a new page 30b which include the following:

"E. Surveillance Requirements for inservice inspection and testing of components shall be applicable as follows:

1. Inservice inspection of components and inservice testing of pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been requested of the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

2. Surveillance intervals specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda for the inservice inspection and testing activities required by the ASME Boiler and Pressure Vessel Code and applicable Addenda shall be applicable as follows in these Technical Specifications:

ASME Boiler and Pressure Vessel Code and applicable Addenda terminology for inservice inspection and testing activities	Required frequencies for performing inservice inspection and testing activities
Weekly	At least once per 7 days
Monthly	At least once per 31 days
Quarterly or every 3 months	At least once per 92 days
Semiannually or every 6 months	At least once per 184 days
Every 9 months	At least once per 276 days
Yearly or annually	At least once per 366 days

3. The provisions of Specification 4.0.B are applicable to the above required frequencies for performing inservice inspection and testing activities.

4. Performance of the above inservice inspection and testing activities shall be in addition to other specified Surveillance Requirements.

5. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any Technical Specification."

4. Add a new Bases Section 4.0.E by revising page 30f and adding a new page 30g which include the following:

   "E. This specification ensures that inservice inspection of components and inservice testing of pumps and valves will be performed in accordance with a periodically updated version of the plant "Inservice Testing Program" and the "Weld and Support Inservice Inspection Program" to comply with Section XI of the ASME Boiler and Pressure Vessel Code and Addenda as required by 10 CFR 50.55a. The plant programs identify classifications required by the ASME code. Request for relief from any of the above requirements is provided in writing to the Commission and is not a part of these Technical Specifications.

   This specification includes a clarification of the frequencies for performing the inservice inspection and testing activities required by Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda. This clarification is provided to ensure consistency in surveillance intervals throughout these Technical Specifications and to remove any ambiguities relative to the frequencies for performing the required inservice inspection and testing activities.

   Under the terms of this specification, the more restrictive requirements of the Technical Specifications take precedence over the ASME Boiler and Pressure Vessel Code and applicable Addenda. For example, the requirements of Specification 4.0.D to perform surveillance activities prior to entry into an OPERATIONAL CONDITION or other specified applicability condition takes precedence over the ASME Boiler and Pressure Vessel Code provision which allows pumps to be tested up to one week after return to normal operation. And for example, the Technical Specification definition of OPERABLE does not grant a grace period before a device that is not capable of performing its specified function is declared inoperable and takes precedence over the ASME Boiler and Pressure Vessel provision which allows a valve to be incapable of performing its specified function for up to 24 hours before being declared inoperable."

5. On page 105, Surveillance Requirement 4.4.A.1, replace the phrase "At least once per month" with "At least once every three months."

6. One page 109, Bases Section 3.4.A, delete the sentence:

   "Experience with pump operability indicates that monthly testing is adequate to detect if failures have occurred."

7. On page 113, Surveillance Requirement 4.5.A.1;

   a) Delete Surveillance Requirement 4.5.A.1.c.

   b) Delete Surveillance Requirement 4.5.A.1.d.

   c) Replace "31 days" with "92 days" in Surveillance Requirement 4.5.A.1.g.

   d) Renumber Surveillance Requirements 4.5.A.1.e, f, and g to read 4.5.A.1.c, d, and e, respectively.

8. On page 114, Surveillance Requirement 4.5.A.3, replace:

   "LPCI System testing shall be as specified in 4.5.A.1.a, b, c, d, f, and g ..."

   with

   "LPCI System testing shall be as specified in 4.5.A.1.a, b, d, and e ..."

9. On page 115a, Surveillance Requirement 4.5.A.5, replace "31 days" with "92 days."

10. On page 115a, Surveillance Requirement 4.5.B.1;

    a) Delete Surveillance Requirement 4.5.B.1.b.

    b) Delete Surveillance Requirement 4.5.B.1.c.1.

    c) Renumber Surveillance Requirements 4.5.B.1.c.2 and d to read 4.5.B.1.b and c, respectively.

11. On page 117, Surveillance Requirement 4.5.C.1, replace:

    "HPCI System testing shall be as specified in 4.5.A.1.a, b, c, d, f, and g ..."

    with

    "HPCI System testing shall be as specified in 4.5.A.1.a, b, d, and e ..."

12. On page 121, Surveillance Requirement 4.5.E.1;

    a) Delete Surveillance Requirement 4.5.E.1.b.

    b) Delete Surveillance Requirement 4.5.E.1.c.

    c) For Surveillance Requirement 4.5.E.1.d, replace:

"Flow Rate	Once/3 months"

    with

"Flow Rate Test - The RCIC pump shall deliver at least 400 gpm at a system head corresponding to a reactor pressure of 1120 psig to 150 psig."	Once/3 months

    d) Replace "31 days" with "92 days" in Surveillance Requirement 4.5.E.1.e.

    e) Renumber Surveillance Requirements 4.5.E.1.d, e, and f to read 4.5.E.1.b, c, and d.

13. On page 121a, delete the sentence:

    "The RCIC pump shall deliver at least 400 gpm for a system head corresponding to a reactor pressure of 1,120 psig to 150 psig."

14. On page 122, Surveillance Requirement 4.5.F;

    a) Delete Surveillance Requirement 4.5.F.2.

    b) Renumber Surveillance Requirements 4.5.F.3 and 4 to read 4.5.F.2 and 3.

15. On page 122a, delete the words "Every month" from Surveillance Requirement 4.5.G.1.

16. On page 132, Bases Section 4.5, replace in the second paragraph:

> "Likewise, the pumps and motor-operated valves are also tested each month to assure their operability. The combination automatic actuation test and monthly tests of the pumps and valve operators is deemed to be adequate testing of these systems."

with

> "The pumps and motor-operated valves are tested once every 3 months to assure their operability. The combination of automatic actuation tests and quarterly tests of the pumps and valve operators is adequate to demonstrate availability of these systems."

17. On page 144, Surveillance Requirement 4.6.F.1, replace:

> "Nondestructive inspections shall be performed on the ASME Boiler and Pressure Vessel Code Class 1, 2 and 3 components and supports in accordance with the requirements of the weld and support inservice inspection program. This inservice inspection program is based on an NRC approved edition of, and addenda to, Section XI of the ASME Boiler and Pressure Vessel Code which is in effect 12 months or less prior to the beginning of the inspection interval."

with

> "The requirements of Specification 4.0.E are applicable."

18. On page 178, Surveillance Requirement 4.7.A.5.a, replace the word "monthly" with the word "quarterly."

19. On page 240, Surveillance Requirement 4.11.D.1;

    a) Delete Surveillance Requirement 4.11.D.1.c.

    b) Delete Surveillance Requirement 4.11.D.1.d.

    c) Renumber Surveillance Requirements 4.11.D.1.e and f as 4.11.D.1.c and d, respectively, and move from page 241 to 240.

20. On page 241, move Surveillance Requirements 4.11.D.1.e and f to page 240 as noted in item 19.c.

C. Editorial Corrections

1. On page 30a, Specification 3.0.D, replace the word "thru" with "through".

2. On page 105, Surveillance Requirement 4.4.A.1, replace the word "verified" with "demonstrated."

3. One page 113;

   a) Replace the word "Months" with "months" in Surveillance Requirement 4.5.A.1.b.

   b) Replace the phrase "Once/each operating cycle" with "Once/operating cycle" in Surveillance Requirement 4.5.A.1.f (renumbered as 4.5.A.1.b).

4. On page 115a;

   a) Replace ":" with a "." in Specification 3.5.B.1.

   b) Replace the word "verifying" with "demonstrating" in Surveillance Requirement 4.5.B.1.c.2 (renumbered as 4.5.B.1.b).

5. On page 122a, Specification 3.5.G.a, renumber specification "3.5.G.a" as specification "3.5.G.1."

6. On page 132, Bases Section 4.5 in the second paragraph, replace:

   "To increase the availability of the individual components of the Core and Containment Cooling Systems the components which make up the system i.e., instrumentation, pumps, valve operators, etc., are tested more frequently."

   with

   "Individual components of the Core and Containment Cooling Systems (e.g., instrumentation, pumps, valve operators, etc.) are tested more frequently."

7. On page 179, Surveillance Requirement 4.7.A.5.g, delete the phrase:

   "... and each vacuum breaker shall be inspected and verified to meet design requirements."

8. On page 240, Surveillance Requirement 4.11.D.1;

   a) Replace the phrase "Each operating cycle" with "Once/operating cycle" in Specification 4.11.D.1.a.

   b) Replace the phrase "Once/each operating cycle" with "Once/operating cycle" in Specification 4.11.D.1.f (renumbered as 4.11.D.1.d).

II. PURPOSE OF THE PROPOSED CHANGES

A. ESW Pump Surveillance Requirements/Flow Rate

During the August 21, 1990 ESW enforcement conference (Reference 5) the Authority identified the limitations of the "shut off head" ESW pump surveillance test currently required by the FitzPatrick Technical Specifications. At that meeting, the Authority committed to prepare and submit a Technical Specification change to require an improved ESW pump test, Reference 5.

In Reference 7, the Authority clarified it's commitment and stated that the test requirements would reflect the appropriate portions of Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code and the FitzPatrick inservice inspection and test programs based upon revised flow requirements. Reference 8 provided the schedule for completion of this action. This application satisfies that commitment.

In preparing the proposed Technical Specification change, the Authority has revised pump flow rate requirements. The flow rate was based on an evaluation of the minimum required flow to safety related components supported by the ESW during a Design Basis Accident (DBA) using an elevated lake temperature, Reference 6.

B. General Incorporation of ASME Section XI

This portion of the amendment submittal implements ASME B&PV Code Section XI as a surveillance requirement in addressing the inspection and testing of ASME B&PV Code class 1, 2, and 3 components as established by the applicable sections of 10 CFR 50.55a(g). The purpose of this change is to eliminate unnecessary testing at power consistent with NRC Commission policy, Reference 11, by consolidating portions of the Technical Specification surveillance test program, Inservice Test Program, and Weld and Support Inservice Inspection Program. The changes will

assure adequate testing for operability while eliminating component wear due to excessive testing.

This change replaces the monthly Technical Specification surveillance requirement for pumps and valves with the James A. FitzPatrick ASME B&PV Section XI Inservice Test Program, Reference 9, in a manner consistent with the Standard Technical Specifications, Reference 10. This change also revises other Surveillance Requirements to be consistent with the requirements of ASME Section XI (e.g., methodologies for determining reference data, acceptable calibration frequencies, testing of specific parameters, acceptance criteria, etc.). The effect will be to eliminate unnecessary testing of safety related pumps and valves, particularly during power operation.

C. Editorial Corrections

Various editorial or administrative changes to pages which were the subject of this amendment submittal are made to improve the consistency and clarity of the Technical Specifications.

III. SAFETY IMPLICATIONS OF THE PROPOSED CHANGES

A. ESW Pump Surveillance Requirements/Flow Rate

The ESW system consists of two independent supply loops each with an emergency service water pump to provide cooling to the Emergency Core Cooling System (ECCS) components and other vital equipment required for a safe reactor shutdown. In the event of failure of one of the two emergency pumps, the remaining loop can provide sufficient cooling water to support operation of the minimum required ECCS equipment during a DBA.

The present surveillance requirement for a flow rate test of the ESW pumps specifies a minimum pump discharge pressure at zero flow for each ESW pump (i.e., shut off head test). The proposed surveillance requirement will overcome the shortcomings of the current test by demonstrating the capability of the pumps to provide flow to the system and by minimizing the wear attributable to shutoff head testing.

The proposed surveillance test will be performed with the ESW pumps aligned to provide flow to components that are required following a design basis accident. The acceptance criteria used for the proposed surveillance test were derived considering three factors: 1. a recalculation of minimum system flow requirements; 2. an evaluation of the system hydraulic characteristics, and; 3. the development of procedures for the inservice testing (IST) program.

1. System Flow Requirements

The proposed surveillance test identifies a minimum flow rate of 1607 gpm. This value is based on a recent calculation of the ESW system flow requirements necessary to remove heat following a DBA, Reference 6. The revised calculation demonstrates that heat removal requirements are met when flow to components required to function following the DBA (i.e., emergency diesel generator jacket, electric bay coolers, crescent area coolers, cable tunnel coolers, control room air handling units, and relay room air handling units) is 1605 and 1607 gpm for trains A and B, respectively.

The minimum flow rate in the proposed surveillance test is less then either the existing FSAR (see Table 9.7-1) flow rate requirement of 2915 gpm or the present Technical Specification of 3250 gpm. 2915 gpm is based on full single loop cooling and individual component flows higher than necessary to perform the required function, Reference 6. 3250 gpm is based on the cooling requirement for all components supplied by the ESW and provides a reasonable allowance for normal pump degradation from the head capacity design curve. The proposed minimum flow rate is not inconsistent with either the FSAR or the current technical specification since it represents only that cooling flow to components required for an accident and reduced flow rates, based on recalculated flows from Reference 6, to those required components.

A minimum flow rate of 1607 gpm is acceptable for demonstrating pump flow.

2. System Hydraulics

The proposed surveillance test identifies the ASME Section XI action level on the pump curve as the basis for determining pump operability when providing the minimum required flow. The proposed acceptance criteria was based on an ESW test, Reference 24, which demonstrated that each ESW pump could provide minimum flow to the components required following the DBA while also supplying RBCLCS components. The RBCLCS components which were isolated during this test will remain isolated during normal power operation. Changes to the requirements to isolate these RBCLCS components will require retesting. Calculations, Reference 25, based on test data have further demonstrated that the ESW pumps have margin to operate below the ASME Section XI action level on their pump curves and still deliver minimum flow to components required for the DBA when the RBCLCS components are aligned.

A surveillance test where the minimum flow rate is supplied to required components while the pump is performing at or above the lower action level on the pump curve is acceptable to demonstrate the hydraulic capability of the pump. A flow test which includes ESW injection into the RBCLCS cannot be performed during plant operation.

3. Flow Test Procedure

In addition to the shut off test performed as required by Surveillance Requirement 4.11.D.1.b, the Authority has started to perform additional pump tests, References 12 and 14, that measure pump flow, differential pressure (dp), and flow through most required components. These tests meet ASME Section XI, Reference 13, by indicating the ESW pump hydraulic condition. These tests will be used to meet the proposed surveillance requirement.

The tests which will be used to meet the proposed surveillance requirement deliver flow to all components required after a DBA except the Control Room and Relay Room air handling units (AHUs). These AHUs are glycol cooled during normal operation and circulation of normal or emergency service water through the system is minimized to keep them clean and to avoid flushing of glycol to Lake Ontario. The flow path in the proposed surveillance test will include the Control Room chiller and the Chiller Room AHU which require a flow rate slightly above that of the Control Room and Relay Room AHUs (226 gpm and 254 gpm for trains A and B, respectively as opposed to 200 gpm).

The proposed tests demonstrate minimum ESW flow through required components or their equivalent and are required to provide a pump flow and head that meet, as a minimum, the action level on the pump curve. They are therefore sufficient to demonstrate pump operability. The proposed pump surveillance test exceeds current service water system surveillance requirements of the Standard Technical Specifications, Reference 10. The pump testing procedure results in an improved indication of pump and system operability while reducing stress to the pumps.

The proposed revision to the surveillance requirements will be performed as part of the current program for testing under ASME Section XI and will provide assurance of the hydraulic condition of both the pump and system to meet plant accident requirements. The system alignment for testing will include all components required for a DBA except those which are aligned manually under accident conditions. The proposed test will demonstrate the capability of the system to perform its intended function.

B. Incorporation of ASME Section XI

This amendment adds the requirements and criteria of ASME Section XI into the Technical Specifications as new requirements, removes the surveillance test requirements for pumps and valves that have been replaced by the Section XI program, and revises the testing frequency to be consistent with ASME Section XI. This change is both administrative and technical in nature. The replacement of multiple individual test requirements with a single requirement (Section 4.0.E) is an administrative change which has a negligible impact on plant operations and safety.

The extension of the specified surveillance intervals from monthly to quarterly is a technical change.

The FitzPatrick Technical Specifications contain, in part, monthly pump and valve surveillance test requirements for the following systems:

Standby Liquid Control System (4.4.A)
Core Spray System (4.5.A)
Residual Heat Removal System (4.5.B)
High Pressure Coolant Injection System (4.5.C)
Reactor Core Isolation Cooling System (4.5.E)
Emergency Core Cooling System (4.5.F)
Reactor Coolant Systems Structural Integrity (4.6.F)
Drywell Vacuum Breakers (4.7.A.5)
Emergency Service Water System (4.11.D)

These FitzPatrick Technical Specifications generally require that pumps and valves be tested once per month. These monthly surveillance tests (i.e., a pump functional test and a valve stroke test), demonstrate system availability by operating the starting circuits and verifying proper equipment operation, have been replaced. They are replaced by the requirements imposed by the new Surveillance Requirement, 4.0.E, which incorporates the FitzPatrick inservice testing program, and will result in a quarterly testing cycle in place of the existing monthly tests. Retained are the pump functional tests which establish pump hydraulic operability by confirming an established discharge flow rate or discharge pressure. These tests and tests on other components (e.g., injection line testable check valves, recirculation pump discharge valve, and drywell/torus vacuum breakers) have been revised to require quarterly testing.

In the late 1960's General Electric (GE), used simplified probabilistic risk techniques to establish a logical basis for both surveillance test intervals and the allowable outage times which are contained in BWR technical specifications. GE Report APED-5736, Reference 16, and a 1968 article from the magazine Nuclear Safety, Reference 17, provide an in-depth discussion of these modeling techniques. These two documents were used in the Bases Sections of the FitzPatrick Technical Specifications as a rationale for the test intervals specified and as a basis for past technical specification requirements on testing redundant systems when in a degraded LCO condition. These studies established the connection between system availability as a function of failure rates, repair times, and the duration between operability tests. They concluded that frequent system testing would provide greater assurance of system operability since the likelihood of detecting a component suffering from degradation prior to failure was increased.

The testing requirement that resulted from these studies did not increase system availability since a system is classified as being unavailable while tests are being conducted. A trade-off exists between the confidence in a system's operability due to frequent testing and a system's availability due to less frequent testing. This approach did not recognize that a component which is repeatedly tested would experience

further degradation compared to a component which is in a static condition awaiting operation.

Following issuance of the FitzPatrick operating license, both the Standard Technical Specifications and the ASME Code were revised to require quarterly pump and valve testing. These changes were based, in part, on concerns for accelerated component aging due to excessive testing and on a better understanding of the relationship between test frequency and component/system availability. These changes eliminated unnecessary monthly tests which are a burden on plant personnel and result in unnecessary additional wear and tear on the components and equipment in the safety systems, and also reduced the risk of plant transients associated with testing at power.

A reduction in testing would therefore provide the benefits of reducing system unavailability and the associated possibility of a plant transient during such testing at power and reducing component degradation due to extensive testing and the need for down time during component maintenance. Additionally, the ASME tests measure changes in pump and valve performance. Degradation can be detected and corrective action (i.e., further testing, repair, etc.) implemented to provide continuous assurance that safety equipment can fulfill their intended functions. A review of the FitzPatrick FSAR and the Technical Specifications indicates no design basis licensing criteria which would preclude this surveillance test extension.

10 CFR 50.55a(g) requires that the plant's inservice testing program be revised at 120 month intervals. The revised program must use, to the extent practicable, the testing requirements contained in the latest edition and addenda of the ASME Code that is in effect 1 year prior to the 120 month interval. The wording of the proposed Section 4.0.E is general enough to accommodate changes to the inservice test program without requiring future technical specification changes.

The proposed Section 4.0.E is consistent with the Standard Technical Specification requirement that Technical Specification requirements take precedent where they are more stringent. However, the proposed Section 4.0.E does differ from the Standard Technical Specification requirement to comply with ASME Section XI except where relief has been granted. The proposed Section 4.0.E allows deviations from the code where relief has been requested in writing from the Commission. This deviation reflects current practice. Changes are discussed with the NRC staff and formally proposed long before they are formally approved.

The proposed revision to the Technical Specifications is consistent with the Standard Technical Specifications with the exception of the Suppression Chamber to Drywell Vacuum Breaker System. This system limits vacuum in the drywell to meet the drywell-wetwell boundary design differential pressure requirement during negative pressure transients or post accident atmospheric cooldown. Overall operability is based on an "n + 1" design capacity. Standard Technical Specification 4.6.4.1.b contains a monthly stroke test for the suppression chamber to drywell vacuum breakers but establishes no technical basis for requiring the surveillance requirements of these valves to be more frequent than other swing check valves. These valves are 30 inch diameter swing check valves with a counterweight to ensure that the valve

remains seated until a pressure differential of 0.5 psid exists across the seat. In addition to the stroke test requirement, the valves are currently subject to visual inspections to assure proper maintenance and operation as well as an operability test every operating cycle. Revising the frequency of the stroke test to agree with the current quarterly stroke test required by the ASME Section XI program is justifiable based upon the similarity to other swing check valves tested to this frequency and the lack of any history of poor vacuum breaker performance at FitzPatrick.

C. Editorial Corrections

Changes identified in Section I of this amendment submittal as editorial or administrative changes can be subgrouped as:

1. Typographical/Punctuation Corrections

   The spelling correction in item I.C.1 and the punctuation correction in item I.C.4.a will not alter the safety evaluation of the Technical Specifications in any way.

2. Editorial Changes

   Editorial changes have been made that clarify the Technical Specifications. They include improvement of word usage (items I.C.3. and I.C.7), correction to numeration (item I.C.5), and grammatical corrections (item I.C.6). In all three cases, the changes made to the Technical Specifications do not entail any changes which would alter the conclusions of the plant's accident analyses as documented in the FSAR or the NRC staff's SER.

3. Administrative Changes

   The changes identified in items I.C.2 and I.C.4.b correct the usage of the words "verify" and "demonstrate" as established in the Technical Specifications by Amendment 148, Reference 20. They eliminate the need for redundant and unnecessary surveillance tests that result from overlapping requirements and are consistent with the Authority's interpretation of these words.

   These changes update Technical Specification pages that were under review when Amendment 148 was approved and represent an improvement to the consistency of the Technical Specifications.

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.

   The changes identified in this proposed amendment revise the pump surveillance testing for the ESW system, consolidating surveillance testing for various systems (e.g., ECCS, HPCI, ESW, etc.) with Section XI of the ASME B&PV Code as a basis, and make editorial corrections. None of these changes involves a hardware modification to the plant, a change to system operation, a change to the manner in which the system is used, or a change in the ability of the system to perform its intended function.

   The change to the ESW pump surveillance test represents an improvement in the test process. The proposed testing will measure actual pump flow through the system using a system alignment that will not prevent the system from performing its required function, if required. The proposed flow test required that a new performance criteria be established. These criteria were developed using recalculated minimum ESW flow requirements as well as the results of a system flow test and calculations which assured that the pumps, operating below the action level on the pump curve, could provide the minimum flow while other non-safety components were aligned. Procedures control system operation consistent with the performance criteria. This change allows for an improved demonstration of the ESW pump capability to meet system performance requirements under DBA conditions.

   The use of Section XI of the ASME B&PV Codes as a basis for establishing surveillance testing and acceptance criteria will not alter existing accident analyses. This has been acknowledged and accepted by the NRC given it's usage in the Standard Technical Specifications, Reference 10. The change to surveillance testing frequencies reduces testing at power, increases the availability of systems important to the mitigation of a DBA, and minimizes component degradation due to excessive testing. Section XI testing tracks component performance allowing identification of component degradation.

   The editorial changes are strictly non technical in nature with no impact to existing analyses. They clarify the Technical Specifications by improving the legibility of this document and update it to incorporate changes previously approved that were missed due to the nature of the amendment process. These changes, by their nature, do not have any affect.

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

   The proposed changes involve no hardware changes, no changes to the operation of the systems, and do not change the ability of the systems to perform their intended functions.

The procedures for testing the ESW pumps as required by the proposed surveillance requirement include those used to meet IST requirements. The system alignment was considered in system design. The flow rate used to establish the acceptance criteria for the new ESW test is based on current accident analyses.

The use of ASME Section XI as the basis for testing involves no testing alignments or practices not previously used as part of either the IST program or testing performed to Technical Specification requirements.

The editorial changes have no effect on plant practices.

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

There are no hardware modifications, changes to system operations, or effect on the ability of systems to perform their intended function associated with the proposed changes.

The revised surveillance test for the ESW system reduces stress on the system pump so the system remains capable of meeting its DBA commitment. The revised flow rate reduced the flows required for the ESW system to meet its design requirement following a DBA by removing conservatism from calculations to reflect system performance. The capability of the pumps to maintain the minimum flow is the subject of the tests that enhance the demonstration of system and pump operability and reduce pump wear.

The proposed changes to add Section XI of the ASME B&PV Code and remove individual Surveillance Requirements in the Technical Specifications does not relax any controls or limitations. The resulting reduction in test frequency, while reducing the possibility of detecting a degraded component prior to failure, is offset by the increased availability of systems important to plant safety and an associated reduction in component degradation due to excessive testing. Additionally, the ASME testing program evaluates components for degraded performance and will identify such degradation early.

There are no safety margins associated with the editorial corrections.

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. The results of these changes are expected to reduce the dose to plant personnel since the number of tests performed in close proximity to radiological sources will be reduced. The proposed change will not change the testing process currently in place to meet ASME Section XI requirements and therefore can have no impact on the Fire Protection program or 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:

a. 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;

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

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

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

VII. REFERENCES

1. James A. FitzPatrick Nuclear Power Plant Updated Final Safety Analysis Report, Sections 4.8, 6.0, and 9.7.1.

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

3. ASME Boiler and Pressure Vessel Code, Section XI, 1980 Edition through Winter 1981, Articles IWP and IWW.

4. NRC Inspection 50-333/90-04 - May 27 - Jun 30 1990 - Routine Inspection Plant Activities Violation - Deviation & Unresolved Item, dated August 2, 1990.

5. NRC letter, C.W. Hehl to W. Fernandez, Received October 9, 1990, "Results of the August 21, 1990 Enforcement Conference," (Inspection Report 50-333/90-04).

6. James A. FitzPatrick Nuclear Power Plant Safety Evaluation for Clarification of Design Basis Requirements for the JAFNPP Emergency Service Water System, JAF-SE-90-067, Revision 1, March 6, 1991.

7. NYPA letter, W. Fernandez to U.S. NRC, dated April 15, 1991, (JAFP-91-0228), "Update of the Status of Activities for the Emergency Service Water System."

8. NYPA letter, R.E. Beedle to the U.S. NRC, dated September 6, 1991, (JPN-91-045), "Revised Schedule for Improved Emergency Service Water System Pump Technical Specifications."

9. Inservice Testing Program for James A. FitzPatrick Nuclear Power Plant, Second Inservice Interval, Revision 4, dated May 1, 1991.

10. NUREG-0123, "Standard Technical Specifications for General Electric Boiling Water Reactors (BWR/5)", Revision 3, Section 4.7.1.2.d.2, dated Fall 1980.

11. SECY-88-304, "Policy Issue Regarding Staff Actions to Reduce Testing at Power", dated October 26,1988.

12. James A. FitzPatrick Nuclear Power Plant Operations Surveillance Test Procedure, ST-8N, "ESW Pump Inservice Test (IST)," Revision 3, dated December 6, 1990.

13. ASME Section XI Interpretation: X1-1-79-19; Subject: Section XI, Division 1, Operability Limits of Pumps, IWP-3210.

14. James A. FitzPatrick Nuclear Power Plant Operations Surveillance Test Procedure, ST-8Q, "Testing of the Emergency Service Water System (IST)," Revision 5, dated July 11, 1991.

15. NRC letter, D.B. Vassallo to L.W. Sinclair, dated October 29, 1982, (JAF-82-270), transmits Amendment 71.

16. APED-5736, "Guidelines for Determining Safe Test Intervals and Repair Times for Engineered Safeguards," dated April 1969.

17. "Reliability of Engineered Safety Features as a Function of Testing Frequency," Nuclear Safety Vol. 9, No. 4, July - August, 1968.

18. USNRC Standard Review Plan, NUREG-0800, Section 3.9.6, "Inservice Testing of Pumps and Valves," Revision 2, dated July 1981.

19. NYPA Performance Engineering Memorandum JPEM-91-001, dated June 13, 1991, "ESW Pump Performance Testing and Operability Requirements."

20. NRC letter, D. LaBarge to J.C. Brons, dated January 3, 1990, (JAF-90-002) transmits Amendment 148.

21. NYPA letter, P.J. Early to U.S. NRC, dated June 26, 1979, (JPN-79-036), "Proposed Emergency Service Water Pump Testing Technical Specifications."

22. NYPA letter, J.C. Brons to U.S. NRC, dated March 30, 1990, (JPN-90-027), "Final Response to NRC Generic Letter 89-04 Regarding Guidance on Developing Acceptable Inservice Testing Programs."

23. NYPA letter, J.C. Brons to U.S. NRC, dated May 31, 1989, (JPN-89-034), "Low Pressure Coolant Injection Pump Flow Surveillance and Demonstrate/Verify Terminology."

24. James A. FitzPatrick Nuclear Power Plant Temporary Operating Procedure, TOP-117, "Full Flow Testing of the Emergency Service Water System," dated June 1990.

25. James A. FitzPatrick Nuclear Power Plant Calculation, JAF-090-102, "ESW Pump Minimum Head Requirements," Revision 0, dated June 10, 1991.