ATTACHMENT 1

TO

Letter from C. R. Steinhardt (WPSC)

to

Document Control Desk (NRC)

Dated

September 7, 1994

PROPOSED TS AMENDMENT NO. 132

Description of Changes, Safety Evaluation,

Significant Hazards Determination,

and Environmental Considerations

Description of Proposed Changes

In an effort to improve the quality of the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS), this Proposed Amendment (PA) is being submitted to incorporate the guidance statements similar to Section 3.0/4.0 from NUREG-0452, Standard Technical Specifications (STS) for Westinghouse Pressurized Water Reactors, into the Kewaunee TS, thereby creating two new sections, i.e., TS Section 3.0 and TS Section 4.0.

Specifically, the following changes are being proposed:

1. Current definition 1.0.p is being deleted from Section 1.0 and relocated to new TS 3.0.c.

2. The notations on Table 1.0-1 are being revised to resemble the format of the Westinghouse STS.

3. A new section TS 3.0 is being added. Section TS 3.0 will contain applicability statements 3.0.a, 3.0.b, and 3.0.c (former TS 1.0.p).

4. A revision is being made to page TS 3.1-1 to delete heading number TS 3.0.

5. A new section TS 4.0 is being added. Section TS 4.0 will contain applicability statements 4.0.a, 4.0.b (existing TS 4.1.c), 4.0.c, and 4.0.d.

6. A revision is being made to page TS 4.1-1 to delete heading number TS 4.0, and TS 4.1.c is being relocated to new TS 4.0.b.

7. Former TS 4.1.d is being deleted and relocated to Tables TS 4.1-1, 4.1-2, and 4.1-3 as a footnote.

8. Former TS 4.1.e is being deleted. This position is currently encompassed in the requirements of TS 6.5.a.6.F and in new TS 4.0.c.

9. Specific maximum allowable time extensions to various surveillance intervals are being deleted throughout the TS. Affected sections include TS Section 4.5, 4.6, and 4.7, and Tables TS 4.1-2, and 4.1-3. Maximum time extensions for the surveillance intervals are now encompassed by new TS 4.0.b.

10. New basis pages for Sections 3.0 and 4.0 have been developed and are being submitted for your information.

11. Administrative changes are also being made to convert to the Word Perfect format and correct minor typographical and format inconsistencies. Among these changes are renumbering the basis section pages and capitalizing the defined words similar to Westinghouse STS. The practice of renumbering basis section pages and capitalizing defined terms will be incorporated throughout the TS as each section is revised and converted to the Word Perfect format.

Safety Evaluation for Proposed Changes to TS Section 3

TS's 3.0.a through 3.0.c establish the general requirements applicable to each of the Limiting Conditions for Operation (LCO) within Section 3 of the KNPP TS's. These requirements are based on the requirements for LCO's stated in the Code of Federal Regulations, 10 CFR 50.36(c)(2).

TS 3.0.a establishes the applicability statement within each individual specification as the requirement for when (i.e., in which operational modes or other specified conditions) conformance to the Limiting Conditions for Operation is required for safe operation of the facility. The action requirements establish those remedial measures that must be taken within specified time limits when the requirements of a LCO are not met.

TS 3.0.b establishes that noncompliance with a specification exists when the requirements of the LCO are not met and the associated action requirements have not been implemented within the specified time interval. The purpose of this specification is to clarify that the implementation of the action requirements within the specified time interval constitutes compliance with a specification. The completion of the remedial measures of the action requirements is not required when compliance with a LCO is restored within the time interval specified in the associated action requirements.

TS 3.0.c establishes the shutdown action requirements that must be implemented when a LCO is not met and the condition is not specifically addressed by the associated action requirements. The purpose of this specification is to delineate the time limits for placing the unit in a mode allowed by the TS. New TS 3.0.c was previously approved as Definition 1.0.p, STANDARD SHUTDOWN SEQUENCE, by letter from T. R. Quay (NRC) to D. C. Hintz (WPSC) dated July 8, 1975 (Approved Technical Specification Amendment 75). Moving this requirement to this section is an administrative change only.

These changes are being made to improve the quality of the KNPP TS's and follow the format established in the Westinghouse STS. These proposed changes are an enhancement to the existing TS's, therefore, they will not adversely affect the health and safety of the public.

Safety Evaluation for Proposed Changes to TS Section 4

TS 4.0.a through 4.0.d establish the general requirements applicable to Surveillance Requirements. These requirements are based on the Surveillance Requirements stated in the Code of Federal Regulations, 10 CFR 50.36(c)(3).

TS 4.0.a establishes the requirement that surveillances must be performed during the operational modes or other conditions for which the requirements of the LCO's apply unless otherwise stated in an individual Surveillance Requirement. The purpose of this specification is to ensure that surveillances are performed to verify the operational status of systems and components and that parameters are within specified limits to ensure safe operation of the facility when the plant is in a mode or other specified condition for which the associated LCO's are applicable. Surveillance requirements do not have to be performed when the facility is in an operational mode for which the requirements of the associated LCO do not apply unless otherwise specified.

Ts 4.0.b establishes the limit for which the specified time interval for Surveillance Requirements may be extended. This specification permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operation 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 an 18 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 TS 4.0.b 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. This provision is sufficient to ensure that the reliability ensured through surveillance activities is not significantly degraded beyond that obtained from the specified surveillance interval.

Specific maximum allowable time extensions to various surveillance intervals are being deleted throughout the TS. Affected sections include TS Section 4.5, 4.6, and 4.7, and Tables 4.1-2 and 4.1-3. New TS 4.0.b, which states the maximum allowable extension is not to exceed 25 percent of the specified surveillance interval, will apply to TS Section 4 in its entirety.

Former TS 4.1.e is currently encompassed in the requirements of TS 6.5.a.6.F and in new TS 4.0.c. New TS 4.0.c establishes the failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by the provision of TS 4.0.b, as a condition that constitutes a failure to meet the operability requirements for a LCO. 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 interval was exceeded. Completion of the Surveillance Requirement within the allowable outage time limits of the action requirements restores compliance with the requirements of TS 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 TS 4.0.b, was a violation of the operability requirements of a LCO that is subject to enforcement action. Further, the failure to perform a surveillance within the provisions of TS 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's 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, e.g., TS 3.0.c, 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 mode changes imposed by action requirements and for completing Surveillance Requirements that are applicable when an exception to the requirements of TS 4.0.d 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 that the surveillance is terminated.

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.

TS 4.0.d establishes the requirement that all applicable surveillances must be met before entry into an operational mode 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 a mode or condition for which these systems and

components ensure safe operation of the facility. This provision applies to changes in operational modes or other specified conditions 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 LCO's are met following a plant outage.

When a shutdown is required to comply with action requirements, the provisions of TS 4.0.d do not apply because this would delay placing the facility in a lower mode of operation.

These changes are being made to improve the quality of the KNPP TS's and follow the format established in the Westinghouse STS. These proposed changes are an enhancement to the existing TS's, therefore, they will not adversely affect the health and safety of the public.

Significant Hazards Determination for Proposed Changes

The proposed changes were reviewed in accordance with the provision of 10 CFR 50.92 to show no significant hazards exist. The proposed changes will not:

1) involve a significant increase in the probability or consequences of an accident previously evaluated.

   The likelihood that an accident will occur is neither increased or decreased by these TS changes. These TS changes will not impact the function or method of operation of plant equipment. Thus, there is not a significant increase in the probability of a previously analyzed accident due to these changes. No systems, equipment, or components are affected by the proposed changes. Thus, the consequences of the malfunction of equipment important to safety previously evaluated in the Updated Safety Analysis Report (USAR) are not increased by these changes.

   The proposed changes have no impact on accident initiators or plant equipment, and thus, do not affect the probabilities or consequences of an accident.

   These changes are consistent with the requirements established in the Westinghouse STS. Therefore, the proposed changes will not significantly increase the probability or consequences of an accident previously evaluated.

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

The proposed TS changes would not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed changes do not involve changes to the physical plant or operations. Since these changes do not contribute to accident initiation, they do not produce a new accident scenario or produce a new type of equipment malfunction. Also, these changes do not alter any existing accident scenarios; they do not affect equipment or its operation, and thus, do not create the possibility of a new or different kind of accident.

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

Operation of the facility in accordance with the proposed TS would not involve a significant reduction in a margin of safety. The proposed changes do not affect plant equipment or operation. Safety limits and limiting safety system settings are not affected by these proposed changes. These changes are consistent with the Westinghouse STS.

Environmental Considerations

This proposed amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, or a change to a surveillance requirement. WPSC has determined that this proposed amendment involves no significant hazards considerations and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. Accordingly, this proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with this proposed amendment.

ATTACHMENT 2

TO

Letter from C. R. Steinhardt (WPSC)

to

Document Control Desk (NRC)

Dated

September 7, 1994

PROPOSED TS AMENDMENT NO. 132

Affected TS Pages

Table of Contents, pages i and ii
TS 1.0-6
Table TS 1.0-1
TS Section 3.0 and Basis
TS 3.1-1
TS Section 4.0 and Basis
TS 4.1-1 and Basis
TS Section 4.5 and Basis
TS Section 4.6 and Basis
TS Section 4.7 and Basis
Table TS 4.1-1 (pages 1-7)
Table TS 4.1-2 (pages 1-2)
Table TS 4.1-3 (pages 1-2)

9409190179 940907
PDR ADOCK 05000305
P PDR

TABLE OF CONTENTS
TECHNICAL SPECIFICATIONS
APPENDIX A

Section	Title	Page
1.0	Definitions	1.0-1
1.0.a	Quadrant-to-Average Power Tilt Ratio	1.0-1
1.0.b	Safety limits	1.0-1
1.0.c	Limiting Safety System Settings	1.0-1
1.0.d	Limiting Conditions for Operation	1.0-1
1.0.e	Operable - Operability	1.0-2
1.0.f	Operating	1.0-2
1.0.g	Containment System Integrity	1.0-2
1.0.h	Protective Instrumentation Logic	1.0-3
1.0.i	Instrumentation Surveillance	1.0-3
1.0.j	Modes	1.0-4
1.0.k	Reactor Critical	1.0-4
1.0.1	Refueling Operation	1.0-4
1.0.m	Rated Power	1.0-5
1.0.n	Reportable Event	1.0-5
1.0.o	Radiological Effluents	1.0-5
1.0.p	Dose Equivalent I-131	1.0-6
2.0	Safety Limits and Limiting Safety System Settings	2.1-1
2.1	Safety Limits, Reactor Core	2.1-1
2.2	Safety Limit, Reactor Coolant System Pressure	2.2-1
2.3	Limiting Safety Systems Settings, Protective Instrumentation	2.3-1
2.3.a	Reactor Trip Settings	2.3-1
2.3.a.1	Nuclear Flux	2.3-1
2.3.a.2	Pressurizer	2.3-1
2.3.a.3	Reactor Coolant Temperature	2.3-1
2.3.a.4	Reactor Coolant Flow	2.3-3
2.3.a.5	Steam Generators	2.3-3
2.3.a.6	Reactor Trip Interlocks	2.3-3
2.3.a.7	Other Trips	2.3-3
3.0	Limiting Conditions for Operation	3.0-1
3.1	Reactor Coolant System	3.1-1
3.1.a	Operational Components	3.1-1
3.1.a.1	Reactor Coolant Pumps	3.1-1
3.1.a.2	Decay Heat Removal Capability	3.1-1
3.1.a.3	Pressurizer Safety Valves	3.1-2
3.1.a.4	Pressure Isolation Valves	3.1-3
3.1.a.5	Pressurizer PORV and Block Valves	3.1-3
3.1.a.6	Pressurizer Heaters	3.1-4
3.1.a.7	Reactor Coolant Vent System	3.1-5
3.1.b	Heat-up & Cooldown Limit Curves for Normal Operation	3.1-6
3.1.c	Maximum Coolant Activity	3.1-8
3.1.d	Leakage of Reactor Coolant	3.1-9
3.1.e	Maximum Reactor Coolant Oxygen, Chloride and Fluoride Concentration	3.1-10
3.1.f	Minimum Conditions for Criticality	3.1-11
3.2	Chemical and Volume Control System	3.2-1

Section	Title	Page
3.3	Engineered Safety Features and Auxiliary Systems	3.3-1
	3.3.a Accumulators	3.3-1
3.3.b	Safety Injection and Residual Heat Removal Systems	3.3-2
	3.3.c Containment Cooling Systems	3.3-4
	3.3.d Component Cooling System	3.3-6
	3.3.e Service Water System	3.3-7
3.4	Steam and Power Conversion System	3.4-1
3.5	Instrumentation System	3.5-1
3.6	Containment System	3.6-1
3.7	Auxiliary Electrical Systems	3.7-1
3.8	Refueling	3.8-1
3.9	Deleted	
3.10	Control Rod and Power Distribution Limits	3.10-1
	3.10.a Shutdown Reactivity	3.10-1
	3.10.b Power Distribution Limits	3.10-1
	3.10.c Quadrant Power Tilt Limits	3.10-5
	3.10.d Rod Insertion Limits	3.10-5
	3.10.e Rod Misalignment Limitations	3.10-6
	3.10.f Inoperable Rod Position Indicator Channels	3.10-7
	3.10.g Inoperable Rod Limitations	3.10-7
	3.10.h Rod Drop Time	3.10-8
	3.10.i Rod Position Deviation Monitor	3.10-8
	3.10.j Quadrant Power Tilt Monitor	3.10-8
	3.10.k Inlet Temperature	3.10-8
	3.10.l Operating Pressure	3.10-8
	3.10.m Coolant Flow Rate	3.10-9
	3.10.n DNB Parameters	3.10-9
3.11	Core Surveillance Instrumentation	3.11-1
3.12	Control Room Postaccident Recirculation System	3.12-1
3.14	Shock Suppressors (Snubbers)	3.14-1
4.0	Surveillance Requirements	4.0-1
4.1	Operational Safety Review	4.1-1
4.2	ASME Code Class In-service Inspection and Testing	4.2-1
	4.2.a ASME Code Class 1, 2, and 3 Components and Supports	4.2-1
	4.2.b Steam Generator Tubes	4.2-2
	4.2.b.1 Steam Generator Sample Selection and Inspection	4.2-3
	4.2.b.2 Steam Generator Tube Sample Selection and Inspection	4.2-3
	4.2.b.3 Inspection Frequencies	4.2-4
	4.2.b.4 Plugging Limit Criteria	4.2-5
	4.2.b.5 Reports	4.2-6
4.3	Deleted	
4.4	Containment Tests	4.4-1
	4.4.a Integrated Leak Rate Tests (Type A)	4.4-1
	4.4.b Local Leak Rate Tests (Type B and C)	4.4-2
	4.4.c Shield Building Ventilation System	4.4-6
	4.4.d Auxiliary Building Special Ventilation System	4.4-7
	4.4.e Containment Vacuum Breaker System	4.4-7

5. UNRESTRICTED AREA

An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, or any area within the SITE BOUNDARY used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes.

p. DOSE EQUIVALENT I-131

DOSE EQUIVALENT I-131 is that concentration of I-131 (μCi/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134 and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be as listed and calculated with the methodology established in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

DOSE CONVERSION FACTOR	ISOTOPE
1.0000	I-131
0.0361	I-132
0.2703	I-133
0.0169	I-134
0.0838	I-135

TABLE TS 1.0-1

FREQUENCY NOTATIONS

NOTATION	FREQUENCY
Shift (S)	At least once per 12 hours
Daily (D)	At least once per 24 hours
Weekly (W)	At least once per 7 days
Monthly (M)	At least once per 31 days
Quarterly (Q)	At least once per 92 days
Semiannual (SA)	At least once per 184 days
Refueling (R)	At least once per 18 months
Reactor Startup (S/U)	Prior to each reactor startup
N.A.	Not applicable

3.0 LIMITING CONDITIONS FOR OPERATION

APPLICABILITY

a. Compliance with the LIMITING CONDITIONS FOR OPERATION contained in the succeeding TSs is required during the operational MODES or other conditions specified therein; except that upon failure to meet the LIMITING CONDITIONS FOR OPERATION, the associated ACTION requirements shall be met.

b. Noncompliance with a TS shall exist when the requirements of the LIMITING CONDITIONS FOR OPERATION and associated ACTION requirements are not met within tho specified time intervals. If the LIMITING CONDITIONS FOR OPERATION is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

c. Standard Shutdown Sequence

When a LIMITING CONDITION FOR OPERATION is not met, and a plant shutdown is required except as provided in the associated action requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,

2. At least HOT SHUTDOWN within the following 6 hours, and

3. At least COLD SHUTDOWN within the subsequent 36 hours.

Exceptions to these requirements are stated in the individual TSs.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the ACTIONS required by LCO 3.0.c. is not required.

This TS is not applicable when the plant is in COLD or REFUELING SHUTDOWN.

BASIS

TS 3.0.a establishes the applicability statement within each individual TS as the requirement for when (i.e., in which OPERATIONAL MODES or other specified conditions) conformance to the LCO is required for safe operation of the facility. The ACTION requirements establish those remedial measures that must be taken within specified time limits when the requirements of a LCO are not met.

There are two basic types of ACTION requirements. The first specifies the remedial measures that permit continued operation of the facility which is not further restricted by the time limits of the ACTION requirements. In this case, conformance to the ACTION requirements provides an acceptable level of safety for unlimited continued operation as long as the ACTION requirements continue to be met. The second type of ACTION requirement specifies a time limit in which conformance to the conditions of the LCO must be met. This time limit is the allowable outage time to restore an inoperable system or component to the OPERABLE status or for restoring parameters within specified limits. If these actions are not completed within the allowable outage time limits, a shutdown is required to place the facility in a MODE or condition in which the TS no longer applies.

The specified time limits of the ACTION requirements are applicable from the point in time it is identified that a LCO is not met. The time limits of the ACTION requirements are also applicable when a system or component is removed from service for surveillance testing or investigation of operational problems. Individual TSs may include a specified time limit for the completion of a surveillance requirement when equipment is removed from service. In this case, the allowable outage time limits of the ACTION requirements are applicable when this limit expires if the surveillance has not been completed. When a shutdown is required to comply with ACTION requirements, the plant may have entered a MODE in which a new TS becomes applicable. In this case, the time limits of the ACTION requirements would apply from the point in time that the new TS becomes applicable if the requirements of the LCO are not met.

TS 3.0.b establishes that noncompliance with a TS exists when the requirements of the LCO are not met and the associated ACTION requirements have not been implemented within the specified time interval. The purpose of this TS is to clarify that the implementation of the ACTION requirements within the specified time interval constitutes compliance with a TS. Completion of the remedial measures of the ACTION requirements is not required when compliance with a LCO is restored within the time interval specified in the associated ACTION requirements.

TS 3.0.c provides the standard shutdown sequence to be followed in the event a LIMITING CONDITION FOR OPERATION cannot be met and the condition is not specifically addressed by the associated action requirements. The purpose of this TS is to delineate the time limits for placing the unit in a safe shutdown mode allowed by the TSs.

3.1 REACTOR COOLANT SYSTEM

APPLICABILITY

Applies to the Operating status of the Reactor Coolant System (RCS).

OBJECTIVE

To specify those LIMITING CONDITIONS FOR OPERATION of the Reactor Coolant System which must be met to ensure safe reactor operation.

SPECIFICATIONS

a. Operational Components

1. Reactor Coolant Pumps

   A. At least one reactor coolant pump or one residual heat removal pump shall be in operation when a reduction is made in the boron concentration of the reactor coolant.

   B. When the reactor is in the OPERATING mode, except for low power tests, both reactor coolant pumps shall be in operation.

   C. A reactor coolant pump shall not be started with one or more of the RCS cold leg temperatures $\leq$ 338°F unless the secondary water temperature of each steam generator is < 100°F above each of the RCS cold leg temperatures.

2. Decay Heat Removal Capability

   A. At least TWO of the following FOUR heat sinks shall be operable whenever the average reactor coolant temperature is $\leq$ 350°F but > 200°F.

      1. Steam Generator 1A
      2. Steam Generator 1B
      3. Residual Heat Removal Train A
      4. Residual Heat Removal Train B

      If less than the above number of required heat sinks are OPERABLE, corrective action shall be taken immediately to restore the minimum number to the OPERABLE status.

4.0 SURVEILLANCE REQUIREMENTS

APPLICABILITY

a. Surveillance requirements shall be met during the operational MODES or other conditions spocified for individual LIMITING CONDITIONS FOR OPERATION unless otherwise stated in an individual surveillance requirement.

b. Each surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25% of the specified surveillance interval.

c. Failure to perform the surveillance requirement within the allowed surveillance interval, defined by TS 4.0.b, shall constitute noncompliance with the OPERABILITY requirements for a LIMITING CONDITION FOR OPERATION. The time limits of the ACTION requirements are applicable at the time it is identified 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 MODE or other specified condition shall not be made unless the surveillance requirement(s) associated with a LIMITING CONDITION FOR OPERATION have been performed within the stated surveillance interval or as otherwise specified. This provision shall not prevent passage through or to operational MODES as required to comply with ACTION requirements.

Exceptions to these requirements are stated in the individual Technical Specifications. An exception to TS 4.0.d is allowed when surveillance requirements can be completed only after entry into an OPERATING MODE or other specified condition for which they apply.

BASIS

TS 4.0.a establishes the requirements that surveillances must be performed during the operational MODES or other conditions for which the requirements of the LIMITING CONDITIONS FOR OPERATION (LCO) apply unless otherwise stated in an individual surveillance requirement. The purpose of this TS is to ensure that surveillances are performed to verify the operational status of systems and components and that parameters are within specified limits. This ensures safe operation of the facility when the plant is in a MODE or other specified condition for which the associated LCOs are applicable. Surveillance requirements do not have to he performed when the facility is in an operational MODE for which the requirements of the associated LCO do not apply unless otherwise specified.

TS 4.0.b establishes the limit for which the specified time interval for surveillance requirements may be extendod. It permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operation 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 performod at each refueling outage and are specified with an 18-month surveillance interval. It is not intended that this provision be used repeatedly as a convenience to extend surveillance intervals beyond that specified for survoillances that are not performed during refueling outages. The limitation of TS 4.0.b is based on engineering judgement and the recognition that tho most probable result of any particular surveillance being performed is the verification of conformance with the surveillance requirements. This provision is sufficient to ensure that the reliability ensured through surveillance activities is not significantly degraded beyond that obtained from the specified surveillance interval.

TS 4.0.c establishes the failure to perform a surveillance requirement within tho allowed surveillance interval, defined by the provisions of TS 4.0.b, as a condition that constitutes a failure to meet the OPERABILITY requirements for a LCO. Under the provisions of this TS, 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 TS also clarifies that the ACTION requirements are applicable when surveillance requirements have not been completed within tho allowed surveillance interval. The time limits of the ACTION requirements apply from the time it is identified that a surveillance has not been performed and not at the time that the allowed surveillance interval was exceeded. Completion of the surveillance requirement within the allowable outage time limits of the ACTION requirements restores compliance with the requirements of TS 4.0.c. However, this does not negate the fact that the failure to have performed the surveillance within tho allowed surveillance interval, defined by the provisions of TS 4.0.b, was a violation of the OPERABILITY requirements of a LCO that is subject to enforcement action. Further, the failure to perform a surveillance within the provisions of TS 4.0.b is a violation of the Technical Specification requirement, and therefore is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B).

If the allowablo outage time limits of the ACTION requirements are < 24 hours or a shutdown is required to comply with ACTION requirements (e.g., TS 3.0.c), a 24-hour allowance is provided. 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 requiroments or before othor 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 and 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 MODE changes imposed by ACTION requirements and for completing surveillance requirements that are applicable when an exception to the roquirements of TS 4.0.d is allowed. If a surveillance is not completed within the 24-hour allowance, the time limits of the ACTION requiroments 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 that the surveillance is terminated.

Surveillance requiroments do net 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 te OPERABLE status.

TS 4.0.d establishes the requirements that all applicable surveillance must be met before entry into an operational MODE or other condition of operation specified in tho applicability statement. The purpose of the TS is to ensure that system and component operability requirements or parameter limits are met before entry into a MODE or condition for which these systems and components ensure safe operation of tbe facility. This provision applies to changes in operational MODES or other specified conditions associated with plant shutdown as well as startup.

Under the provisions of the TS, the applicable surveillance requirements must be performed within the specified surveillance interval to ensure that the LCOs are met during initial plant startup or following a plant outage.

When a shutdown is required to comply with ACTION requirements, the provisions of TS 4.0.d do not apply because this would delay placing the facility in a lower MODE of operation.

4.1 OPERATIONAL SAFETY REVIEW

APPLICABILITY

Applies to items directly related to safety limits and LIMITING CONDITIONS FOR OPERATION.

OBJECTIVE

To assure that instrumentation shall be checked, tested, and calibrated, and that equipment and sampling tests shall be conducted at sufficiently frequent intervals to ensure safe operation.

SPECIFICATION

a. Calibration, testing, and checking of protective instrumentation channels and testing of logic channels shall be performed as specified in Table TS 4.1-1.

b. Equipment and sampling tests shall be conducted as specified in Table TS 4.1-2 and TS 4.1-3.

c. Deleted

d. Deleted

e. Deleted

BASIS - Operational Safety Review (TS 4.1)

Check

Failures such as blown instrument fuses, defective indicators, or faulted amplifiers which result in "upscale" or "downscale" indication can be easily recognized by simple observation of the functioning of an instrument or system. Furthermore, such failures are, in many cases, revealed by alarm or annunciator action, and a check supplements this type of built-in surveillance. Based on experience in operation of both conventional and nuclear plant systems, the minimum checking frequency of once per shift is regarded as adequate for reactor and steam system instrumentation when the plant is in operation.

Calibration

Calibration shall be performed to ensure the accuracy of information presented.

The nuclear flux (linear level) channels shall be calibrated at least daily against a heat balance standard to verify drift and effects of changing rod patterns.

Other channels are subject only to "drift" errors induced within the instrumentation itself and, consequently, can tolerate longer intervals between calibration. Process system instrumentation errors induced by drift can be expected to remain within acceptable tolerances if recalibration is performed at each REFUELING shutdown.

Substantial calibration shifts within a channel (essentially a channel failure) will be revealed during routine checking and testing procedures.

Thus, minimum calibration frequencies of daily for the nuclear flux (linear level) channels, and once each REFUELING shutdown for the process system channels is considered acceptable.

Testing

Experience with this type of instrumentation has shown that the testing frequency as specified in Table TS 4.1-1 will assure the required level of performance.

Turbine Overspeed Protection

Surveillance on the turbine overspeed protection system varies depending on the system. The electro-hydraulic system is tested once per REFUELING cycle. The mechanical trip system has a calibration check performed once per REFUELING cycle and certain portions of it are tested on a monthly cycle.

The redundant overspeed trip system is calibrated once per REFUELING cycle and tested monthly.

The turbine governor and stop valves are to be tested at a frequency consistent with the methodology presented in WCAP-11525, "Probabilistic Evaluation of Reduction in Turbine Valve Test Frequency," and in accordance with the established NRC acceptance criteria for the probability of a missile ejection incident of 1.0×10^{-5} per year. In no case shall the turbine valve test interval exceed one year.

Fuel Inspection

Two fuel assemblies per region will be selected as reference assemblies on which base line data will be taken prior to initial fuel loading. During each REFUELING, visual inspections will be made on a representative sample of assemblies and in addition on any suspect assembly. Any observed unexplained anomalies in the suspected assembly will determine the necessity to recheck the reference assemblies against the original base line data.

Seismic

The seismic instrumentation will be checked for proper operation once per operating cycle or once every 18 months, whichever occurs first. In the event of a seismic disturbance, written administrative procedures will be put into effect covering operation of the plant. Inspection of crucial areas and components will be made immediately with the results of this inspection documented. In the absence of any unusual observations the plant will continue to be operated.

Guard Pipes

Visual inspections will be made of the accessible portions of the hot process pipeline guard pipes once during each operating cycle or once every 18 months, whichever occurs first.

4.5 EMERGENCY CORE COOLING SYSTEM AND CONTAINMENT AIR COOLING SYSTEM TESTS

APPLICABILITY

Applies to testing of the Emergency Core Cooling System and the Containment Air Cooling System.

OBJECTIVE

To verify that the subject systems will respond promptly and perform their design functions, if required.

SPECIFICATION

a. System Tests

1. Safety Injection System

A. System tests shall be performed once per operating cycle or once every 18 months, whichever occurs first. With the Reactor Coolant System pressure ≤ 350 psig and temperature ≤ 350°F, a test safety injection signal will be applied to initiate operation of the system. The safety injection and residual heat removal pumps are not operated during this test.

B. The test will be considered satisfactory if control board indication or visual observations indicate that all components have received the safety injection signal in the proper sequence and timing. That is, the appropriate pump motor breakers shall have opened and closed, and all valves shall have completed their travel.

2. Containment Vessel Internal Spray System

A. System tests shall be performed once every operating cycle or once every 18 months, whichever occurs first. The test shall be performed with the isolation valves in the supply lines at the containment blocked closed.

B. The spray nozzles shall be checked for proper functioning at least every 5 years using either air with telltales or smoke test to determine that all nozzles are clear.

C. The test will be considered satisfactory if control board indications or visual observations indicate all components have operated satisfactorily.

3. Containment Fancoil Units

Each fancoil unit shall be tested once every operating cycle or once every 18 months, whichever occurs first, to verify proper operation of the motor-operated service water outlet valves and the fancoil emergency discharge and associated backdraft dampers.

b. Component Tests

1. Pumps

A. The safety injection pumps, residual heat removal pumps, and containment spray pumps shall be started and operated on recirculation flow quarterly during power operation and within 1 week after the plant is returned to power operation, if the test was not performed during plant shutdown.

B. Acceptable levels of performance shall be that the pumps start, reach their required developed head at miniflow, and operate for at least 15 minutes on the miniflow line.

2. Valves

A. The Refueling Water Storage Tank and containment sump outlet valves shall be tested in performing the pump tests.

B. The accumulator check valves shall be checked for OPERABILITY during each major REFUELING outage. The accumulator block valves shall be checked to assure "valve open" requirements during each major REFUELING outage.

C. The boric acid tank isolation valves to the safety injection pumps shall be tested at quarterly intervals during power operation.

D. Spray additive tank valves shall be tested during each REFUELING outage.

E. Closing of the boric acid tank isolation valves and concurrent opening of Refueling Water Storage Tank valves upon receipt of simulated lo-lo boric acid tank level signal shall be tested at quarterly intervals during power operation.

F. Residual Heat Removal System valve interlocks shall be tested once per operating cycle.

BASIS

System Tests (TS 4.5.a)

The Safety Injection System and the Containment Vessel Internal Spray System are principal plant safety systems that are normally inoperative during reactor operation. Complete systems tests cannot be performed when the reactor is OPERATING because a safety injection signal causes containment isolation, and a Containment Vessel Internal Spray System test requires the system to be temporarily disabled. The method of assuring OPERABILITY of these systems is therefore to combine system tests to be performed during periodic shutdowns with more frequent component tests, which can be performed during reactor operation.

The systems tests demonstrate proper automatic operation of the Safety Injection and Containment Vessel Internal Spray Systems. With the pumps blocked from starting, a test signal is applied to initiate automatic action and verification is made that the components receive the safety injection signal in the proper sequence. The test demonstrates the operation of the valves, pump circuit breakers, and automatic circuitry.[1]

Component Tests - Pumps (TS 4.5.b.1)

During reactor operation, the instrumentation which is depended upon to initiate safety injection and containment spray is checked daily and the initiating and logic circuits are tested monthly (in accordance with TS 4.1). In addition, the active components (pumps and valves) are to be tested quarterly to check the operation of the starting circuits and to verify that the pumps are in satisfactory running order. The quarterly test interval is based on the judgment that more frequent testing would not significantly increase the reliability (i.e., the probability that the component would operate when required), yet more frequent testing would result in increased wear over a long period of time.

Component Tests - Valves (TS 4.5.b.2)

Testing of the closure of the boric acid tank isolation valves with concurrent opening of the Refueling Water Storage Tank valves upon receipt of simulated lo-lo boric acid tank level signal is performed to verify proper operation to prevent inadvertent spillage of Refueling Water Storage Tank water through the boric acid tank should the isolation valves fail to close.

Testing of the containment fancoil unit emergency discharge and backdraft dampers is performed to assure the integrity of the duct work post-LOCA.

---

[1] USAR Section 6.2

Other systems that are also important to the emergency cooling function are the accumulators, the Component Cooling System, and the Service Water System. The accumulators are a passive safety feature. In accordance with TS 4.1, the water volume and pressure in the accumulators are checked each shift. The other systems mentioned operate when the reactor is in operation and by these means are continuously monitored for satisfactory performance.

4.6 PERIODIC TESTING OF EMERGENCY POWER SYSTEM

APPLICABILITY

Applies to periodic testing and surveillance requirements of the emergency power system.

OBJECTIVE

To verify that the emergency power sources and equipment are OPERABLE.

SPECIFICATION

The following tests and surveillance shall be performed:

a. Diesel Generators

1. Manually-initiated start of each diesel generator, and assumption of load by the diesel generator. This test shall be conducted monthly, loading the diesel generator to at least 2600 KW (nominal) for a period of at least 1 hour.

2. Automatic start of each diesel generator, load shedding, and restoration to operation of particular vital equipment, all initiated by a simulated loss of all normal a-c station service power supplies together with a simulated safety injection signal. This test will be conducted at each REFUELING interval to assure that each diesel generator will start and assume required loads to the extent possible within 1 minute, and operate for ≥ 5 minutes while loaded with the emergency loads.

3. Each diesel generator shall be inspected at each major REFUELING outage.

4. Diesel generator load rejection test in accordance with IEEE 387-1977, Section 6.4.5, shall be performed at least once per 18 months.

5. Each diesel generator shall be loaded to 2950 KW (nominal) for 2 hours every operating cycle.

6. Safeguard bus undervoltage and safeguard bus second level undervoltage relays shall be calibrated at least once per operating cycle.

b. Station Batteries

1. The voltage of each cell shall be measured to the nearest hundredth volt each month. An equalizing charge shall be applied if the lowest cell in the battery falls < 2.13 volts. The temperature and specific gravity of a pilot cell in each battery shall be measured.

2. The following additional measurements shall be made quarterly: the specific gravity and height of electrolyte in every cell and the temperature of every fifth cell.

3. All measurements shall be recorded and compared with previous data to detect signs of deterioration.

4. The batteries shall be subjected to a load test during the first REFUELING and once every 5 years thereafter. Battery voltage shall be monitored as a function of time to establish that the battery performs as expected during heavy discharge and that all electrical connections are tight.

BASIS

Periodic Testing of Emergency Power Systems, TS 4.6

Each diesel generator can start and be ready to accept full load within 10 seconds, and will sequentially start and supply the power requirements for one complete set of engineered safety features equipment in approximately one minute.[1]

The specified test frequencies provide reasonable assurance that any mechanical or electrical deficiency will be detected and corrected before it can result in failure of one emergency power supply to respond when called upon to function. Its possible failure to respond is, of course, anticipated by providing two diesel generators, each supplying through an independent bus, a complete and adequate set of engineered safety features equipment. Further, both diesel generators are provided as backup to multiple sources of external power, and this multiplicity of sources should be considered with regard to adequacy of test frequency.

Monthly Diesel Generator Surveillance, TS 4.6.a.1

The monthly tests specified for the diesel generators will demonstrate their continued capability to start and carry rated load. The fuel supplies and starting circuits and controls are continuously monitored, and abnormal conditions in these systems would be indicated by an alarm without need for test startup. Monthly tests are performed in accordance with the intent of IEEE 387-1977, paragraph 6.6.1.

REFUELING Interval Diesel Generator Surveillance, TS 4.6.a.2

The REFUELING interval diesel generator surveillance demonstrates that the emergency power system, and its control system, will function automatically to provide engineered safety equipment power in the event of loss of off-site power coincident with a safety injection signal. This test demonstrates proper tripping of motor feeder breakers, main supply and tie breakers on the affected bus, and sequential starting of essential equipment to demonstrate OPERABILITY of the diesel generators. This surveillance is performed to meet the intent of IEEE 387-1977 paragraph 6.6.2. (Note also that Reg. Guide 1.108 addresses diesel generator surveillance.)

A separate test demonstrates that the emergency lighting system is operable.

REFUELING Interval Diesel Generator Inspection, TS 4.6.a.3

Inspections are performed at REFUELING outage intervals in order to maintain the diesel generators in accordance with the manufacturers' recommendations. The inspection procedure is periodically updated to reflect experience gained from past inspections and new information as it is available from the manufacturer.

---

[1] USAR Section 8.2

18-Month Load Rejection Test, TS 4.6.a.4

The load rejection test demonstrates the capability of rejecting the maximum rated load without overspeeding or attaining voltages which would cause the diesel generator to trip, mechanical damage, or harmful overstresses.

Operating Cycle Short-Term Load Test, TS 4.6.a.5

Loading the diesel generators to their short-term rating will demonstrate their capability to provide a continuous source of emergency AC power during a load perturbation of up to 112% of the diesel generator's continuous rating.

Station Batteries, TS 4.6.b

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide indication of a cell becoming unserviceable long before it fails.

If a battery cell has deteriorated, or if a connection is loose, the voltage under load will drop excessively, indicating need for replacement or maintenance.

4.7 MAIN STEAM ISOLATION VALVES

APPLICABILITY

Applies to periodic testing of the main steam isolation valves.

OBJECTIVE

To verify the ability of the main steam isolation valves to close upon signal.

SPECIFICATION

The main steam isolation valves shall be tested once per operating cycle at major outages with the reactor at COLD SHUTDOWN. A closure time of 5 seconds or less shall be verified.

BASIS

The main steam isolation valves serve to limit the cooldown rate of the Reactor Coolant System and the reactivity insertion that could result from a main steam break incident. Their ability to close upon signal should be verified at each major REFUELING outage. A closure time of 5 seconds or less shall be verified.

TABLE TS 4.1-1

MINIMUN FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	REMARKS
1. Nuclear Power Range	Each shift(a) Effective Full Power Month(c)	Daily(a) Effective Full Power Quarter(c)	Monthly(b) Quarterly(d)	(a) Heat balance (b) Signal to ΔT; bistable action (permissive, rod stop, trips) (c) Upper and lower chambers for axial off-set using incore detectors. The check and calibration for axial offset shall also be performed prior to > 75% power following any core alteration. (d) Permissives P8 and P10 and the 25% reactor trip are tested quarterly.
2. Nuclear Intermediate Range	Each shift(a,c)	Not applicable	Prior to each startup if not done previous week(b)	(a) Once/shift when in service (b) Log level; bistable action (permissive, rod stop, trips) (c) Channel check required in all plant modes
3. Nuclear Source Range	Each shift(a,c)	Not applicable	Prior to each startup if not done previous week(b)	(a) Once/shift when in service (b) Bistable action (alarm, trips) (c) Channel check required in all plant modes
4. Reactor Coolant Temperature	Each shift (c)	Each refueling cycle	Monthly(a) Monthly(b)	(a) Overtemperature ΔT (b) Overpower ΔT (c) Channel check not required below HOT SHUTDOWN
5. Reactor Coolant Flow	Each shift	Each refueling cycle	Monthly	(a) Only if test indicates calibration required

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	REMARKS
6. Pressurizer Water Level	Each shift	Each refueling cycle(a)	Monthly	(a) Only if test indicates calibration required
7. Pressurizer Pressure	Each shift	Each refueling cycle(a)	Monthly	(a) Only if test indicates calibration required
8. a. 4-KV Voltage and Frequency	Not applicable	Each refueling cycle	Monthly	Reactor protection circuits only
b. 4-KV Voltage (Loss of Voltage)	Not applicable	Each refueling cycle	Monthly	Safeguards buses only
c. 4-KV Voltage (Degraded Grid)	Not applicable	Each refueling cycle	Monthly	Safeguards buses only
9. Analog Rod Position	Each shift(a,b)	Each refueling cycle(c)	Each refueling cycle	(a) With step counters (b) Following rod motion in excess of 24 steps when computer is out of service (c) Only if test indicates calibration required
10. Rod Position Bank Counters	Each shift(a,b)	Not applicable	Each refueling cycle	(a) With analog rod position (b) Following rod motion in excess of 24 steps when computer is out of service

TABLE TS 4.1-1

MININUM FREQUENCIES FOR CHECKS, CALIBRATIONS ANO TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	RENARKS
11. a. Steam Generator Low Level	Each shift	Each refueling cycle(a)	Monthly	(a) Only if test indicates calibration required
b. Steam Generator High Level	Each shift	Each refueling cycle(a)	Monthly	(a) Only if test indicates calibration required
12. Steam Generator Flow Mismatch	Each shift	Each refueling cycle(a)	Monthly	(a) Only if test indicates calibration required
13. Charging Flow	Each shift	Each refueling cycle	Not applicable	
14. Residual Heat Removal Pump Flow	Each shift (when in operation)	Each refueling cycle	Not applicable	
15. Boric Acid Tank Level	Daily	Each refueling cycle	Monthly	
16. Refueling Water Storage Tank Level	Weekly	Annually	Not applicable	
17. Volume Control Tank Level	Each shift	Each refueling cycle	Not applicable	

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTIDN	CHECK	CALIBRATE	TEST	REMARKS
18. a. Containment Pressure (SIS signal)	Each shift	Each refueling cycle(b)	Monthly(a)	(a) Isolation Valve Signal (b) Only if test indicates calibration required
b. Containment Pressure (Steamline Isolation)	Each shift(a)	Each refueling cycle(a,b)	Monthly(a)	(a) Narrow range containment pressure (-3.0, +3.0 psig excluded) (b) Only if test indicates calibration required
c. Containment Pressure (Containment Spray Act)	Each shift	Each refueling cycle(a)	Monthly	(a) Only if test indicates calibration required
d. Annulus Pressure (Vacuum Breaker)	Not applicable	Each refueling cycle(a)	Each refueling cycle	(a) Only if test indicates calibration required
19. Radiation Monitoring System	Daily (b)	Each refueling cycle	Monthly	(a) Includes only channels R11 thru R15, R19, R21, and R23 (b) Channel check required in all plant modes
20. Boric Acid Make-Up Flow Channel	Not applicable	Each refueling cycle	Not applicable	
21. Containment Sump Level	Not applicable	Not applicable	Each refueling cycle	
22. Accumulator Level and Pressure	Each shift	Each refueling cycle	Not applicable	

TABLE TS 4.1-1

MINIMUN FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	REMARKS
23. Steam Generator Pressure	Each shift	Each refueling cycle	Monthly	
24. Turbine First Stage Pressure	Each shift	Annually(a)	Monthly	(a) Only if test indicates calibration required
25. Portable Radiation Survey Instruments	Monthly (a)	Annually	Quarterly	(a) Channel check required in all plant modes
26. Protective System Logic Channel Testing	Not applicable	Not applicable	Monthly	Includes auto load sequencer
27. Deleted				
28. Turbine Overspeed Protection				
a. Electro-Hydraulic System	Not applicable	Not applicable	Each refueling cycle	
b. Mechanical System	Not applicable	Each refueling cycle(a)	Monthly	(a) A calibration check is performed for the Mechanical System once per refueling cycle; repairs are made if necessary
c. Redundant Overspeed Trip System	Not applicable	Each refueling cycle	Monthly	
29. Seismic Monitoring System	Each refueling cycle	Each refueling cycle	Not applicable	

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	REMARKS
30. Fore Bay Water Level	Not applicable	Each refueling cycle(a)	Each refueling cycle	(a) Only if test indicates calibration required
31. AFW Flow Rate	(a)	Each refueling cycle	Not applicable	(a) Flow rate indication will be checked at each unit startup and shutdown
32. PORV Position Indication	Monthly	Each refueling cycle	Not applicable	
a. Back-up (Temperature)	Monthly	Each refueling cycle	Not applicable	
33. PORV Block Valve Position Indicator	Monthly	Each refueling cycle	Not applicable	
34. Safety Valve Position Indicator (Acoustic)	Monthly	Each refueling cycle	Not applicable	
a. Back-up (Temperature)	Monthly	Each refueling cycle	Not applicable	
35. FW Pump Trip (AFW Initiation)	Not applicable	Not applicable	Each refueling cycle	
36. Reactor Coolant System Subcooling Monitor	Monthly	Each refueling cycle(a)	Each refueling cycle	(a) Only if test indicates calibration required
37. Containment Pressure (Wide Range)	Daily	Each refueling cycle	Not applicable	

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	RENARKS
38. Containment Hydrogen Monitors	Daily	Each refueling cycle	Monthly	
39. Containment Water Level (Wide Range)	Not applicable	Not applicable	Each refueling cycle	
40. Reactor Vessel Level Indication	Monthly	Each refueling cycle	Not applicable	
41. Core Exit Thermocouples	Monthly	Each refueling cycle	Not applicable	
42. Steam Generator Level (Wide Range)	Monthly	Each refueling cycle	Not applicable	

TABLE TS 4.1-2

MINIMUM FREQUENCIES FOR SAMPLING TESTS

SAMPLING TESTS	TEST	FREQUENCY
1. Reactor Coolant Samples	a. Gross Radioactivity Determination (excluding tritium)	5/week[1]
	b. DOSE EQUIVALENT I-131 Concentration	1/14 days[2]
	c. Tritium activity	Monthly
	d. Chemistry (Cl, F, O_2)[3]	3/week[4]
	e. $\bar{E}$ Determination	1/6 months[5]
	f. RCS isotopic analysis for Iodine	Once per 4 hours in accordance with TS 3.1.c.2.C.
2. Reactor Coolant Boron[6]	Boron Concentration[3]	2/week

[1] Maximum time between tests is 3 days.

[2] Sample required only when in the OPERATING MODE.

[3] Test required in all plant modes.

[4] Maximum time between tests is 4 days.

[5] Sample after a minimum of 2 EFPD and 20 days of OPERATING MODE operation have elapsed since the reactor was last subcritical for ≥ 48 hours.

[6] A reactor coolant boron concentration sample does not have to be taken when the core is completely unloaded.

TABLE TS 4.1-2

MINIMUM FREQUENCIES FOR SAMPLING TESTS

SAMPLING TESTS	TEST	FREQUENCY
3. Refueling Water Storage Tank Water Sample[7]	Boron Concentration	Monthly[8]
4. Boric Acid Tanks	Boron Concentration	Weekly
5. Accumulator	Boron Concentration	Monthly
6. Spent Fuel Pool	Boron Concentration	Monthly[9]
7. Secondary Coolant	a. Gross Beta or Gamma Activity b. Iodine Concentration	Weekly Weekly when gross beta or gamma activity $\geq$ 1.0 μCi/cc

[7] A refueling water storage tank (RWST) boron concentration sample does not have to be taken when the RWST is empty during REFUELING outages.

[8] And after adjusting tank contents.

[9] Sample will be taken monthly when fuel is in the pool.

TABLE 4.1-3

MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

Equipment Tests[1]	Test	Frequency
1. Control Rods	Rod drop times of all full length rods Partial movement of all rods	Each refueling outage Every 2 weeks
1a. Reactor Trip Breakers	Independent Test[2] Shunt & Undervoltage Trip Attachments	Monthly
1b. Reactor Coolant Pump Breakers-Open-Reactor Trip	Operability	Each refueling outage
1c. Manual Reactor Trip	Open Trip Reactor[3] Trip & Bypass Bkr	Each refueling outage
2. Deleted		
3. Deleted		
4. Containment Isolation Trip	Operability	Each refueling outage
5. Refueling System Interlocks	Operability	Prior to fuel movement each refueling outage
6. Deleted		
7. Deleted		
8. RCS Leak Detection	Operability	Weekly
9. Diesel Fuel Supply	Fuel Inventory[4]	Weekly
10. Turbine Stop and Governor Valves	Operability	Annually[5]

---

[1] Following maintenance on the above equipment that could affect the operation of the equipment, tests should be performed to verify operability.

[2] Verify operability of the bypass breaker undervoltage trip attachment prior to placing breaker into service.

[3] Using the control room pushbuttons, independently test the reactor trip breakers shunt trip and undervoltage trip attachments. The test shall also verify the undervoltage trip attachment on the reactor trip bypass breakers.

[4] Integrity of fuel required in all plant modes.

[5] Frequency of test is 365 days; no grace period applies.

TABLE 4.1-3

MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

Equipment Tests[6]	Test	Frequency
11. Fuel Assemblies	Visual Inspection	Each refueling outage
12. Guard Pipes	Visual Inspection	Each refueling outage
13. Pressurizer PORVs	Operability	Each refueling cycle
14. Pressurizer PORV Block Valves	Operability	Quarterly[7]
15. Pressurizer Heaters	Operability[8]	Each refueling cycle
16. Containment Purge and Vent Isolation Valves	Operability[9]	Each refueling cycle

[6] Following maintenance on the above equipment that could affect the operation of the equipment, tests should be performed to verify operability.

[7] Not required when valve is administratively closed.

[8] Test will verify operability of heaters and availability of an emergency power supply.

[9] This test shall demonstrate that the valve(s) close in ≤ 5 seconds.