

Attachment I to JAFP-97-0359

**PROPOSED TECHNICAL SPECIFICATION CHANGES
ASME SECTION XI SURVEILLANCE TESTING**

TECHNICAL SPECIFICATION PAGE CHANGES

(JPTS-93-003)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

Docket No. 50-333

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3.0 Continued

- D. Entry into an OPERATIONAL CONDITION (mode) or other specified condition shall not be made when the conditions for the Limiting Condition for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL CONDITION (mode) or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through OPERATIONAL CONDITIONS (modes) required to comply with ACTION requirements. Exceptions to these requirements are stated in the individual specifications.
- 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.
- F. Equipment removed from service or declared inoperable to comply with required actions may be returned to service under administrative control solely to perform testing required to demonstrate its operability or the operability of other equipment. This is an exception to LCO 3.0.B.

4.0 Continued

- that a Surveillance Requirement has not been performed. The ACTION requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the ACTION requirements are less than 24 hours. Surveillance requirements do not have to be performed on inoperable equipment.
- 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. This provision shall not prevent passage through or to Operational Modes as required to comply with ACTION Requirements.
- E. Surveillance Requirements for inservice testing of components shall be applicable as follows:
1. 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(f), except where specific written relief has been granted by the NRC pursuant to 10 CFR 50, Section 50.55a(f)(6)(i). The inservice testing and 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 prior to the beginning of the inspection interval.

4.0 Continued

2. Surveillance intervals specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda for the inservice testing activities required by the Code and applicable Addenda shall be applicable as defined in Technical Specification 1.0.T.
3. The provisions of Specification 4.0.B are applicable to the frequencies specified in Technical Specification 1.0.T for performing inservice testing activities.
4. Performance of the above inservice 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.

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. Compliance with ACTION requirements that permit continued operation of the facility for an unlimited period of time provides an acceptable level of safety for continued operation without the regard to

- D. Continued

the status of the plant before or after an OPERATIONAL CONDITION (mode) change. Therefore in this case, entry into an OPERATIONAL CONDITION (mode) or other specified condition may be made in accordance with the provisions of the ACTION requirements. The provisions of this specification should not, however, be interpreted as endorsing the failure to exercise good practice in restoring systems or components to OPERABLE status before startup.

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 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.

3.0 Bases - Continued

- F. LCO 3.0.F establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with required actions. The sole purpose of this Specification is to provide an exception to LCO 3.0.B to allow testing to demonstrate: (a) the operability of the equipment being returned to service; or (b) the operability of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the required actions is limited to the time absolutely necessary to perform the allowed testing. This Specification does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the operability of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with the required actions and must be reopened to perform the testing.

An example of demonstrating the operability of other equipment is taking an inoperable channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of testing on another channel in the other trip system. A similar example of demonstrating the operability of other equipment is taking an inoperable channel or trip system out of the tripped condition to permit the logic to function and indicate the appropriate response during the performance of testing on another channel in the same trip system.

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. Specification 4.0.B establishes the limit for which the specified time interval for Surveillance Requirements may be extended. It permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operating conditions that may not be suitable for conducting the surveillance (e.g., transient conditions or other ongoing surveillance or maintenance activities). It also provides flexibility to accommodate the length of a fuel cycle for surveillances that are performed at each refueling outage and are specified with a 24 month surveillance interval. It is not intended that this provision be used repeatedly as a convenience to extend surveillance intervals beyond that specified for surveillances that are not performed during refueling outages. The limitation of this specification is based on engineering judgement and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the Surveillance Requirements. The limit on extension of the normal surveillance interval ensures that the reliability confirmed by surveillance activities is not significantly reduced below that obtained from the specified surveillance interval. The exceptions to Specification 4.0.B are those surveillances for which the 25% extension of the interval specified does not apply. These exceptions are stated in the individual Technical Specifications. The requirements of regulations take precedence over the Technical Specifications. Therefore, when a test interval is specified in the regulations, the test interval cannot be extended under the provisions of 4.0.B, and the surveillance requirement will be identified as an exception. An example of an exception when the test interval is not specified in the regulations is the Note in Specification 6.20, "Primary Containment Leakage Rate Testing Program," which states
- "The provisions of Specification 4.0.B do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program." This exception is provided because the program already includes provisions for extension of intervals.
- C. This specification establishes the failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by the provisions of Specification 4.0.B, as a condition that constitutes a failure to meet the OPERABILITY requirements for a Limiting Condition for Operation. Under the provisions of this specification, systems and components are assumed to be OPERABLE when Surveillance Requirements have been satisfactorily performed within the specified time interval. However, nothing in this provision is to be construed as implying that systems or components are OPERABLE when they are found or known to be inoperable although still meeting the Surveillance Requirements. This specification also clarifies that the ACTION requirements are applicable when Surveillance Requirements have not been completed within the allowed surveillance interval and that the time limits of the ACTION requirements apply from the point in time it is identified that a surveillance has not been performed and not at the time that the allowed surveillance was exceeded. Completion of the Surveillance Requirement within the allowable outage time limits of the ACTION requirements restores compliance with the requirements of Specification 4.0.C. However, this does not negate the fact that the failure to have performed the surveillance within the allowed surveillance interval, defined by the provisions of Specification 4.0.B, was a violation of the OPERABILITY requirements of a Limiting Condition for Operation that is subject to enforcement action. Further, the failure to

4.0 BASES - Continued

C. Continued

perform a surveillance within the provisions of Specification 4.0.B is a violation of a Technical Specification requirement and is, therefore, a reportable event under the requirements of 10 CFR 50.73(a)(2)(i)(B) because it is a condition prohibited by the plant Technical Specifications.

If the allowable outage time limits of the ACTION requirements are less than 24 hours or a shutdown is required to comply with ACTION requirements, a 24-hour allowance is provided to permit a delay in implementing the ACTION requirements. This provides an adequate time limit to complete Surveillance Requirements that have not been performed. The purpose of this allowance is to permit the completion of a surveillance before a shutdown is required to comply with ACTION requirements or before other remedial measures would be required that may preclude completion of a surveillance. The basis for this allowance includes consideration for plant conditions, adequate planning, availability of personnel, the time required to perform the surveillance and the safety significance of the delay in completing the required surveillance. This provision also provides a time limit for the completion of Surveillance Requirements that become applicable as a consequence of OPERATIONAL CONDITION (mode) changes imposed by ACTION requirements and for completing Surveillance Requirements that are applicable when an exception to the requirements of Specification 4.0.C is allowed. If a surveillance is not completed within the 24-hour allowance, the time limits of the ACTION requirements are applicable at that time. When a surveillance is performed within the 24-hour allowance and the Surveillance Requirements are not met, the time limits of the ACTION requirements are applicable at the time the surveillance is terminated.

C. Continued

Surveillance Requirements do not have to be performed on inoperable equipment because the ACTION requirements define the remedial measures that apply. However, the Surveillance Requirements have to be met to demonstrate that inoperable equipment has been restored to OPERABLE status.

- D. This specification establishes the requirement that all applicable surveillances must be met before entry into an OPERATIONAL CONDITION or other condition of operation specified in the Applicability statement. The purpose of this specification is to ensure that system and component OPERABILITY requirements or parameter limits are met before entry into an OPERATIONAL CONDITION or other specified condition associated with plant shutdown as well as startup.

Under the provisions of this specification, the applicable Surveillance Requirements must be performed within the specified surveillance interval to ensure that the Limiting Conditions for Operation are met during initial plant startup or following a plant outage.

When a shutdown is required to comply with ACTION requirements, the provisions of this specification do not apply because this would delay placing the facility in a lower CONDITION of operation.

4.C BASES - Continued

E. This specification ensures that inservice testing of pumps and valves will be performed in accordance with a periodically updated version of the FitzPatrick plant "Inservice Testing Program" to comply with Section XI of the ASME Boiler and Pressure Vessel Code and Addenda as required by 10 CFR 50.55. The plant program identifies classifications required by 10CFR50.55a and Regulatory Guide 1.26. Request for relief from any of these requirements is provided in writing to the NRC and is not a part of these Technical Specifications.

This specification includes a reference to Technical Specification Section 1.0.T which defines the frequencies for performing the inservice testing activities required by Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda. This reference 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 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 96 hours after return to normal operation. As another 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 and minimum number of instrument channels per trip system that must be operable for each position of the reactor mode switch, shall be as shown in Table 3.1-1.

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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.

The response time of the reactor protection system trip functions listed below shall be demonstrated to be within its limit once per 24 months. Neutron detectors are exempt from response time testing. Each test shall include at least one channel in each trip system. All channels in both trip systems shall be tested within two test intervals.

1. Reactor High Pressure (02-3PT-55A, B, C, D) *
2. Drywell High Pressure (05PT-12A, B, C, D)
3. Reactor Water Level-Low (L3) (02-3LT-101A, B, C, D) *
4. Main Steam Line Isolation Valve Closure
(29PNS-80A2, B2, C2, D2)
(29PNS-86A2, B2, C2, D2)
5. Turbine Stop Valve Closure (94PNS-101, 102, 103, 104)
6. Turbine Control Valve Fast Closure (94PS-200A, B, C, D)
7. APRM Fixed High Neutron Flux
8. APRM Flow Referenced Neutron Flux

* Sensor is eliminated from response time testing for the RPS actuation logic circuits. Response time testing and conformance to the test acceptance criteria for the remaining channel components includes trip unit and relay logic.

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3.3.C (cont'd)

2. The average of the scram insertion times for the three fastest operable control rods of all groups of four control rods in a two-by-two array shall be no greater than:

<u>Control Rod Notch Position Observed</u>	<u>Average Scram Insertion Time (Seconds)</u>
46	0.361
38	0.977
24	2.112
04	3.764

3. The maximum scram insertion time for 90 percent insertion of any operable control rod shall not exceed 7.00 sec.

4.3.C (cont'd)

2. At 16-week intervals, 10 percent of the operable control rod drives shall be scram timed above 950 psig. The same control rod drives should not be tested each interval. Whenever such scram time measurements are made, an evaluation shall be made to provide reasonable assurance that proper control rod drive performance is being maintained.

3. All control rods shall be determined operable by demonstrating the scram discharge volume drain and vent valves are:

	<u>Item</u>	<u>Frequency</u>
a.	Verified Open	Once per 31 Days
b.	Cycled Fully Closed and Open	In accordance with the Inservice Testing Program
c.	Verified to close within 30 seconds after receipt of an actual or simulated scram signal and open when the actual or simulated scram signal is reset.	Once per 24 Months

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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:

	<u>Item</u>	<u>Frequency</u>
1.	Verify each valve (manual, power operated, or automatic) in the system flowpath that is not locked, sealed or otherwise secured in position, is in the correct position.	Once per 31 Days
2.	Pump minimum flow rate of 50 gpm shall be verified against a system head of $\geq 1,275$ psig using demineralized water from the test tank.	In accordance with the Inservice Testing Program

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4.4 (cont'd)

	<u>Item</u>	<u>Frequency</u>
3.	Manually initiate the system, except the explosive valves and pump solution in the recirculation path	Once per 24 Months
4.	Explosive one of three primer assemblies manufactured in same batch to verify proper function. Then install the two remaining primer assemblies of the same batch in the explosive valves.	Once per 24 Months
5.	Demineralized water shall be injected into the reactor vessel to test that valves (except explosive valves) not checked by the recirculation test are not clogged.	Once per 24 Months
6.	Test that the setting of the system pressure relief valves is between 1,400 and 1,490 psig.	In accordance with the Inservice Testing Program
7.	Disassemble and inspect one explosive valve so that it can be established that the valve is not clogged. Both valves shall be inspected within two test intervals.	In accordance with the Inservice Testing Program

B. Operation with Inoperable Components

From and after the date that a redundant component is made or found to be inoperable, Specification 3.4.A shall be considered fulfilled, and continued operation permitted, provided that:

1. The component is returned to an operable condition within 7 days.

B. Operation with Inoperable Components

When a component becomes inoperable its redundant component shall be verified to be operable immediately and daily thereafter.

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. Experience with pump operability indicates that periodic testing in accordance with the IST Program is adequate to detect if degradation has occurred. Valves in the system flowpath are verified to be in the proper position on a monthly basis. This requirement does not apply to explosive valves or to valves that cannot be inadvertently misaligned, such as check valves. Verifying the correct alignment of manual, power operated, or automatic valves in the system flowpath provides assurance that the proper flowpath will exist for system operation. The month frequency is based on engineering judgement and is supported by procedural controls governing valve operation that ensure correct valve positions.

The only practical time to test the Standby Liquid Control System is during a refueling outage and by initiation from local stations.

Because components of the system are checked periodically as described above, a functional test of the entire system on a frequency of more than once every 24 months is 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)

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4.5 (cont'd)

- | | | |
|----|---|--|
| b. | Flow Rate Test -
Core spray pumps shall deliver at least 4,265 gpm against a system head corresponding to a reactor vessel pressure greater than or equal to 113 psi above primary containment pressure. | In accordance with the Inservice Testing Program |
| c. | Verify that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed or otherwise secured in position, is in the correct position. | Once per 31 Days |
| d. | Motor operated valves. | In accordance with the Inservice Testing Program |
| e. | Core Spray Header
Δp Instrumentation
Check
Calibrate
Test | Once/day
Once/3 months
Once/3 months |
| f. | Logic System
Functional Test | Refer to Table 4.2-2 |
| g. | Testable Check Valves | In accordance with the Inservice Testing Program |

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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).
6. 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 $\geq 212^{\circ}\text{F}$ 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 31 days.

B. Containment Cooling Mode (of the RHR System)

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

	<u>Item</u>	<u>Frequency</u>
a.	a pump operability and flow rate test on the RHR pumps.	Per Surveillance Requirement 4.5.A.3
b.	an operability test of the RHR containment cooling mode motor operated valves.	In accordance with the Inservice Testing Program
c.	an operability test on the RHRSW pumps and associated motor operated valves.	In accordance with the Inservice Testing Program
d.	a flow rate test verifying 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.	In accordance with the Inservice Testing Program

3.5 (cont'd)

4.5 (cont'd)

Item	Frequency
<p>e. a verification that each valve (manual, power operated, or automatic) in the flowpath that is not locked, sealed or otherwise secured in position, is in the correct position.</p>	<p>Once per 31 Days</p>
<p>f. an air test shall be performed on the containment spray headers and nozzles.</p>	<p>Once per 5 Years</p>
<p>2. Should one RHRSW pump of the components required in 3.5.B.1 above be made or found inoperable, continued reactor operation is permissible only during the succeeding 30 days provided that during such 30 days all remaining components of the containment cooling mode subsystems are operable.</p>	
<p>3. Should one of the containment cooling subsystems become inoperable or should one RHRSW pump in each subsystem become inoperable, continued reactor operation is permissible for a period not to exceed 7 days.</p>	
<p>4. If the requirements of 3.5.B.2 or 3.5.B.3 cannot be met, the reactor shall be placed in a cold condition within 24 hr.</p>	
<p>5. Low power physics testing and reactor operator training shall be permitted with reactor coolant temperature <212°F with an inoperable component(s) as specified in 3.5.B above.</p>	
<p>2. When it is determined that one RHRSW pump of the components required in 3.5.B.1 above is inoperable, the remaining components of the containment cooling mode subsystems shall be verified to be operable immediately and daily thereafter.</p>	
<p>3. When one containment cooling subsystem becomes inoperable, the redundant containment cooling subsystem shall be verified to be operable immediately and daily thereafter. When one RHRSW pump in each subsystem becomes inoperable, the remaining components of the containment cooling subsystems shall be verified to be operable immediately and daily thereafter.</p>	

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 $\leq 212^\circ\text{F}$.
4. The RCIC system is not required to be operable during hydrostatic pressure and leakage testing with reactor coolant temperatures between 212°F and 300°F and irradiated fuel in the reactor vessel provided all control rods are inserted.

4.5 (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.

<u>Item</u>	<u>Frequency</u>
a. Simulated Automatic Actuation (and Restart*) Test	Once per 24 Months
b. Verify that each valve (manual, power operated or automatic) in the system flowpath that is not locked, sealed or otherwise secured in position, is in the correct position.	Once per 31 Days
c. Motor Operated Valve Operability	Once per 92 Days

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

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3.5 (cont'd)

4.5 (cont'd)

<u>Item</u>	<u>Frequency</u>
d. Flow Rate Test - The RCIC pump shall deliver at least 400 gpm against a system head corresponding to a reactor vessel pressure of 1195 psig to 150 psig.	Once per 92 Days
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.
f. Logic System Functional Test	Once per 24 Months
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. In accordance with the Inservice Testing Program, perform a flowrate test on the required Core Spray pump(s) and/or the RHR pump(s). Each Core Spray pump shall deliver at least 4,265 gpm against a system head corresponding to a reactor vessel pressure greater than or equal to 11.3 psi above primary containment pressure. Each RHR pump shall deliver at least 8910 gpm against a system head corresponding to a reactor vessel to primary containment differential pressure of ≥ 20 psid.
2. In accordance with the Inservice Testing Program, perform an operability test on the required Core Spray and/or LPCI motor operated valves.
3. 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.
4. 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.
5. Once per 31 days, verify that each valve (manual, power operated, or automatic) in the flowpath that is not locked, sealed, or otherwise secured in position, is in the correct position for the required RHR and/or core spray system(s).

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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. Every month 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.

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3.5 (cont'd)

condition, that pump shall be considered inoperable for purposes of satisfying Specifications 3.5.A, 3.5.C, and 3.5.E.

4.5 (cont'd)

2. Following any period where the LPCI subsystems or core spray subsystems have not been maintained in a filled condition; the discharge piping of the affected subsystem shall be vented from the high point of the system and water flow observed.
3. Whenever the HPCI or RCIC System is lined up to take suction from the condensate storage tank, the discharge piping of the HPCI or RCIC shall be vented from the high point of the system, and water flow observed on a monthly basis.
4. The level switches located on the Core Spray and RHR System discharge piping high points which monitor these lines to ensure they are full shall be functionally tested each month.

H. Average Planar Linear Heat Generation Rate (APLHGR)

During power operation, the APLHGR for each type of fuel as a function of axial location and average planar exposure shall be within limits based on applicable APLHGR limit values which have been approved for the respective fuel and lattice types. These values are specified in the Core Operating Limits Report. If at anytime during reactor power operation greater than 25% of rated power it is determined that the limiting value for APLHGR is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the APLHGR is not returned to within the prescribed limits within two (2) hours, the reactor power shall be reduced to less than 25% of rated power within the next four hours, or until the APLHGR is returned to within the prescribed limits.

H. Average Planar Linear Heat Generation Rate (APLHGR)

The APLHGR for each type of fuel as a function of average planar exposure shall be determined daily during reactor operation at $\geq 25\%$ rated thermal power.

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 once per 24 months. 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. On a monthly basis, correct alignment shall be verified for manual, power operated, or automatic valves in ECCS and RCIC system flow paths to provide assurance that proper flow paths will exist for system operation. For the HPCI and RCIC Systems, this requirement also includes the steam flowpath for the turbines and the flow controller position. This surveillance requirement does not apply to valves that cannot be inadvertently misaligned such as check valves, or to valves that are locked, sealed, or otherwise secured in position. A valve that receives an initiation signal is allowed to be in a non-accident position provided the valve will automatically reposition in the proper stroke time upon receipt of the initiation signal. The monthly frequency of this requirement is based upon engineering judgement and is supported by procedural controls governing valve operation that ensure correct valve positions. This frequency is further supported by the In-service Testing Program, which demonstrates system pump and power operated valve operability. This combination of automatic actuation tests, periodic pump and valve testing, and monthly flow path verification is adequate to demonstrate operability 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 RCIC flow rate is described in the UFSAR. The flow rates to be delivered to the reactor core for HPCI, the LPCI mode of RHR, and CS are based on the SAFER/GESTR LOCA analysis. The flow rates for the LPCI mode of RHR and CS are modified by a 10 percent reduction from the SAFER/GESTR LOCA analysis. The reductions are based on a sensitivity analysis (General Electric MDE-93-0786) performed for the parameters used in the SAFER/GESTR analysis.

The CS surveillance requirement includes an allowance for system leakage in addition to the flow rate required to be delivered to the reactor core. The leak rate from the core spray piping inside the reactor but outside the core shroud is assumed in the UFSAR and includes a known loss of less than 20 gpm from the 1/4 inch diameter vent hole in the core spray T-box connection in each of the loops, and in the B loop, a potential additional loss of less than 40 gpm from a clamshell repair whose structural weld covers only 5/6 of the circumference of the pipe. Both of these identified sources of leakage occur in the space between the reactor vessel wall and the core shroud. Therefore flow lost through these leak sources does not contribute to core cooling.

4.5 BASES (cont'd)

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 the line is in a full condition. Instrumentation has been provided in the Core Spray System and LPCI System to monitor the presence of water in the discharge piping. This instrumentation is functionally tested monthly to ensure that during the interval between the monthly checks the status of the discharge piping is monitored on a continuous basis.

Normally the low pressure ECCS subsystems required by Specification 3.5.F.1 are demonstrated operable by the surveillance tests in Specifications 4.5.A.1 and 4.5.A.3. Section 4.5.F specifies periodic surveillance tests for the low pressure ECCS subsystems which are applicable when the reactor is in the cold condition. These tests in conjunction with the requirements on filled discharge piping (Specification 3.5.G), and the requirements on ECCS actuation instrumentation (Specification 3.2.B), assure adequate ECCS capability in the cold condition. The water level in the suppression pool, or the Condensate Storage Tanks (CST) when the suppression pool is inoperable, is checked once each shift to ensure that sufficient water is available for core cooling.

3.7 (cont'd)

4.7 (cont'd)

4. Pressure Suppression Chamber Reactor Building Vacuum Breakers

- a. Except as specified in 3.7.A.4.b below, two Pressure Suppression Chamber Reactor Building Vacuum Breakers shall be operable at all times when the primary containment integrity is required. The setpoint of the differential pressure instrumentation which actuates the pressure suppression chamber reactor building vacuum breakers shall be ≤ 0.5 psi below reactor building pressure.
- b. From and after the date that one of the pressure suppression chamber reactor building vacuum breakers is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days, unless such vacuum

4. Pressure Suppression Chamber-Reacto Building Vacuum Breakers

- a. The pressure suppression chamber-reactor building vacuum breakers shall be checked for proper operation in accordance with the Inservice Testing Program.
- b. Instrumentation associated with pressure suppression chamber-reactor building vacuum breakers shall be functionally tested once per 92 days.

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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. Deleted

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 monthly.
- 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. Each vacuum breaker valve shall be visually inspected to insure proper maintenance and operation in accordance with the Inservice Testing Program.
- d. A leak test of the drywell to suppression chamber structure shall be conducted once per 24 months; the acceptable leak rate is ≤ 0.25 in. water/min. over a 10 min period, with the drywell at 1 psid.

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3.7 (cont'd)

4.7 (cont'd)

- c. Secondary containment capability to maintain a 1/4 in. of water vacuum under calm wind conditions with a filter train flow rate of not more than 6,000 cfm, shall be demonstrated at each refueling outage prior to refueling.

D. Primary Containment Isolation Valves

1. Whenever primary containment integrity is required per 3.7.A.2, containment isolation valves and all instrument line excess flow check valves shall be operable, except as specified in 3.7.D.2. The containment vent and purge valves shall be limited to opening angles less than or equal to that specified below:

<u>Valve Number</u>	<u>Maximum Opening Angle</u>
27AOV-111	40°
27AOV-112	40°
27AOV-113	40°
27AOV-114	50°
27AOV-115	50°
27AOV-116	50°
27AOV-117	50°
27AOV-118	50°

D. Primary Containment Isolation Valves

1. The primary containment isolation valves surveillance shall be performed as follows:

<u>Item</u>	<u>Frequency</u>
a. The operable isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and for closure time.	In accordance with the Inservice Testing Program
b. Instrument line excess flow check valves shall be tested for proper operation.	In accordance with the Inservice Testing Program
c. All normally open power-operated isolation valves (except for the main steam isolation valves) shall be fully closed and reopened.	In accordance with the Inservice Testing Program

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3.7 (cont'd)

4.7 (cont'd)

2. With one or more of the containment isolation valves inoperable, maintain at least one isolation valve operable in each affected penetration that is open and:
 - a. Restore the inoperable valve(s) to operable status within 4 hours; or
 - b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the closed position. Isolation valves closed to satisfy these requirements may be reopened on an intermittent basis under administrative control; or
 - c. Isolate each affected penetration within 4 hours by use of at least one closed manual valve or a blind flange.
3. If Specifications 3.7.D.1 or 3.7.D.2 cannot be met the reactor shall be in the cold condition within 24 hrs.

<u>Item</u>	<u>Frequency</u>
d. With the reactor at a reduced power level, fast close each main steam isolation valve, one at a time, and verify closure time.	In accordance with the Inservice Testing Program
e. Main steam isolation valves shall be exercised by partial closure and subsequent reopening.	Twice per Week

2. Whenever a containment isolation valve is inoperable, the position of at least one other valve in each line having an inoperable valve shall be recorded daily.

4.7 BASES (cont'd)

The main steam line isolation valves are functionally tested on a more frequent interval to establish a high degree of reliability.

The primary containment is penetrated by several small diameter instrument lines connected to the reactor coolant system. Each instrument line contains a 0.25 in. restricting orifice inside the primary containment and an excess flow check valve outside the primary containment.

A list of containment isolation valves, including a brief description of each valve is included in Section 7.3 of the updated FSAR.

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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:

<u>Item</u>	<u>Frequency</u>
a. Simulated Automatic Actuation Test	Once every 24 months
b. Flow Rate Test - Each ESW pump shall deliver at least 1500 gpm to its respective loop. The loop. The pump total developed head shall be greater than or equal to the corresponding point on the pump curve, reduced by a maximum of 7%, for the measured flow.	In Accordance with the Inservice Testing Program
c. Verify that each valve (manual, power operated, or automatic) in the system flowpath that is not locked, sealed or otherwise secured in position, is in the correct position.	Once per 31 Days
d. Motor Operated Valves	In Accordance with the Inservice Testing Program