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U.S. Nuclear Regulatory Commission
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Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Renewed Facility Operating License Nos. DPR-71 and DPR-62
Docket Nos. 50-325 and 50-324

Catawba Nuclear Station, Unit Nos. 1 and 2
Renewed Facility Operating License Nos. NPF-35 and NPF-52
Docket Nos. 50-413 and 50-414

Shearon Harris Nuclear Power Plant, Unit No. 1
Renewed Facility Operating License No. NPF-63
Docket No. 50-400

McGuire Nuclear Station, Unit Nos. 1 and 2
Renewed Facility Operating License Nos. NPF-9 and NPF-17
Docket Nos. 50-369 and 50-370

Oconee Nuclear Station, Unit Nos. 1, 2, and 3
Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55
Docket Numbers 50-269, 50-270, and 50-287

H. B. Robinson Steam Electric Plant, Unit No. 2
Renewed Facility Operating License No. DPR-23
Docket No. 50-261

Subject: Application to Revise Technical Specifications to Adopt TSTF-554, Revision 1, "Revise Reactor Coolant Leakage Requirements"

Ladies and Gentlemen:

Pursuant to 10 CFR 50.90, Duke Energy Progress, LLC and Duke Energy Carolinas, LLC, collectively referred to as Duke Energy, is submitting a request for an amendment to the Technical Specifications (TS) for the Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (BNP); the Catawba Nuclear Station, Unit Nos. 1 and 2 (CNS); the Shearon Harris Nuclear Power Plant, Unit No. 1 (HNP); the McGuire Nuclear Station, Unit Nos. 1 and 2 (MNS); the Oconee Nuclear Station, Unit Nos. 1, 2, and 3 (ONS); and the H. B. Robinson Steam Electric Plant, Unit No. 2 (RNP).

Duke Energy requests adoption of TSTF-554, "Revise Reactor Coolant Leakage Requirements," which is an approved change to the Standard Technical Specifications (STS), into the BNP, CNS, HNP, MNS, ONS, and RNP TS. The proposed amendment revises the TS definition of "Leakage," clarifies the requirements when pressure boundary leakage is detected, and adds a Required Action when pressure boundary leakage is identified. The change is requested as part of the Consolidated Line Item Improvement Process (CLIIP).

Enclosure 1 provides a description and assessment of the proposed changes. Enclosure 2 provides the existing TS pages marked up to show the proposed changes. Enclosure 3 provides the revised (clean) TS pages. Enclosure 4 provides the existing TS Bases pages marked up to show the proposed changes, for information only.

Approval of the proposed amendment is requested within six months of completion of the NRC's acceptance review. Once approved, the amendment shall be implemented within 120 days.

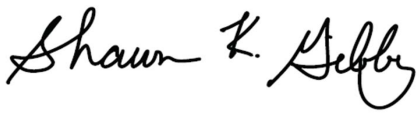
In accordance with 10 CFR 50.91, Duke Energy is providing a copy of the proposed license amendment to the designated representative for the States of North Carolina and South Carolina.

This document contains no new regulatory commitments.

Please refer any questions regarding this submittal to Ryan Treadway, Director – Nuclear Fleet Licensing, at (980) 373-5873.

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on February 16, 2023.

Sincerely,



Shawn K. Gibby

Enclosures:
1. Description and Assessment
2. Proposed Technical Specification Changes (Mark-Up)
3. Proposed Technical Specification Changes (Clean)
4. Proposed Technical Specification Bases Changes (Mark-Up) – For Information Only

cc:

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Enclosure 1

Description and Assessment

1.0 DESCRIPTION

Duke Energy Progress, LLC and Duke Energy Carolinas, LLC, collectively referred to as Duke Energy, requests adoption of TSTF-554, "Revise Reactor Coolant Leakage Requirements," which is an approved change to the Standard Technical Specifications (STS), into the Technical Specifications (TS) for the Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (BNP); the Catawba Nuclear Station, Unit Nos. 1 and 2 (CNS); the Shearon Harris Nuclear Power Plant, Unit No. 1 (HNP); the McGuire Nuclear Station, Unit Nos. 1 and 2 (MNS); the Oconee Nuclear Station, Unit Nos. 1, 2, and 3 (ONS); and the H. B. Robinson Steam Electric Plant, Unit No. 2 (RNP). The proposed amendment revises the TS definition of "Leakage" and the Reactor Coolant System (RCS) Operational Leakage TS to clarify the requirements.

2.0 ASSESSMENT

2.1 Applicability of Safety Evaluation

Duke Energy has reviewed the safety evaluation for TSTF-554 provided to the Technical Specifications Task Force in a letter dated December 18, 2020. This review included a review of the NRC staff's evaluation, as well as the information provided in TSTF-554, Revision 1. Duke Energy has concluded that the justifications presented in TSTF-554, Revision 1 and the safety evaluation prepared by the NRC staff are applicable to BNP, CNS, HNP, MNS, ONS, and RNP, and justify this amendment for the incorporation of the changes into the TS.

2.2 Variations

Duke Energy is proposing the following variations from the TS changes described in TSTF-554, Revision 1, or the applicable parts of the NRC staff's safety evaluation:

<u>BNP</u>

The affected portions of the BNP TS have some editorial differences from the corresponding STS on which TSTF-554 was based. None of the differences affect the applicability of TSTF-554 to the BNP TS.

- BNP TS 1.1 Definition for "Identified LEAKAGE", Item a.1, already ends with a ";" so the markups in this license amendment request differ editorially from TSTF-554 which shows the punctuation changing from a "." to a ";".
- BNP TS 1.1 Definition for "Identified LEAKAGE", Item a.2, already ends with a ";" so the markups in this license amendment request differ editorially from TSTF-554 which shows the punctuation changing from a "." to a ";".
- BNP TS 1.1 Definition for "Unidentified LEAKAGE", Item b, ends with a ";" so the markups in this license amendment request differ editorially from TSTF-554 which shows the punctuation ending with a ",".
- BNP TS 1.1 Definition for "Total LEAKAGE", Item c, already contains a ";" prior to the "and" so the markups in this license amendment request differ editorially from TSTF-554 which shows the punctuation changing from a "," to a ";".

The BNP TS 3.4.4, "RCS Operational LEAKAGE," Conditions are structured differently than those in the Standard Technical Specifications (STS) on which TSTF-554 were based. Specifically, the following difference exists.

- The existing STS 3.4.4. contains Condition A, which addresses unidentified LEAKAGE not within limit or total LEAKAGE not within limit and Condition B, which addresses increase in unidentified LEAKAGE not within limit. The existing BNP TS 3.4.4, Condition A addresses unidentified LEAKAGE not within limit, total LEAKAGE not within limit, or increase in unidentified LEAKAGE not within limit.

The structural difference (i.e., existing BNP Condition A versus existing STS Conditions A and B) is administrative and does not affect the applicability of TSTF-554, Revision 1, to the BNP TS.
The requirements of existing BNP TS 3.4.4 differ from those in the STS on which TSTF-554 were based. Specifically, the following differences exist.

- The existing STS 3.4.4. Conditions A and B have a 4-hour Completion Time. The existing equivalent BNP Condition A has an 8-hour Completion Time.
- Existing STS 3.4.4, Required Action B.2 is not included in the BNP TS 3.4.4 Required Actions.

TSTF-554, Revision 1, establishes a new TS 3.4.4 Condition A to address pressure boundary LEAKAGE with a Completion Time of 4 hours. If the 4-hour Completion time cannot be met, the plant must initiate a shutdown (i.e., be in MODE 3 in 12 hours and Mode 4 within 36 hours). The proposed BNP revision incorporates the same requirements as TSTF-554, Revision 1. The 8-hour Completion Time of existing BNP Required Action A.1 (i.e., new Required Action B.1) has no impact on the applicability of TSTF-554, Revision 1, to the BNP TS.

STS 3.4.4, Required Action B.2 allows an option to verify the source of unidentified LEAKAGE is not service sensitive type 304 or type 316 austenitic stainless steel. The lack of a BNP Required Action that is equivalent to STS 3.4.4, Required Action B.2 results in the BNP TS 3.4.4 being more conservative than STS 3.4.4; any increase in unidentified LEAKAGE must be reduced to within limits independent of its source. This difference has no impact on the applicability of TSTF-554, Revision 1, to the BNP TS.

CNS

The affected portions of the CNS TS have some editorial differences from the corresponding STS on which TSTF-554 was based. None of the differences affect the applicability of TSTF-554 to the CNS TS.

- CNS TS 1.1 Definition for “Identified LEAKAGE”, Item a.3, includes the acronym “SG” for steam generator while the STS does not. The acronym has been deleted as it is no longer needed based on the subsequent changes to align wording in the definition with TS 3.4.13.
- CNS TS 1.1 Definition for “Identified LEAKAGE”, Item a.3 does not contain the phrase “primary to secondary LEAKAGE” in parentheses consistent with the STS. The parenthetical has been added to ensure consistent phrasing between the “LEAKAGE” definition and TS 3.4.13.

- CNS TS 1.1 Definition for “Identified LEAKAGE”, Item a.3, already ends with a “;” so the markups in this license amendment request differ editorially from TSTF-554 which shows the punctuation changing from a “.” to a “;”.
- CNS TS 1.1 Definition for “Unidentified LEAKAGE”, Item b, does not end with “and” as shown in TSTF-554 and the STS. The “and” has been added for consistency with the STS.
- CNS TS 1.1 Definition for “Pressure Boundary LEAKAGE”, Item c, uses the term “SG LEAKAGE” rather than “primary to secondary LEAKAGE” as shown in TSTF-554 and the STS. This license amendment request is requesting the editorial change to the definition to ensure consistent phrasing between the “LEAKAGE” definition and TS 3.4.13.

CNS TS 3.4.13 RCS Leakage LCO item ‘d.’ is different from the STS on which TSTF-554 was based. The LCO provides a permanently reduced primary to secondary leakage rate for Unit 2 as 45 gallons per day. This was approved in Amendment 263 to the Unit 2 renewed facility operating license (ADAMS Accession No. ML12054A692). This limit was set based on evaluations performed after identification of stress corrosion cracking in the Unit 2 steam generators. This difference does not affect the applicability of TSTF-554 to the CNS TS.

HNP

The HNP TS are based upon the format and content of the NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors," series. As a result, the HNP TS numbers, wording, and format varies from the NRC Improved Standard Technical Specifications shown in TSTF-554, Revision 1, and referenced in the applicable parts of the NRC's Safety Evaluation. These differences are administrative in nature and do not affect the applicability of TSTF-554 to the HNP TS.

The HNP TS 1.0, “Definitions,” does not contain a single definition for “LEAKAGE”. Instead, specific leakage type definitions are provided. Table 1 shows a comparison of the current leakage definitions with the proposed definitions based on TSF-554.

Table 1

HNP TS	Term	Current Definition	Proposed Definition
1.8	CONTROLLED LEAKAGE	CONTROLLED LEAKAGE shall be that seal water flow supplied to the reactor coolant pump seals.	CONTROLLED LEAKAGE shall be that seal water flow supplied to the reactor coolant pump seals.
1.17	IDENTIFIED LEAKAGE	IDENTIFIED LEAKAGE shall be: a. Leakage (except CONTROLLED LEAKAGE) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of Leakage Detection Systems or not to be PRESSURE BOUNDARY LEAKAGE, or c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System (primary-to-secondary leakage).	IDENTIFIED LEAKAGE shall be: a. Leakage, such as that from pump seals or valve packing (except CONTROLLED LEAKAGE), that is captured and conducted to a sump or collecting tank, or b. Leakage into the containment atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems; or c. Reactor Coolant System leakage through a steam generator to the Secondary System (primary to secondary leakage).
1.24	PRESSURE BOUNDARY LEAKAGE	PRESSURE BOUNDARY LEAKAGE shall be leakage (except primary-to-secondary leakage) through a nonisolable fault in a Reactor Coolant System component body, pipe wall, or vessel wall.	PRESSURE BOUNDARY LEAKAGE shall be leakage (except primary to secondary leakage) through a fault in a Reactor Coolant System component body, pipe wall, or vessel wall. Leakage past seals, packing, and gaskets is not PRESSURE BOUNDARY LEAKAGE.
1.39	UNIDENTIFIED LEAKAGE	UNIDENTIFIED LEAKAGE shall be all leakage which is not IDENTIFIED LEAKAGE or CONTROLLED LEAKAGE.	UNIDENTIFIED LEAKAGE shall be all leakage which is not IDENTIFIED LEAKAGE or CONTROLLED LEAKAGE.

As shown in Enclosure 2, the HNP TS 1.0 numbers and terms shown in Table 1 are maintained, while the definitions are modified to be consistent with TSTF-554. This is to ensure consistent numbering and terminology is maintained within the TS. The changes in this license amendment do not propose modification to the definition of "CONTROLLED LEAKAGE". This term is used within the HNP TS but is not incorporated into the NUREG-1431 STS for Westinghouse plants, nor is the definition provided by TSTF-554, Revision 1. It is included in Table 1 to ensure clarity with the other definitions of leakage. The term "UNIDENTIFIED LEAKAGE" maintains the current TS wording as well since it refers to "CONTROLLED LEAKAGE". These differences are administrative and do not affect the applicability of TSTF-554 to the HNP TS.

HNP TS 3.4.6.2, "Reactor Coolant System Operational Leakage," contains additional LCO requirements not incorporated in STS or TSTF-554, Revision 1. The additional LCO requirements are not impacted by the application of TSTF-554, Revision 1 to the HNP TS.

HNP TS 3.4.6.2 Actions refer to HOT STANDBY and COLD SHUTDOWN operational modes instead of referring to the numerical MODES that are utilized in STS and TSTF-554, Revision 1. HNP TS 1.0, Table 1.2, Operational Modes, defines HOT STANDBY as MODE 3 and COLD SHUTDOWN as MODE 5. These differences are administrative and do not affect the applicability of TSTF-554 to the HNP TS.

HNP TS 3.4.6.2 LCO c. and Action b. contain an editorial difference from the corresponding STS on which TSTF-554 was based. The term "primary-to-secondary" is separated by hyphens (-) instead of spaces. As shown in Enclosure 2, the term "primary to secondary" no longer contains hyphens to ensure consistency with TSTF-554. This difference is administrative and does not affect the applicability of TSTF-554 to the HNP TS.

Since the HNP TS are based upon the format and content of the NUREG-0452, TS 3.4.6.2 Action 'a' requires the Unit being at least in HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours for any PRESSURE BOUNDARY LEAKAGE or primary to secondary leakage. To align with the wording and actions described in TSTF-554, this license amendment proposes revising TS 3.4.6.2 Action 'a' to refer only to PRESSURE BOUNDARY LEAKAGE. In addition, this license amendment includes a proposed change to create a new TS 3.4.6.2 Action 'd' to describe actions for primary to secondary leakage not within the limit. As shown in Enclosure 2, with primary to secondary leakage not within the limit, the Unit must be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours. This change ensures consistency with TSTF-554 and the current HNP TS 3.4.6.2 requirements for primary to secondary leakage. This difference is administrative and does not affect the applicability of TSTF-554 to the HNP TS. As a result, the HNP TS numbers, wording, and format varies from that which is included in STS and TSTF-554, Revision 1.

MNS

The affected portions of the MNS TS have some editorial differences from the corresponding STS on which TSTF-554 was based. None of the differences affect the applicability of TSTF-554 to the MNS TS.

- MNS TS 1.1 Definition for “Identified LEAKAGE”, Item a.3, already ends with a “;” so the markups in this license amendment request differ editorially from TSTF-554 which shows the punctuation changing from a “.” to a “;”.
- MNS TS 1.1 Definition for “Unidentified LEAKAGE”, Item b, does not end with “and” as shown in TSTF-554 and the STS. The “and” has been added for consistency with the STS.

ONS

TSTF-554, Revision 1, and its corresponding Safety Evaluation discuss the applicable regulatory requirements and guidance, including the applicability of 10 CFR 50, Appendix A, General Design Criteria (GDC) 14 and 30. ONS Units 1, 2, and 3 were not licensed to the current 10 CFR 50, Appendix A, GDC. ONS Updated Final Safety Analysis Report (UFSAR) Chapter 3, "Conformance with NRC General Design Criteria," states ONS was evaluated with respect to the proposed GDC contained in the Federal Register notice published July 11, 1967 (ADAMS Accession No. ML043310029). The UFSAR contains a discussion of the criteria as well as a summary of the criteria by groups. The ONS UFSAR provides criteria for the Reactor Coolant Pressure Boundary in Section 3.1.9 and Monitoring Reactor Coolant Pressure Boundary in Section 3.1.16, which contains provisions equivalent to 10 CFR 50, Appendix A, GDC 14 and 30. This difference has no impact on the applicability of TSTF-554, Revision 1, to the ONS TS.

The affected portions of the ONS TS have some editorial differences from the corresponding STS on which TSTF-554 was based. None of the differences affect the applicability of TSTF-554 to the ONS TS.

- ONS TS 1.1 Definition for “Identified LEAKAGE”, Item a.3, already ends with a “;” so the markups in this license amendment request differ editorially from TSTF-554 which shows the punctuation changing from a “.” to a “;”.
- ONS TS 1.1 Definition for “Unidentified LEAKAGE”, Item b, ends with a “.” instead of a “;” and does not end with “and” as shown in TSTF-554 and the STS. The “;” and “and” has been added for consistency with the STS.

ONS TS 3.4.13, RCS Leakage, Required Action B.1 (new Required Action C.1), states the Unit must be in MODE 3 with a Completion Time of 12 hours, whereas the Completion Time for the equivalent Required Action B.1 in STS and TSTF-554, Revision 1 is 6 hours. This difference in the default Completion Time does not impact the applicability of TSTF-554, Revision 1 to the ONS TS.

RNP

TSTF-554, Revision 1, and its corresponding Safety Evaluation discuss the applicable regulatory requirements and guidance, including the applicability of 10 CFR 50, Appendix A, General Design Criteria (GDC) 14 and 30. RNP Unit 2 was not licensed to the current 10 CFR 50, Appendix A, GDC. RNP UFSAR Chapter 3, "Design of Structures, Components, Equipment and Systems," states RNP was evaluated with respect to the proposed GDC contained in the Federal Register notice published July 11, 1967 (ADAMS Accession No. ML043310029). The UFSAR contains a discussion of the criteria as well as a summary of the criteria by groups. The RNP UFSAR provides criteria for the Reactor Coolant Pressure Boundary in Section 3.1.2.9 and Monitoring Reactor Coolant Leakage in Section 3.1.2.16, which contains provisions equivalent to 10 CFR 50, Appendix A, GDC 14 and 30. This difference has no impact on the applicability of TSTF-554, Revision 1, to the RNP TS.

The affected portions of the RNP TS have some editorial differences from the corresponding STS on which TSTF-554 was based. None of the differences affect the applicability of TSTF-554 to the RNP TS.

- RNP TS 1.1 Definition for “Identified LEAKAGE”, Item a.3, already ends with a “;” so the markups in this license amendment requestion differ editorially from TSTF-554 which shows the punctuation changing from a “.” to a “;”.
- RNP TS 1.1 Definition for “Unidentified LEAKAGE”, Item b, does not end with “and” as shown in TSTF-554 and the STS. The “and” has been added for consistency with the STS.

RNP TS 3.4.13, RCS Operational Leakage, LCO ‘d.’ describes the limit of primary to secondary leakage through any one steam generator as 75 gallons per day. The STS and TSTF-554, Revision 1 reflect a limit of 150 gallons per day in LCO 3.4.13.d.. This difference in the RNP TS is more conservative than the STS and does not impact the applicability of TSTF-554, Revision 1, to the RNP TS.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

Duke Energy Progress, LLC and Duke Energy Carolinas, LLC, collectively referred to as Duke Energy, requests adoption of TSTF-554, Revision 1, "Revise Reactor Coolant Leakage Requirements," that is an approved change to the Standard Technical Specifications (STS), into the Technical Specifications (TS) for Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (BNP); the Catawba Nuclear Station, Unit Nos. 1 and 2 (CNS); the Shearon Harris Nuclear Power Plant, Unit No. 1 (HNP); the McGuire Nuclear Station, Unit Nos. 1 and 2 (MNS); the Oconee Nuclear Station, Unit Nos. 1, 2, and 3 (ONS); and the H. B. Robinson Steam Electric Plant, Unit No. 2 (RNP). The proposed amendment revises the TS definition of "Leakage," clarifies the requirements when pressure boundary leakage is detected, and adds a Required Action when pressure boundary leakage is identified.

Duke Energy has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   The proposed amendment revises the TS definition of "Leakage," clarifies the requirements when pressure boundary leakage is detected, and adds a Required Action when pressure boundary leakage is identified.

   The proposed change revises the definition of pressure boundary leakage. Pressure boundary leakage is a precursor to some accidents previously evaluated. The proposed change expands the definition of pressure boundary leakage by eliminating the qualification that pressure boundary leakage must be from a "nonisolable" flaw. A new TS Action is created which requires isolation of the pressure boundary flaw from the Reactor Coolant System. This new action provides assurance that the flaw will not result in any accident previously evaluated.

   Pressure boundary leakage, and the actions taken when pressure boundary leakage is detected, is not assumed in the mitigation of any accident previously evaluated. As a result, the consequences of any accident previously evaluated are unaffected.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   The proposed amendment revises the TS definition of "Leakage," clarifies the requirements when pressure boundary leakage is detected, and adds a Required Action when pressure boundary leakage is identified. The proposed change does not alter the design function or operation of the RCS. The proposed change does not alter the ability of the RCS to perform its design function. Since pressure boundary leakage is an evaluated accident, the proposed change does not create any new failure mechanisms, malfunctions, or accident initiators not considered in the design and licensing bases.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

   Response: No

   The proposed amendment revises the TS definition of "Leakage," clarifies the requirements when pressure boundary leakage is detected, and adds a Required Action when pressure boundary leakage is identified. The proposed change does not affect the initial assumptions, margins, or controlling values used in any accident analysis. The amount of leakage allowed from the RCS is not increased. The proposed change does not affect any design basis or safety limit or any Limiting Condition for Operation.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Duke Energy concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

3.2 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission’s regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL CONSIDERATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

Enclosure 2

Proposed Technical Specification Changes (Mark-Up)

BNP Unit No. 1

Proposed Technical Specification Changes (Mark-Up)

1.1 Definitions

DRAIN TIME (continued)	d) No additional draining events occur; and e) Realistic cross-sectional areas and drain rates are used. A bounding DRAIN TIME may be used in lieu of a calculated value.
EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME	The ECCS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS initiation setpoint at the channel sensor until the ECCS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
ISOLATION INSTRUMENTATION RESPONSE TIME	The ISOLATION INSTRUMENTATION RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its isolation initiation setpoint at the channel sensor until the isolation valves receive the isolation signal (e.g., de-energization of the MSIV solenoids). The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE into the drywell, such as that from pump seals or valve packing, that is captured and conducted to a sump or collecting tank; or 2. LEAKAGE into the drywell atmosphere from sources that are both specifically located and known ~~either not~~ to not interfere with the operation of leakage detection systems ~~or not to be pressure boundary LEAKAGE~~;

(continued)

1.1 Definitions

LEAKAGE (continued)	b. Unidentified LEAKAGE All LEAKAGE into the drywell that is not identified LEAKAGE~~;~~ c. Total LEAKAGE Sum of the identified and unidentified LEAKAGE; and d. Pressure Boundary LEAKAGE LEAKAGE through a ~~nonisolable~~ fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
LINEAR HEAT GENERATION RATE (LHGR)	The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components (i.e., all required relays and contacts, trip units, solid state logic elements, etc.) of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.
MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Operational LEAKAGE

LCO 3.4.4 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. ≤ 5 gpm unidentified LEAKAGE averaged over the previous 24 hour period;

c. ≤ 25 gpm total LEAKAGE averaged over the previous 24 hour period; and

d. ≤ 2 gpm increase in unidentified LEAKAGE within the previous 24 hour period in MODE 1.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B~~A. Unidentified LEAKAGE not within limit. OR Total LEAKAGE not within limit. OR Unidentified LEAKAGE increase not within limit.	~~B~~A.1 Reduce LEAKAGE to within limits.	8 hours
~~C~~B. Required Action and associated Completion Time ~~of Condition A~~ not met. ~~OR~~ ~~Pressure boundary LEAKAGE exists.~~	~~C~~B.1 Be in MODE 3. AND ~~C~~B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	Verify RCS unidentified and total LEAKAGE and unidentified LEAKAGE increase are within limits.	In accordance with the Surveillance Frequency Control Program

BNP Unit No. 2

Proposed Technical Specification Changes (Mark-Up)

1.1 Definitions

DRAIN TIME (continued)	d) No additional draining events occur; and e) Realistic cross-sectional areas and drain rates are used. A bounding DRAIN TIME may be used in lieu of a calculated value.
EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME	The ECCS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS initiation setpoint at the channel sensor until the ECCS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
ISOLATION INSTRUMENTATION RESPONSE TIME	The ISOLATION INSTRUMENTATION RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its isolation initiation setpoint at the channel sensor until the isolation valves receive the isolation signal (e.g., de-energization of the MSIV solenoids). The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE into the drywell, such as that from pump seals or valve packing, that is captured and conducted to a sump or collecting tank; or 2. LEAKAGE into the drywell atmosphere from sources that are both specifically located and known ~~either not~~ to not interfere with the operation of leakage detection systems ~~or not to be pressure boundary LEAKAGE~~;

(continued)

1.1 Definitions

LEAKAGE (continued)	b. <u>Unidentified LEAKAGE</u> All LEAKAGE into the drywell that is not identified LEAKAGE; c. <u>Total LEAKAGE</u> Sum of the identified and unidentified LEAKAGE; and d. <u>Pressure Boundary LEAKAGE</u> LEAKAGE through a ~~nonisolable~~ fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
LINEAR HEAT GENERATION RATE (LHGR)	The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components (i.e., all required relays and contacts, trip units, solid state logic elements, etc.) of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.
MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Operational LEAKAGE

LCO 3.4.4 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. ≤ 5 gpm unidentified LEAKAGE averaged over the previous 24 hour period;

c. ≤ 25 gpm total LEAKAGE averaged over the previous 24 hour period; and

d. ≤ 2 gpm increase in unidentified LEAKAGE within the previous 24 hour period in MODE 1.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A~~B. Unidentified LEAKAGE not within limit. OR Total LEAKAGE not within limit. OR Unidentified LEAKAGE increase not within limit.	~~A~~B.1 Reduce LEAKAGE to within limits.	8 hours
~~B~~C. Required Action and associated Completion Time ~~of Condition A~~ not met. ~~OR~~ ~~Pressure boundary LEAKAGE exists.~~	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	Verify RCS unidentified and total LEAKAGE and unidentified LEAKAGE increase are within limits.	In accordance with the Surveillance Frequency Control Program

CNS Unit Nos. 1 and 2

Proposed Technical Specification Changes (Mark-Up)

1.1 Definitions (continued)

LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known ~~either~~ to not ~~to~~ interfere with the operation of leakage detection systems ~~or not to be pressure boundary LEAKAGE~~; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator ~~(SG)~~ to the Secondary System (primary to secondary LEAKAGE); b. Unidentified LEAKAGE All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and c. Pressure Boundary LEAKAGE LEAKAGE (except ~~SG~~ primary to secondary LEAKAGE) through a ~~nonisolable~~ fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
MASTER RELAY TEST	A MASTER RELAY TEST shall consist of energizing each master relay and verifying the OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay.
MODE	A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE; and

d. 150 gallons per day (Unit 1) and 45 gallons per day (Unit 2) primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
~~A~~B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	~~A~~B.1 Reduce LEAKAGE to within limits.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B~~C. Required Action and associated Completion Time ~~of Condition A~~ not met. ~~OR~~ ~~Pressure boundary LEAKAGE exists.~~ OR Primary to secondary LEAKAGE not within limit.	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 5.	6 hours 36 hours

HNP Unit No. 1

Proposed Technical Specification Changes (Mark-Up)

No changes to this page. Including for information purposes only. See CONTROLLED LEAKAGE.

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

a. All penetrations required to be closed during accident conditions are either:

1. Capable of being closed by an OPERABLE containment automatic isolation valve system, or

2. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except as provided in Specification 3.6.3.

b. All equipment hatches are closed and sealed,

c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,

d. The containment leakage rates are within the limits of Specification 3.6.1.2, and

e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 CONTROLLED LEAKAGE shall be that seal water flow supplied to the reactor coolant pump seals.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

CORE OPERATING LIMITS REPORT

1.9.a The CORE OPERATING LIMITS REPORT is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.6. Plant operation within these core operating limits is addressed within the individual specifications.

DIGITAL CHANNEL OPERATIONAL TEST

1.10 A DIGITAL CHANNEL OPERATIONAL TEST shall consist of exercising the digital computer hardware using data base manipulation to verify OPERABILITY of alarm and/or trip functions.

$\overline{E}$ – AVERAGE DISINTEGRATION ENERGY

1.12 $\overline{E}$ shall be the average, weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling, of the sum of the average beta and gamma energies per disintegration (MeV/d) for isotopes, with half-lives greater than 15 minutes, making up at least 95% of the total non-iodine activity in the coolant.

ENGINEERED SAFETY FEATURES RESPONSE TIME

1.13 The ENGINEERED SAFETY FEATURES (ESF) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF Actuation Setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.

EXCLUSION AREA BOUNDARY

1.14 The EXCLUSION AREA BOUNDARY shall be that line beyond which the land is not controlled by the licensee to limit access.

FREQUENCY NOTATION

1.15 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.

1.16 (DELETED)

IDENTIFIED LEAKAGE

1.17 IDENTIFIED LEAKAGE shall be:

a. Leakage ~~(except CONTROLLED LEAKAGE) into closed systems,~~ such as that from pump seals or valve packing (except CONTROLLED LEAKAGE)~~,~~ ~~leaks~~ that ~~i~~sare captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known ~~either~~ to not ~~to i~~nterfere with the operation of Leakage Detection Systems~~; or not to be PRESSURE BOUNDARY LEAKAGE~~, or

c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System (primary ~~-~~ to ~~-~~secondary leakage).

INSERVICE TESTING PROGRAM

1.17a The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).

MASTER RELAY TEST

1.18 A MASTER RELAY TEST shall be the energization of each master relay and verification of OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay.

MEMBER(S) OF THE PUBLIC

1.19 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the licensee, its contractors, or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational, or other purposes not associated with the plant.

OFFSITE DOSE CALCULATION MANUAL

1.20 The OFFSITE DOSE CALCULATION MANUAL (ODCM) shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Environmental Radiological Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs required by Section 6.8.4 and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Release Reports required by Specifications 6.9.1.3 and 6.9.1.4.

OPERABLE - OPERABILITY

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

OPERATIONAL MODE - MODE

1.22 An OPERATIONAL MODE (i.e., MODE) shall correspond to any one inclusive combination of core reactivity condition, power level, and average reactor coolant temperature specified in Table 1.2.

PHYSICS TESTS

1.23 PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation:

(1) described in Chapter 14.0 of the FSAR, (2) authorized under the provisions of 10 CFR 50.59, or (3) otherwise approved by the Commission.

PRESSURE BOUNDARY LEAKAGE

1.24 PRESSURE BOUNDARY LEAKAGE shall be leakage (except primary- to- secondary leakage) through a ~~nonisolable~~ fault in a Reactor Coolant System component body, pipe wall, or vessel wall. Leakage past seals, packing, and gaskets is not PRESSURE BOUNDARY LEAKAGE.

No changes to this page. Including for information purposes only. See UNIDENTIFIED LEAKAGE.

SITE BOUNDARY

1.32 For these Specifications, the SITE BOUNDARY shall be identical to the EXCLUSION AREA BOUNDARY defined above.

SLAVE RELAY TEST

1.33 A SLAVE RELAY TEST shall be the energization of each slave relay and verification of OPERABILITY of each relay. The SLAVE RELAY TEST shall include a continuity check, as a minimum, of associated testable actuation devices.

SOLIDIFICATION

1.34 Deleted from Technical Specifications and relocated to the PCP.

SOURCE CHECK

1.35 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a source of increased radioactivity.

STAGGERED TEST BASIS

1.36 A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems, trains, or other designated components obtained by dividing the specified test interval into n equal subintervals, and

b. The testing of one system, subsystem, train, or other designated component at the beginning of each subinterval.

THERMAL POWER

1.37 THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

TRIP ACTUATING DEVICE OPERATIONAL TEST

1.38 A TRIP ACTUATING DEVICE OPERATIONAL TEST shall consist of operating the Trip Actuating Device and verifying OPERABILITY of alarm, interlock and/or trip functions. The TRIP ACTUATING DEVICE OPERATIONAL TEST shall include adjustment, as necessary, of the Trip Actuating Device such that it actuates at the required Setpoint within the required accuracy.

UNIDENTIFIED LEAKAGE

1.39 UNIDENTIFIED LEAKAGE shall be all leakage which is not IDENTIFIED LEAKAGE or CONTROLLED LEAKAGE.

UNRESTRICTED AREA

1.40 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.

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System operational leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 gpm UNIDENTIFIED LEAKAGE,

c. 150 gallons per day primary~~-~~ to ~~-~~secondary leakage through any one steam generator,

d. 10 gpm IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. 31 gpm CONTROLLED LEAKAGE at a Reactor Coolant System pressure of 2235 ± 20 psig, and

f. The maximum allowable leakage of any Reactor Coolant System Pressure Isolation Valve shall be as specified in Table 3.4-1 at a pressure of 2235 ± 20 psig.*

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE,~~ or with primary-to-secondary leakage not within limit~~ isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours ~~,~~or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System operational leakage greater than any one of the above limits, excluding primary~~-~~ to~~-~~ secondary leakage, PRESSURE BOUNDARY LEAKAGE and leakage from Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any Reactor Coolant System Pressure Isolation Valve leakage greater than the limit specified in Table 3.4-1, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least two closed manual or deactivated automatic valves, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With primary to secondary leakage not within limit, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

* Test pressures less than 2235 psig but greater than 150 psig are allowed. Observed leakage shall be adjusted by multiplying the observed leakage by the square root of the quotient of 2235 divided by the test pressure.

MNS Unit Nos. 1 and 2

Proposed Technical Specification Changes (Mark-Up)

1.1 Definitions (continued)

ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known ~~either~~ to not ~~to~~ interfere with the operation of leakage detection systems ~~or not to be pressure boundary LEAKAGE~~; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); b. Unidentified LEAKAGE All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and c. Pressure Boundary LEAKAGE LEAKAGE (except primary to secondary LEAKAGE) through a ~~nonisolable~~ fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE;

d. 389 gallons per day total primary to secondary LEAKAGE through all steam generators (SGs); and

e. 135 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
~~A~~B. RCS Operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	~~A~~B.1 Reduce LEAKAGE to within limits.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B~~C. Required Action and associated Completion Time ~~of Condition A~~ not met. ~~OR~~ ~~Pressure boundary LEAKAGE exists.~~ OR Primary to secondary LEAKAGE not within limits.	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 5.	6 hours 36 hours

ONS Unit Nos. 1, 2, and 3

Proposed Technical Specification Changes (Mark-Up)

1.1 Definitions (continued)

LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE, such as that from pump seals or valve packing (except RCP seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known ~~either~~ to not ~~to~~ interfere with the operation of leakage detection systems ~~or not to be pressure boundary LEAKAGE~~; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); b. Unidentified LEAKAGE All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; ~~,~~ and c. Pressure Boundary LEAKAGE LEAKAGE (except primary to secondary LEAKAGE) through a ~~nonisolable~~ fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
MODE	A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE – OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE; and

d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
~~A~~B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	~~A~~B.1 Reduce LEAKAGE to within limits.	4 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B~~C. Required Action and associated Completion Time ~~of Condition A~~ not met. ~~OR~~ ~~Pressure boundary LEAKAGE exists.~~ OR Primary to secondary LEAKAGE not within limit.	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 5.	12 hours 36 hours

RNP Unit No. 2

Proposed Technical Specification Changes (Mark-Up)

1.1 Definitions

$\bar{E}$ - AVERAGE DISINTEGRATION ENERGY (continued)	iodines, with half lives > 15 minutes, making up at least 95% of the total noniodine activity in the coolant.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or return), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known ~~either~~ to not ~~to~~ interfere with the operation of leakage detection systems ~~or not to be pressure boundary LEAKAGE~~; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); b. Unidentified LEAKAGE All LEAKAGE (except RCP seal water injection or return) that is not identified LEAKAGE; and c. Pressure Boundary LEAKAGE LEAKAGE (except primary to secondary LEAKAGE) through a ~~nonisolable~~ fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
MASTER RELAY TEST	A MASTER RELAY TEST shall consist of energizing each master relay and verifying the OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE; and

d. 75 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
~~A~~B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	~~A~~B.1 Reduce LEAKAGE to within limits.	4 hours
~~B~~C. Required Action and associated Completion Time ~~of Condition A~~ not met. ~~OR~~ ~~Pressure boundary LEAKAGE exists.~~	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 5.	6 hours 36 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
OR Primary to secondary LEAKAGE not within limit.		

Enclosure 3

Proposed Technical Specification Changes (Clean)

BNP Unit No. 1

Proposed Technical Specification Changes (Clean)

1.1 Definitions

DRAIN TIME (continued)	d) No additional draining events occur; and e) Realistic cross-sectional areas and drain rates are used. A bounding DRAIN TIME may be used in lieu of a calculated value.
EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME	The ECCS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS initiation setpoint at the channel sensor until the ECCS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
ISOLATION INSTRUMENTATION RESPONSE TIME	The ISOLATION INSTRUMENTATION RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its isolation initiation setpoint at the channel sensor until the isolation valves receive the isolation signal (e.g., de-energization of the MSIV solenoids). The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE into the drywell, such as that from pump seals or valve packing, that is captured and conducted to a sump or collecting tank; or 2. LEAKAGE into the drywell atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems;

(continued)

1.1 Definitions

LEAKAGE (continued)	b. <u>Unidentified LEAKAGE</u> All LEAKAGE into the drywell that is not identified LEAKAGE c. Total LEAKAGE Sum of the identified and unidentified LEAKAGE; and d. Pressure Boundary LEAKAGE LEAKAGE through a fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
LINEAR HEAT GENERATION RATE (LHGR)	The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components (i.e., all required relays and contacts, trip units, solid state logic elements, etc.) of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.
MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Operational LEAKAGE

LCO 3.4.4 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. ≤ 5 gpm unidentified LEAKAGE averaged over the previous 24 hour period;

c. ≤ 25 gpm total LEAKAGE averaged over the previous 24 hour period; and

d. ≤ 2 gpm increase in unidentified LEAKAGE within the previous 24 hour period in MODE 1.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Unidentified LEAKAGE not within limit. OR Total LEAKAGE not within limit. OR Unidentified LEAKAGE increase not within limit.	B.1 Reduce LEAKAGE to within limits.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	Verify RCS unidentified and total LEAKAGE and unidentified LEAKAGE increase are within limits.	In accordance with the Surveillance Frequency Control Program

BNP Unit No. 2

Proposed Technical Specification Changes (Clean)

1.1 Definitions

DRAIN TIME (continued)	d) No additional draining events occur; and e) Realistic cross-sectional areas and drain rates are used. A bounding DRAIN TIME may be used in lieu of a calculated value.
EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME	The ECCS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS initiation setpoint at the channel sensor until the ECCS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
ISOLATION INSTRUMENTATION RESPONSE TIME	The ISOLATION INSTRUMENTATION RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its isolation initiation setpoint at the channel sensor until the isolation valves receive the isolation signal (e.g., de-energization of the MSIV solenoids). The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE into the drywell, such as that from pump seals or valve packing, that is captured and conducted to a sump or collecting tank; or 2. LEAKAGE into the drywell atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems;

(continued)

1.1 Definitions

LEAKAGE (continued)	b. <u>Unidentified LEAKAGE</u> All LEAKAGE into the drywell that is not identified LEAKAGE; c. <u>Total LEAKAGE</u> Sum of the identified and unidentified LEAKAGE; and d. <u>Pressure Boundary LEAKAGE</u> LEAKAGE through a fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
LINEAR HEAT GENERATION RATE (LHGR)	The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components (i.e., all required relays and contacts, trip units, solid state logic elements, etc.) of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.
MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Operational LEAKAGE

LCO 3.4.4 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. ≤ 5 gpm unidentified LEAKAGE averaged over the previous 24 hour period;

c. ≤ 25 gpm total LEAKAGE averaged over the previous 24 hour period; and

d. ≤ 2 gpm increase in unidentified LEAKAGE within the previous 24 hour period in MODE 1.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Unidentified LEAKAGE not within limit. OR Total LEAKAGE not within limit. OR Unidentified LEAKAGE increase not within limit.	B.1 Reduce LEAKAGE to within limits.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	Verify RCS unidentified and total LEAKAGE and unidentified LEAKAGE increase are within limits.	In accordance with the Surveillance Frequency Control Program

CNS Unit Nos. 1 and 2

Proposed Technical Specification Changes (Clean)

1.1 Definitions (continued)

LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); b. Unidentified LEAKAGE All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and c. Pressure Boundary LEAKAGE LEAKAGE (except primary to secondary LEAKAGE) through a fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
MASTER RELAY TEST	A MASTER RELAY TEST shall consist of energizing each master relay and verifying the OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay.
MODE	A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE; and

d. 150 gallons per day (Unit 1) and 45 gallons per day (Unit 2) primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	B.1 Reduce LEAKAGE to within limits.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met. OR Primary to secondary LEAKAGE not within limit.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

HNP Unit No. 1

Proposed Technical Specification Changes (Clean)

$\overline{E}$ – AVERAGE DISINTEGRATION ENERGY

1.12 $\overline{E}$ shall be the average, weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling, of the sum of the average beta and gamma energies per disintegration (MeV/d) for isotopes, with half-lives greater than 15 minutes, making up at least 95% of the total non-iodine activity in the coolant.

ENGINEERED SAFETY FEATURES RESPONSE TIME

1.13 The ENGINEERED SAFETY FEATURES (ESF) RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF Actuation Setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.

EXCLUSION AREA BOUNDARY

1.14 The EXCLUSION AREA BOUNDARY shall be that line beyond which the land is not controlled by the licensee to limit access.

FREQUENCY NOTATION

1.15 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.

1.16 (DELETED)

IDENTIFIED LEAKAGE

1.17 IDENTIFIED LEAKAGE shall be:

a. Leakage , such as that from pump seals or valve packing (except CONTROLLED LEAKAGE), that is captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known to not interfere with the operation of Leakage Detection Systems; or

c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System (primary to secondary leakage).

INSERVICE TESTING PROGRAM

1.17a The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).

MASTER RELAY TEST

1.18 A MASTER RELAY TEST shall be the energization of each master relay and verification of OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay.

MEMBER(S) OF THE PUBLIC

1.19 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the licensee, its contractors, or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational, or other purposes not associated with the plant.

OFFSITE DOSE CALCULATION MANUAL

1.20 The OFFSITE DOSE CALCULATION MANUAL (ODCM) shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Environmental Radiological Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs required by Section 6.8.4 and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Release Reports required by Specifications 6.9.1.3 and 6.9.1.4.

OPERABLE - OPERABILITY

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

OPERATIONAL MODE - MODE

1.22 An OPERATIONAL MODE (i.e., MODE) shall correspond to any one inclusive combination of core reactivity condition, power level, and average reactor coolant temperature specified in Table 1.2.

PHYSICS TESTS

1.23 PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation:

(1) described in Chapter 14.0 of the FSAR, (2) authorized under the provisions of 10 CFR 50.59, or (3) otherwise approved by the Commission.

PRESSURE BOUNDARY LEAKAGE

1.24 PRESSURE BOUNDARY LEAKAGE shall be leakage (except primary to secondary leakage) through a fault in a Reactor Coolant System component body, pipe wall, or vessel wall. Leakage past seals, packing, and gaskets is not PRESSURE BOUNDARY LEAKAGE.

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System operational leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 gpm UNIDENTIFIED LEAKAGE,

c. 150 gallons per day primary to secondary leakage through any one steam generator,

d. 10 gpm IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. 31 gpm CONTROLLED LEAKAGE at a Reactor Coolant System pressure of 2235 ± 20 psig, and

f. The maximum allowable leakage of any Reactor Coolant System Pressure Isolation Valve shall be as specified in Table 3.4-1 at a pressure of 2235 ± 20 psig.*

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System operational leakage greater than any one of the above limits, excluding primary to secondary leakage, PRESSURE BOUNDARY LEAKAGE and leakage from Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any Reactor Coolant System Pressure Isolation Valve leakage greater than the limit specified in Table 3.4-1, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least two closed manual or deactivated automatic valves, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With primary to secondary leakage not within limit, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

* Test pressures less than 2235 psig but greater than 150 psig are allowed. Observed leakage shall be adjusted by multiplying the observed leakage by the square root of the quotient of 2235 divided by the test pressure.

MNS Unit Nos. 1 and 2

Proposed Technical Specification Changes (Clean)

1.1 Definitions (continued)

ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); b. <u>Unidentified LEAKAGE</u> All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and c. <u>Pressure Boundary LEAKAGE</u> LEAKAGE (except primary to secondary LEAKAGE) through a fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE;

d. 389 gallons per day total primary to secondary LEAKAGE through all steam generators (SGs); and

e. 135 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	Pressure boundary LEAKAGE exists.	A.1	Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
B.	RCS Operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	B.1	Reduce LEAKAGE to within limits.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met. OR Primary to secondary LEAKAGE not within limits.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

ONS Unit Nos. 1, 2, and 3

Proposed Technical Specification Changes (Clean)

1.1 Definitions (continued)

LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE, such as that from pump seals or valve packing (except RCP seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); b. <u>Unidentified LEAKAGE</u> All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; and c. <u>Pressure Boundary LEAKAGE</u> LEAKAGE (except primary to secondary LEAKAGE) through a fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
MODE	A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE – OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE; and

d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1 Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	B.1 Reduce LEAKAGE to within limits.	4 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met. OR Primary to secondary LEAKAGE not within limit.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	12 hours 36 hours

RNP Unit No. 2

Proposed Technical Specification Changes (Clean)

1.1 Definitions

$\bar{E}$ - AVERAGE DISINTEGRATION ENERGY (continued)	iodines, with half lives > 15 minutes, making up at least 95% of the total noniodine activity in the coolant.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or return), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known to not interfere with the operation of leakage detection systems; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE); b. Unidentified LEAKAGE All LEAKAGE (except RCP seal water injection or return) that is not identified LEAKAGE; and c. Pressure Boundary LEAKAGE LEAKAGE (except primary to secondary LEAKAGE) through a fault in an RCS component body, pipe wall, or vessel wall. LEAKAGE past seals, packing, and gaskets is not pressure boundary LEAKAGE.
MASTER RELAY TEST	A MASTER RELAY TEST shall consist of energizing each master relay and verifying the OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay.

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE; and

d. 75 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressure boundary LEAKAGE exists.	A.1	Isolate affected component, pipe, or vessel from the RCS by use of a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve.	4 hours
B. RCS operational LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE or primary to secondary LEAKAGE.	B.1	Reduce LEAKAGE to within limits.	4 hours
C. Required Action and associated Completion Time not met. OR Primary to secondary LEAKAGE not within limit.	C.1 AND C.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

Enclosure 4

Proposed Technical Specification Bases Changes (Mark-Up)
For Information Only

BNP Unit No. 1

Proposed Technical Specification Bases Changes (Mark-Up)
For Information Only

BASES (continued)

APPLICABLE SAFETY ANALYSES

The allowable RCS operational LEAKAGE limits are based on the predicted and experimentally observed behavior of pipe cracks. The normally expected background LEAKAGE due to equipment design and the detection capability of the instrumentation for determining system LEAKAGE were also considered. The evidence from experiments suggests that, for LEAKAGE even greater than the specified unidentified LEAKAGE limits, the probability is small that the imperfection or crack associated with such LEAKAGE would grow rapidly.

The unidentified LEAKAGE flow limit allows time for corrective action before the RCPB could be significantly compromised. The 5 gpm limit is a small fraction of the calculated flow from a critical crack in the primary system piping. Crack behavior from experimental programs (Refs. 4 and 5) shows that leakage rates of hundreds of gallons per minute will precede crack instability.

The low limit on increase in unidentified LEAKAGE assumes a failure mechanism of intergranular stress corrosion cracking (IGSCC) that produces tight cracks. This flow increase limit is capable of providing an early warning of such deterioration.

No applicable safety analysis assumes the total LEAKAGE limit. The total LEAKAGE limit considers RCS inventory makeup capability and the capacity of the drywell sumps.

RCS operational LEAKAGE satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii) (Ref. 6).

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

~~No p~~Pressure boundary LEAKAGE is ~~prohibited~~allowed, ~~being indicative of material degradation. LEAKAGE of this type is unacceptable~~ as the leak itself could cause further RCPB deterioration, resulting in higher LEAKAGE. ~~Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~

(continued)

BASES

LCO (continued)

b. Unidentified LEAKAGE

The 5 gpm of unidentified LEAKAGE (averaged over the previous 24 hour period) is allowed as a reasonable minimum detectable amount that the containment air monitoring and drywell sump level monitoring equipment can detect within a reasonable time period. Separating the sources of leakage (i.e., leakage from an identified source versus leakage from an unidentified source) is necessary for prompt identification of potentially adverse conditions, assessment of the safety significance, and corrective action. ~~Violation of this LCO could result in continued degradation of the RCPB.~~

c. Total LEAKAGE

The total LEAKAGE limit (averaged over the previous 24 hour period) is based on a reasonable minimum detectable amount and takes into consideration RCS inventory makeup capability and the capacity of the drywell sumps. The limit also accounts for LEAKAGE from known sources (identified LEAKAGE). Violation of this LCO indicates an unexpected amount of LEAKAGE and, therefore, could indicate new or additional degradation in an RCPB component or system.

d. Unidentified LEAKAGE Increase

An unidentified LEAKAGE increase of > 2 gpm within the previous 24 hour period indicates a potential flaw in the RCPB and must be quickly evaluated to determine the source and extent of the LEAKAGE. The increase is measured relative to the steady state value; temporary changes in LEAKAGE rate as a result of transient conditions (e.g., startup) are not considered. As such, the 2 gpm increase limit is only applicable in MODE 1 when operating pressures and temperatures are established. ~~Violation of this LCO could result in continued degradation of the RCPB.~~

APPLICABILITY

In MODES 1, 2, and 3, the RCS operational LEAKAGE LCO applies, because the potential for RCPB LEAKAGE is greatest when the reactor is pressurized.

In MODES 4 and 5, RCS operational LEAKAGE limits are not required since the reactor is not pressurized and stresses in the RCPB materials and potential for LEAKAGE are reduced.

(continued)

BASES (continued)

ACTIONS

A.1

If pressure boundary LEAKAGE exists, the affected component, pipe, or vessel must be isolated from the RCS by a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours. While in this condition, structural integrity of the system should be considered because the structural integrity of the part of the system within the isolation boundary must be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location. Normal LEAKAGE past the isolation device is acceptable as it will limit RCS LEAKAGE and is included in identified or unidentified LEAKAGE. This action is necessary to prevent further deterioration of the RCPB.

B.1

With RCS unidentified or total LEAKAGE greater than the limits, actions must be taken to reduce the leak. Because the LEAKAGE limits are conservatively below the LEAKAGE that would constitute a critical crack size, 8 hours is allowed to reduce the LEAKAGE rates before the reactor must be shut down. If an unidentified LEAKAGE has been identified and quantified, it may be reclassified and considered as identified LEAKAGE; however, the total LEAKAGE limit would remain unchanged.

An unidentified LEAKAGE increase of > 2 gpm within a 24 hour period is an indication of a potential flaw in the RCPB and action must be taken to reduce the leak. Although the increase does not necessarily violate the absolute unidentified LEAKAGE limit, it does provide an early warning of potential IGSCC. For an unidentified LEAKAGE increase greater than required limits, reducing the LEAKAGE rate such that the current rate is less than the "2 gpm increase in the previous 24 hours" limit may be performed either by isolating the source or other possible methods. The 8 hour Completion Time is reasonable to properly reduce the LEAKAGE increase before the reactor must be shut down without unduly jeopardizing plant safety.

~~C~~B.1 and ~~C~~B.2

If the Required Action and associated Completion Time ~~of Condition A~~ is not met ~~or if pressure boundary LEAKAGE exists~~, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant safety systems.

(continued)

BNP Unit No. 2

Proposed Technical Specification Bases Changes (Mark-Up)
For Information Only

BASES (continued)

APPLICABLE SAFETY ANALYSES

The allowable RCS operational LEAKAGE limits are based on the predicted and experimentally observed behavior of pipe cracks. The normally expected background LEAKAGE due to equipment design and the detection capability of the instrumentation for determining system LEAKAGE were also considered. The evidence from experiments suggests that, for LEAKAGE even greater than the specified unidentified LEAKAGE limits, the probability is small that the imperfection or crack associated with such LEAKAGE would grow rapidly.

The unidentified LEAKAGE flow limit allows time for corrective action before the RCPB could be significantly compromised. The 5 gpm limit is a small fraction of the calculated flow from a critical crack in the primary system piping. Crack behavior from experimental programs (Refs. 4 and 5) shows that leakage rates of hundreds of gallons per minute will precede crack instability.

The low limit on increase in unidentified LEAKAGE assumes a failure mechanism of intergranular stress corrosion cracking (IGSCC) that produces tight cracks. This flow increase limit is capable of providing an early warning of such deterioration.

No applicable safety analysis assumes the total LEAKAGE limit. The total LEAKAGE limit considers RCS inventory makeup capability and the capacity of the drywell sumps.

RCS operational LEAKAGE satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii) (Ref. 6).

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

~~No p~~Pressure boundary LEAKAGE is ~~prohibited~~allowed, ~~being indicative of material degradation. LEAKAGE of this type is unacceptable~~ as the leak itself could cause further RCPB deterioration, resulting in higher LEAKAGE. ~~Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~

(continued)

BASES

LCO (continued)

b. Unidentified LEAKAGE

The 5 gpm of unidentified LEAKAGE (averaged over the previous 24 hour period) is allowed as a reasonable minimum detectable amount that the containment air monitoring and drywell sump level monitoring equipment can detect within a reasonable time period. Separating the sources of leakage (i.e., leakage from an identified source versus leakage from an unidentified source) is necessary for prompt identification of potentially adverse conditions, assessment of the safety significance, and corrective action. ~~Violation of this LCO could result in continued degradation of the RCPB.~~

c. Total LEAKAGE

The total LEAKAGE limit (averaged over the previous 24 hour period) is based on a reasonable minimum detectable amount and takes into consideration RCS inventory makeup capability and the capacity of the drywell sumps. The limit also accounts for LEAKAGE from known sources (identified LEAKAGE). Violation of this LCO indicates an unexpected amount of LEAKAGE and, therefore, could indicate new or additional degradation in an RCPB component or system.

d. Unidentified LEAKAGE Increase

An unidentified LEAKAGE increase of > 2 gpm within the previous 24 hour period indicates a potential flaw in the RCPB and must be quickly evaluated to determine the source and extent of the LEAKAGE. The increase is measured relative to the steady state value; temporary changes in LEAKAGE rate as a result of transient conditions (e.g., startup) are not considered. As such, the 2 gpm increase limit is only applicable in MODE 1 when operating pressures and temperatures are established. ~~Violation of this LCO could result in continued degradation of the RCPB.~~

APPLICABILITY

In MODES 1, 2, and 3, the RCS operational LEAKAGE LCO applies, because the potential for RCPB LEAKAGE is greatest when the reactor is pressurized.

In MODES 4 and 5, RCS operational LEAKAGE limits are not required since the reactor is not pressurized and stresses in the RCPB materials and potential for LEAKAGE are reduced.

(continued)

BASES (continued)

ACTIONS

A.1

If pressure boundary LEAKAGE exists, the affected component, pipe, or vessel must be isolated from the RCS by a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours. While in this condition, structural integrity of the system should be considered because the structural integrity of the part of the system within the isolation boundary must be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location. Normal LEAKAGE past the isolation device is acceptable as it will limit RCS LEAKAGE and is included in identified or unidentified LEAKAGE. This action is necessary to prevent further deterioration of the RCPB.

~~A~~B.1

With RCS unidentified or total LEAKAGE greater than the limits, actions must be taken to reduce the leak. Because the LEAKAGE limits are conservatively below the LEAKAGE that would constitute a critical crack size, 8 hours is allowed to reduce the LEAKAGE rates before the reactor must be shut down. If an unidentified LEAKAGE has been identified and quantified, it may be reclassified and considered as identified LEAKAGE; however, the total LEAKAGE limit would remain unchanged.

An unidentified LEAKAGE increase of > 2 gpm within a 24 hour period is an indication of a potential flaw in the RCPB and action must be taken to reduce the leak. Although the increase does not necessarily violate the absolute unidentified LEAKAGE limit, it does provide an early warning of potential IGSCC. For an unidentified LEAKAGE increase greater than required limits, reducing the LEAKAGE rate such that the current rate is less than the "2 gpm increase in the previous 24 hours" limit may be performed either by isolating the source or other possible methods. The 8 hour Completion Time is reasonable to properly reduce the LEAKAGE increase before the reactor must be shut down without unduly jeopardizing plant safety.

~~B~~C.1 and ~~B~~C.2

If the Required Action and associated Completion Time ~~of Condition A~~ is not met ~~or if pressure boundary LEAKAGE exists~~, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant safety systems.

(continued)

CNS Unit Nos. 1 and 2

Proposed Technical Specification Bases Changes (Mark-Up)
For Information Only

BASES

APPLICABLE SAFETY ANALYSES (continued)

The safety analysis (Ref. 3) for an event resulting in steam discharge to the atmosphere assumes that primary to secondary LEAKAGE from each steam generator (SG) is 150 gallons per day. Any event in which the reactor coolant system will continue to leak water inventory to the secondary side, and in which there will be a postulated source term associated with the accident, utilizes this leakage value as an input in the analysis. These accidents include the rod ejection accident, locked rotor accident, main steam line break, steam generator tube rupture and uncontrolled rod withdrawal accident. The rod ejection accident, locked rotor accident and uncontrolled rod withdrawal accident yield a source term due to postulated fuel failure as a result of the accident. The main steam line break and the steam generator tube rupture yield a source term due to perforations in fuel pins causing an iodine spike. Primary to secondary side leakage may escape the secondary side due to flashing or atomization of the coolant, or it may mix with the secondary side SG water inventory and be released due to steaming of the SGs. The rod ejection accident is limiting compared to the remainder of the accidents with respect to dose results. The dose results for each of the accidents delineated above are below the 10 CFR 50.67 limits (Ref. 9) and the limits in Regulatory Guide 1.183 (Ref. 10) for these accidents.

The RCS operational LEAKAGE satisfies Criterion 2 of 10 CFR 50.36 (Ref. 4).

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

~~No p~~Pressure boundary LEAKAGE is prohibited~~allowed, being indicative of material deterioration. LEAKAGE of this type is unacceptable~~ as the leak itself could cause further RCPB deterioration, resulting in higher LEAKAGE.

~~Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~

b. Unidentified LEAKAGE

One gallon per minute (gpm) of unidentified LEAKAGE is allowed as a reasonable minimum detectable amount that the containment air monitoring and containment sump level monitoring equipment

BASES

LCO (continued)

can detect within a reasonable time period. Separating the sources of leakage (i.e. leakage from an identified source versus leakage from an unidentified source) is necessary for prompt identification of potentially adverse conditions, assessment of the safety significance, and corrective action. ~~Violation of this LCO could result in continued degradation of the RCPB, if the LEAKAGE is from the pressure boundary.~~

c. Identified LEAKAGE

Up to 10 gpm of identified LEAKAGE is considered allowable because LEAKAGE is from known sources that do not interfere with detection of unidentified or total LEAKAGE and is well within the capability of the RCS Makeup System. Identified LEAKAGE includes LEAKAGE captured by the pressurizer relief tank and reactor coolant drain tank, as well as quantified LEAKAGE to the containment from specifically known and located sources, but does not include ~~pressure boundary LEAKAGE or~~ controlled reactor coolant pump (RCP) seal leakoff (a normal function not considered LEAKAGE). ~~Violation of this LCO could result in continued degradation of a component or system.~~

d. Primary to Secondary LEAKAGE through Any One SG

The limit of 150 gallons per day (Unit 1) and 45 gallons per day (Unit 2) per SG is based on the operational LEAKAGE performance criterion in NEI 97-06, "Steam Generator Program Guidelines" (Ref. 6). The Steam Generator Program operational LEAKAGE performance criterion in NEI 97-06 states: "The RCS operational primary to secondary leakage through any one SG shall be limited to 150 gallons per day." The limit for Unit 2 has been permanently reduced as a result of the SG tube alternate repair criteria that has been implemented for this unit.

The primary to secondary LEAKAGE measurement is based on the methodology described in Ref. 5.

The operational LEAKAGE rate limit applies to LEAKAGE in any one SG. If it is not practical to assign the LEAKAGE to an individual SG, all the LEAKAGE should be conservatively assumed to be from one SG.

The limit in this criterion is based on operating experience gained from SG tube degradation mechanisms that result in tube LEAKAGE. The operational LEAKAGE rate criterion in conjunction with implementation of the Steam Generator Program is an

effective measure for minimizing the frequency of SG tube ruptures.

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, the potential for RCPB LEAKAGE is greatest when the RCS is pressurized.

In MODES 5 and 6, LEAKAGE limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for LEAKAGE.

LCO 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leak tight. If both valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable unidentified LEAKAGE.

ACTIONS

A.1

If pressure boundary LEAKAGE exists, the affected component, pipe, or vessel must be isolated from the RCS by a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours. While in this condition, structural integrity of the system should be considered because the structural integrity of the part of the system within the isolation boundary must be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location. Normal LEAKAGE past the isolation device is acceptable as it will limit RCS LEAKAGE and is included in identified or unidentified LEAKAGE. This action is necessary to prevent further deterioration of the RCPB.

~~A~~B.1

Unidentified LEAKAGE or identified LEAKAGE in excess of the LCO limits must be reduced to within limits within 4 hours. This Completion Time allows time to verify leakage rates and either identify unidentified LEAKAGE or reduce LEAKAGE to within limits before the reactor must be shut down. This action is necessary to prevent further deterioration of the RCPB.

~~C~~B.1 and ~~B~~C.2

If ~~any pressure boundary LEAKAGE exists, or if~~ primary to secondary LEAKAGE is not within limit, or if ~~unidentified LEAKAGE or identified LEAKAGE cannot be reduced to within limits within 4 hours,~~any of the Required Actions and associated Completion Times cannot be met, the reactor must be brought to lower pressure conditions to reduce the severity of the LEAKAGE and its potential consequences. ~~It should be~~

BASES

noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. The reactor must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. This action reduces the LEAKAGE and also reduces the factors that tend to degrade the pressure boundary.

ACTIONS (continued)

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. In MODE 5, the pressure stresses acting on the RCPB are much lower, and further deterioration is much less likely.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1

Verifying RCS LEAKAGE to be within the LCO limits ensures the integrity of the RCPB is maintained. Pressure boundary LEAKAGE would at first appear as unidentified LEAKAGE and can only be positively identified by inspection. ~~It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~ Unidentified LEAKAGE and identified LEAKAGE are determined by performance of an RCS water inventory balance. For this SR, the volumetric calculation of unidentified LEAKAGE and identified LEAKAGE is based on a density at room temperature of 77 degrees F.

The Surveillance is modified by two Notes. The RCS water inventory balance must be performed with the reactor at steady state operating conditions and near operating pressure. Therefore, Note 1 indicates that this SR is not required to be completed until 12 hours of steady state operation near operating pressure have been established.

Steady state operation is required to perform a proper inventory balance; calculations during maneuvering are not useful and Note 1 requires the Surveillance to be met when steady state is established. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

Note 2 states that this SR is not applicable to primary to secondary LEAKAGE because LEAKAGE of 150 gallons per day or lower cannot be measured accurately by an RCS water inventory balance.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment sump level. ~~It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~ These leakage detection systems are specified in LCO 3.4.15, "RCS Leakage Detection Instrumentation."

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program. A Note under the Frequency column states that this SR is only required to be performed during steady state operation.

HNP Unit No. 1

Proposed Technical Specification Bases Changes (Mark-Up)
For Information Only

3/4.4.6.2 OPERATIONAL LEAKAGE (continued)

Limiting Condition for Operation (LCO)

Reactor Coolant System operational leakage shall be limited to:

a. PRESSURE BOUNDARY LEAKAGE

~~No~~ PRESSURE BOUNDARY LEAKAGE is ~~allowed, being indicative of material deterioration. Leakage of this type is unacceptable~~prohibited as the leak itself could cause further RCPB deterioration, resulting in higher leakage. ~~Violation of this LCO could result in continued degradation of the Reactor Coolant Pressure Boundary. Leakage past seals and gaskets is not PRESSURE BOUNDARY LEAKAGE.~~

b. UNIDENTIFIED LEAKAGE

One gallon per minute (gpm) of UNIDENTIFIED LEAKAGE is allowed as a reasonable minimum detectable amount that the containment air monitoring and containment sump level monitoring equipment can detect within a reasonable time period. Separating the sources of leakage (i.e., leakage from an identified source versus leakage from an unidentified source) is necessary for prompt identification of potentially adverse conditions, assessment of the safety significance, and corrective action.~~Violation of this LCO could result in continued degradation of the Reactor Coolant Pressure Boundary, if the leakage is from the pressure boundary.~~

c. PRIMARY-TO-SECONDARY LEAKAGE THROUGH ANY ONE STEAM GENERATOR

The limit of 150 gpd per SG is based on the operational leakage performance criterion in NEI 97-06, Steam Generator Program Guidelines (Reference 3). The Steam Generator Program operational leakage performance criterion in NEI 97-06 states, "The RCS operational primary-to-secondary leakage through any one steam generator shall be limited to 150 gallons per day." The limit is based on operating experience with steam generator tube degradation mechanisms that result in tube leakage. The operational leakage rate criterion in conjunction with the implementation of the Steam Generator Program is an effective measure for minimizing the frequency of SG tube ruptures.

3/4.4.6.2 OPERATIONAL LEAKAGE (continued)

d. IDENTIFIED LEAKAGE

Up to 10 gpm of IDENTIFIED LEAKAGE is considered allowable because leakage is from known sources that do not interfere with detection of UNIDENTIFIED LEAKAGE and is well within the capability of the Reactor Coolant System Makeup System. IDENTIFIED LEAKAGE includes leakage to the containment from specifically known and located sources, but does not include ~~PRESSURE BOUNDARY LEAKAGE or~~ CONTROLLED LEAKAGE. ~~Violation of this LCO could result in continued degradation of a component or system.~~

e. CONTROLLED LEAKAGE

The CONTROLLED LEAKAGE limitation restricts operation when the total flow supplied to the reactor coolant pump seals exceeds 31 gpm with the modulating valve in the supply line fully open at a nominal RCS pressure of 2235 psig. This limitation ensures that in the event of a LOCA, the safety injection flow will not be less than assumed in the accident analysis.

f. REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVE LEAKAGE

The maximum allowable leakage from any RCS pressure isolation valve is sufficiently low to ensure early detection of possible in-series check valve failure. It is apparent that when pressure isolation is provided by two in-series check valves and when failure of one valve in the pair can go undetected for a substantial length of time, verification of valve integrity is required. Since these valves are important in preventing overpressurization and rupture of the ECCS low pressure piping, which could result in a LOCA that bypasses containment, these valves should be tested periodically to ensure low probability of gross failure.

3/4.4.6.2 OPERATIONAL LEAKAGE (continued)

Applicability

In MODES 1, 2, 3, and 4, the potential for RCPB leakage is greatest when the RCS is pressurized.

In Modes 5 and 6, leakage limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for leakage.

ACTIONS

a. If ~~any~~ PRESSURE BOUNDARY LEAKAGE exists, the affected component, pipe, or vessel must be isolated from the RCS by a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours. While in this condition, structural integrity of the system should be considered because the structural integrity of the part of the system within the isolation boundary must be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location. Normal leakage past the isolation device is acceptable as it will limit RCS leakage and is included in IDENTIFIED LEAKAGE or UNIDENTIFIED LEAKAGE.~~or primary-to-secondary leakage is not within limit,~~ Otherwise, the reactor must be brought to HOT STANDBY within 6 hours and COLD SHUTDOWN within the next 30 hours. This action ~~reduces the leakage and also reduces the factors that tend to degrade the pressure boundary~~is necessary to prevent further deterioration of the RCPB.

   The allowed completion times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. In COLD SHUTDOWN, the pressure stresses acting on the RCPB are much lower, and further deterioration is much less likely.

b. UNIDENTIFIED LEAKAGE, IDENTIFIED LEAKAGE, or CONTROLLED LEAKAGE in excess of the LCO limits must be reduced to within the limits within 4 hours. This completion time allows time to verify leakage rates and either identify UNIDENTIFIED LEAKAGE or reduce leakage to within limits before the reactor must be shut down. Otherwise, the reactor must be brought to HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours. This action is necessary to prevent further deterioration of the RCPB.

c. With RCS Pressure Isolation Valve leakage in excess of the limit, the high pressure portion of the affected system must be isolated within 4 hours, or be in at least HOT STANDBY within the next 6 hours, and COLD SHUTDOWN within the following 30 hours. This action is necessary to prevent over pressurization of low pressure systems, and the potential for intersystem LOCA.

d. If primary-to-secondary leakage is not within limit, the reactor must be brought to lower pressure conditions to reduce the severity of the leakage and its potential consequences. The reactor must be brought to HOT STANDBY within 6 hours and COLD SHUTDOWN within the next 30 hours. This action reduces the leakage and also reduces the factors that tend to degrade the pressure boundary.

3/4.4.6.2 OPERATIONAL LEAKAGE (continued)

Surveillance Requirements

4.4.6.2.1 Verifying RCS leakage to be within the LCO limits ensures that the integrity of the RCPB is maintained. PRESSURE BOUNDARY LEAKAGE would at first appear as UNIDENTIFIED LEAKAGE and can only be positively identified by inspection. ~~It should be noted that leakage past seals and gaskets is not PRESSURE BOUNDARY LEAKAGE.~~ UNIDENTIFIED LEAKAGE and IDENTIFIED LEAKAGE are determined by performance of an RCS water inventory balance.

The RCS water inventory balance must be met with the reactor at steady-state operating conditions (stable pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The surveillance is modified by a note. The note states that this SR is not required to be performed until 12 hours after establishing steady-state operation. The 12-hour allowance provides sufficient time to collect and process all necessary data after stable plant conditions are established.

Steady-state operation is required to perform a proper water inventory balance since calculations during maneuvering are not useful. For RCS operational leakage determination by water inventory balance, steady-state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

An early warning of PRESSURE BOUNDARY LEAKAGE or UNIDENTIFIED LEAKAGE is provided by the automatic systems that monitor containment atmosphere radioactivity and reactor cavity sump level. ~~It should be noted that leakage past seals and gaskets is not PRESSURE BOUNDARY LEAKAGE.~~ These leakage detection systems are specified in LCO 3.4.6.1, "Reactor Coolant System Leakage Detection Systems."

Part (d) notes that this SR is not applicable to primary-to-secondary leakage. This is because leakage of 150 gallons per day cannot be measured accurately by an RCS water inventory balance.

The surveillance frequency is controlled under the Surveillance Frequency Control Program.

MNS Unit Nos. 1 and 2

Proposed Technical Specification Bases Changes (Mark-Up)
For Information Only

BASES

BACKGROUND (Continued)

pressure vessels, piping, pumps, and valves, which are: (1) Part of the reactor coolant system, or (2) Connected to the reactor coolant system, up to and including any and all of the following: (a) The outermost containment isolation valve in system piping which penetrates primary reactor containment, (b) The second of two valves normally closed during normal reactor operation in system piping which does not penetrate primary reactor containment, (c) The reactor coolant system safety and relief valves.

APPLICABLE SAFETY ANALYSES

Except for primary to secondary LEAKAGE, the safety analyses do not address operational LEAKAGE. However, other operational LEAKAGE is related to the safety analyses for LOCA; the amount of leakage can affect the probability of such an event. The safety analysis (Ref. 3) for an event resulting in steam discharge to the atmosphere assumes a 389 gpd primary to secondary leakage as the initial condition (limited to 135 gpd per SG). Any event in which the reactor coolant system will continue to leak water inventory to the secondary side, and in which there will be a postulated source term associated with the accident, utilizes this leakage value as an input in the analysis. These accidents include the rod ejection accident, locked rotor accident, main steam line break, steam generator tube rupture and uncontrolled rod withdrawal accident. The rod ejection accident, locked rotor accident and uncontrolled rod withdrawal accident yield a source term due to postulated fuel failure as a result of the accident. The main steam line break and the steam generator tube rupture yield a source term due to perforations in fuel pins causing an iodine spike. Primary to secondary side leakage may escape the secondary side due to flashing or atomization of the coolant, or it may mix with the secondary side SG water inventory and be released due to steaming of the SGs. The rod ejection accident is limiting compared to the remainder of the accidents with respect to dose results. The dose results for each of the accidents delineated above are well within the 10 CFR 100 limits for the rod ejection accident, and below a small fraction of 10 CFR 100 limits for the remainder of the accidents.

The RCS operational LEAKAGE satisfies Criterion 2 of 10 CFR 50.36 (Ref. 4).

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

~~No p~~Pressure boundary LEAKAGE is prohibited~~allowed, being indicative of material deterioration. LEAKAGE of this type is unacceptable~~ as the leak itself could cause further RCPB deterioration, resulting in higher LEAKAGE.

LCO (continued)

~~LEAKAGE. Violation of this LCO could result in continued degradation of the RCPB. Pressure boundary LEAKAGE is nonisolable LEAKAGE from the RCPB through an RCS component body, pipe wall or vessel wall. LEAKAGE past seals and gaskets and SG LEAKAGE are not pressure boundary LEAKAGE.~~

b. Unidentified LEAKAGE

One gallon per minute (gpm) of unidentified LEAKAGE is allowed as a reasonable minimum detectable amount that the containment air monitoring and containment sump level monitoring equipment can detect within a reasonable time period. Separating the sources of leakage (i.e., leakage from an identified source versus leakage from an unidentified source) is necessary for prompt identification of potentially adverse conditions, assessment of the safety significance, and corrective action.~~Violation of this LCO could result in continued degradation of the RCPB, if the LEAKAGE is from the pressure boundary.~~

c. Identified LEAKAGE

Up to 10 gpm of identified LEAKAGE is considered allowable because LEAKAGE is from known sources that do not interfere with detection of unidentified or total LEAKAGE and is well within the capability of the RCS Makeup System. Identified LEAKAGE includes LEAKAGE captured by the pressurizer relief tank and reactor coolant drain tank, as well as quantified LEAKAGE to the containment from specifically known and located sources, but does not include ~~pressure boundary LEAKAGE or~~ controlled reactor coolant pump (RCP) seal leakoff (a normal function not considered LEAKAGE). ~~Violation of this LCO could result in continued degradation of a component or system.~~

d. Primary to Secondary LEAKAGE through All Steam Generators (SGs)

Total primary to secondary LEAKAGE amounting to 389 gpd through all SGs produces acceptable offsite doses in the accident analysis. Violation of this LCO could exceed the offsite dose limits for the previously described accidents. Primary to secondary LEAKAGE must be included in the total allowable limit for identified LEAKAGE.

e. Primary to Secondary LEAKAGE through Any One SG

BASES

The limit of 135 gallons per day per SG is based on the LEAKAGE rate assumptions in the accident analyses (Ref. 9). This limit is more conservative than the performance criterion in NEI 97-06, Steam Generator Program Guidelines (Ref. 7) which is based on operating experience with SG tube degradation mechanisms that result in tube leakage. The 135 gallons per day limit in conjunction with the implementation of the Steam Generator Program is an effective measure for minimizing the frequency of steam generator tube ruptures.

~~LCO (continued)~~

~~effective measure for minimizing the frequency of steam generator tube ruptures.~~

APPLICABILITY

In MODES 1, 2, 3, and 4, the potential for RCPB LEAKAGE is greatest when the RCS is pressurized.

In MODES 5 and 6, LEAKAGE limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for LEAKAGE.

LCO 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leak tight. If both valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable unidentified LEAKAGE.

ACTIONS

A.1

If pressure boundary LEAKAGE exists, the affected component, pipe, or vessel must be isolated from the RCS by a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours. While in this condition, structural integrity of the system should be considered because the structural integrity of the part of the system within the isolation boundary must be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location. Normal LEAKAGE past the isolation device is acceptable as it will limit RCS LEAKAGE and is included in identified or unidentified LEAKAGE. This action is necessary to prevent further deterioration of the RCPB.

B.1

BASES

Unidentified LEAKAGE or identified LEAKAGE in excess of the LCO limits must be reduced to within limits within 4 hours. This Completion Time allows time to verify leakage rates and either identify unidentified LEAKAGE or reduce LEAKAGE to within limits before the reactor must be shut down. This action is necessary to prevent further deterioration of the RCPB.

~~B~~C.1 and ~~B~~C.2

If ~~any pressure boundary LEAKAGE exists, or~~ primary to secondary LEAKAGE is not within limits, or if any of the Required Actions and associated Completion Times cannot be met, ~~unidentified LEAKAGE, or identified LEAKAGE cannot be reduced to within limits within 4 hours,~~ the reactor must be brought to lower pressure conditions to reduce the severity of the LEAKAGE and its potential consequences. ~~It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~ The reactor must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. This action reduces the LEAKAGE and also reduces the factors that tend to degrade the pressure boundary.

ACTIONS (Continued)

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. In MODE 5, the pressure stresses acting on the RCPB are much lower, and further deterioration is much less likely.

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1

Verifying RCS LEAKAGE to be within the LCO limits ensures the integrity of the RCPB is maintained. Pressure boundary LEAKAGE would at first appear as unidentified LEAKAGE and can only be positively identified by inspection. ~~It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~ Unidentified LEAKAGE and identified LEAKAGE are determined by performance of an RCS water inventory balance.

The RCS water inventory balance must be performed with the reactor at steady state operating conditions (stable temperature, power level, pressurizer and makeup tank levels, makeup and letdown flows, and RCP seal injection and return flows). The surveillance is modified by two Notes. Note 1 states that this SR is not required to be performed until 12 hours after establishment of steady state operation. The 12 hour

allowance provides sufficient time to collect and process all necessary data after stable plant conditions are established. See TS 1.4, example 3, for additional guidance on use of this provision.

Steady state operation is required to perform a proper inventory balance; calculations during maneuvering are not useful and a Note requires the Surveillance to be met when steady state is established. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown flows, and RCP seal injection and return flows.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment sump level. ~~It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~ These leakage detection systems are specified in LCO 3.4.15, "RCS Leakage Detection Instrumentation."

Note 2 states that this SR is not applicable to primary to secondary LEAKAGE because LEAKAGE of 135 gallons per day cannot be measured accurately by an RCS water inventory balance.

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SURVEILLANCE (continued)
REQUIREMENTS

SR 3.4.13.2

This SR verifies that primary to secondary LEAKAGE is less than or equal to 135 gallons per day through any one SG and less than or equal to 389

~~SURVEILLANCE (continued)~~

gallons per day total through all SGs. Satisfying the primary to secondary LEAKAGE limit ensures that the assumptions of the safety analyses are met (Ref. 3). If this SR is not met, compliance with this LCO, as well as LCO 3.4.18, "Steam Generator Tube Integrity," should be evaluated. The 135 and 389 gallons per day limits are measured at a temperature of 585°F as described in Ref. 3. The operational LEAKAGE rate limit applies to LEAKAGE through any one SG. If it is not practical to assign the LEAKAGE to an individual SG, all the primary to secondary LEAKAGE should be conservatively assumed to be from one SG.

The Surveillance is modified by a Note which states that the Surveillance is not required to be performed until 12 hours after establishment of

ONS Unit Nos. 1, 2, and 3

Proposed Technical Specification Bases Changes (Mark-Up)
For Information Only

BASES (continued)

APPLICABLE SAFETY ANALYSES (continued)

Primary to secondary LEAKAGE is a factor in the dose releases outside containment resulting from a SLB accident. To a lesser extent, other accidents or transients involve secondary steam release to the atmosphere, such as a steam generator tube rupture (SGTR). The leakage contaminates the secondary fluid and can be released to the environment.

The LCO requirement to limit primary to secondary LEAKAGE through any one SG to less than or equal to 150 gallons per day is less than the conditions assumed in the safety analyses. The dose consequences resulting from the SLB accident are within the limits defined in 10 CFR 100.

RCS operational LEAKAGE satisfies Criterion 2 of 10 CFR 50.36 (Ref.3).

LCO

RCS LEAKAGE includes leakage from connected systems up to and including the second normally closed valve for systems which do not penetrate containment and the outermost isolation valve for systems which penetrate containment. Loss of reactor coolant through reactor coolant pump seals and system valves to connecting systems which vent to the gas vent header and from which coolant can be returned to the RCS shall not be considered as RCS LEAKAGE.

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

~~No p~~Pressure boundary LEAKAGE is prohibited~~allowed, being indicative of material deterioration. LEAKAGE of this type is unacceptable~~ as the leak itself could cause further RCPB deterioration, resulting in higher LEAKAGE. ~~Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals, gaskets, and steam generator tubes is not pressure boundary LEAKAGE.~~

b. Unidentified LEAKAGE

One gallon per minute (gpm) of unidentified LEAKAGE is allowed as a reasonable minimum detectable amount that the containment air monitoring and containment sump level monitoring equipment can detect within a reasonable time period. Separating the sources of leakage (i.e., leakage from an identified source versus leakage from an unidentified source) is necessary for prompt identification of potentially adverse conditions, assessment of the safety significance, and corrective action. ~~Violation of this LCO could result in continued degradation of the RCPB, if the LEAKAGE is from the~~

BASES (continued)

~~pressure boundary.~~

BASES (continued)

LCO (continued)

c. Identified LEAKAGE

Up to 10 gpm of identified LEAKAGE is considered allowable because LEAKAGE is from known sources that do not interfere with detection of unidentified LEAKAGE and is well within the capability of the RCS makeup system. Identified LEAKAGE includes LEAKAGE to the containment from specifically known and located sources, but does not include ~~pressure boundary LEAKAGE or~~ controlled reactor coolant pump (RCP) seal leakoff (a normal function not considered LEAKAGE). ~~Violation of this LCO could result in continued degradation of a component or system.~~

d. Primary to Secondary LEAKAGE Through Any One SG

The limit of 150 gallons per day per SG is based on the operational LEAKAGE performance criterion in NEI 97-06, Steam Generator Program Guidelines (Ref. 4). The Steam Generator Program operational LEAKAGE performance criterion in NEI 97-06 states, "The RCS operational primary to secondary leakage through any one SG shall be limited to 150 gallons per day." The limit is based on operating experience with SG tube degradation mechanisms that result in tube leakage. The operational leakage rate criterion in conjunction with the implementation of the Steam Generator Program is an effective measure for minimizing the frequency of steam generator tube ruptures.

APPLICABILITY

In MODES 1, 2, 3, and 4, the potential for RCPB LEAKAGE is greatest when the RCS is pressurized.

In MODES 5 and 6, LEAKAGE limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for LEAKAGE.

LCO 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leaktight. If both valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable identified LEAKAGE.

BASES (continued)

ACTIONS

A.1

If pressure boundary LEAKAGE exists, the affected component, pipe, or vessel must be isolated from the RCS by a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours. While in this condition, structural integrity of the system should be considered because the structural integrity of the part of the system within the isolation boundary must be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location. Normal LEAKAGE past the isolation device is acceptable as it will limit RCS LEAKAGE and is included in identified or unidentified LEAKAGE. This action is necessary to prevent further deterioration of the RCPB.

B.1

If unidentified LEAKAGE or identified LEAKAGE are in excess of the LCO limits, the LEAKAGE must be reduced to within limits within 4 hours. This Completion Time allows time to verify leakage rates and either identify unidentified LEAKAGE or reduce LEAKAGE to within limits before the reactor must be shut down. This action is necessary to prevent further deterioration of the RCPB.

~~B~~C.1 and ~~B~~C.2

If ~~any pressure boundary LEAKAGE exists, or~~ primary to secondary LEAKAGE is not within limit, or ~~identified LEAKAGE cannot be reduced to within limits within 4 hours~~any of the Required Actions and associated Completion Times cannot be met, the reactor must be brought to lower pressure conditions to reduce the severity of the LEAKAGE and its potential consequences. The reactor must be brought to MODE 3 within 12 hours and MODE 5 within 36 hours. This action reduces the LEAKAGE and also reduces the factors that tend to degrade the pressure boundary.

The Completion Times allowed are reasonable, based on operating experience, to reach the required conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, the pressure stresses acting on the RCPB are much lower and further deterioration is much less likely.

RNP Unit No. 2

Proposed Technical Specification Bases Changes (Mark-Up)
For Information Only

BASES (continued)

APPLICABLE SAFETY ANALYSES

Except for primary to secondary LEAKAGE, the safety analyses do not address operational LEAKAGE. However, other operational LEAKAGE is related to the safety analyses for LOCA; the amount of leakage can affect the probability of such an event. The safety analysis for an event resulting in steam discharge to the atmosphere assumes that primary to secondary LEAKAGE from all steam generators (SGs) is 0.3 gpm or increases to 0.3 gpm as a result of accident induced conditions. The LCO requirement to limit primary to secondary LEAKAGE through any one SG to less than or equal to 75 gallons per day is less than the conditions assumed in the safety analyses.

Primary to secondary LEAKAGE is a factor in the dose releases outside containment resulting from a steam line break (SLB) accident. To a lesser extent, other accidents or transients involve secondary steam release to the atmosphere, such as a steam generator tube rupture (SGTR). The leakage contaminates the secondary fluid.

For the SGTR, the activity released due to the 0.3 gpm primary to secondary LEAKAGE is relatively insignificant compared to the activity released via the ruptured tube. The safety analysis for the SGTR accident assumes 0.3 gpm total primary to secondary LEAKAGE in all generators as an initial condition. After mixing in the secondary side, the activity is then released via the SG PORVs or safeties. This release pathway continues until the SGs are isolated, which is relatively soon for the affected SG compared to the intact SGs. The dose consequences resulting from the SGTR accident are within the limits defined in 10 CFR 50.67.

The RCS operational LEAKAGE satisfies Criterion 2 of the NRC Policy Statement.

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

~~No p~~Pressure boundary LEAKAGE is prohibited~~allowed, being indicative of material deterioration. LEAKAGE of this type is unacceptable~~ as the leak itself could cause further RCPB deterioration, resulting in higher LEAKAGE. ~~Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~

(continued)

BASES (continued)

~~LCO (continued)~~ ~~Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~

LCO (continued)

b. Unidentified LEAKAGE

One gallon per minute (gpm) of unidentified LEAKAGE is allowed as a reasonable minimum detectable amount that the containment atmosphere radiation monitoring systems, condensate measuring system, dewpoint monitoring equipment, and containment sump level monitoring equipment can detect within a reasonable time period. Separating the sources of leakage (i.e. leakage from an identified source versus leakage from an unidentified source) is necessary for prompt identification of potentially adverse conditions, assessment of the safety significance, and corrective action. ~~Violation of this LCO could result in continued degradation of the RCPB, if the LEAKAGE is from the pressure boundary.~~

c. Identified LEAKAGE

Up to 10 gpm of identified LEAKAGE is considered allowable because LEAKAGE is from known sources that do not interfere with detection of identified LEAKAGE and is well within the capability of the RCS Makeup System. Identified LEAKAGE includes LEAKAGE to the containment from specifically known and located sources, but does not include ~~pressure boundary LEAKAGE or~~ controlled reactor coolant pump (RCP) seal leakoff (a normal function not considered LEAKAGE). ~~Violation of this LCO could result in continued degradation of a component or system.~~

d. Primary to Secondary LEAKAGE through All Steam Generators (SGs)

The limit of 75 gallons per day per SG is based on the operational LEAKAGE performance criterion in NEI 97-06, Steam Generator Program Guidelines (Ref. 3). The limit is based on operating experience with SG tube degradation mechanisms that result in tube leakage. The operational LEAKAGE criterion of 75 gallons per day in conjunction with the implementation of the Steam Generator Program is an

(continued)

BASES (continued)

effective measure for minimizing the frequency of steam generator tube ruptures.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, the potential for RCPB LEAKAGE is greatest when the RCS is pressurized.

In MODES 5 and 6, LEAKAGE limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for LEAKAGE.

LCO 3.4.14, "RCS Pressure Isolation Valves (PIVs)," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leak tight. If both valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable identified LEAKAGE.

ACTIONS

A.1

If pressure boundary LEAKAGE exists, the affected component, pipe, or vessel must be isolated from the RCS by a closed manual valve, closed and de-activated automatic valve, blind flange, or check valve within 4 hours. While in this condition, structural integrity of the system should be considered because the structural integrity of the part of the system within the isolation boundary must be maintained under all licensing basis conditions, including consideration of the potential for further degradation of the isolated location. Normal LEAKAGE past the isolation device is acceptable as it will limit RCS LEAKAGE and is included in identified or unidentified LEAKAGE. This action is necessary to prevent further deterioration of the RCPB.

B.1

Unidentified LEAKAGE or identified LEAKAGE in excess of the LCO limits must be reduced to within limits within 4 hours. This Completion Time allows time to verify leakage rates and either identify unidentified LEAKAGE or reduce LEAKAGE to within limits before the reactor must be shut down. This action is necessary to prevent further deterioration of the RCPB.

(continued)

~~(continued)~~

BASES (continued)

ACTIONS
(continued)

~~B~~C.1 and ~~B~~C.2

If ~~any pressure boundary LEAKAGE exists,~~ primary to secondary LEAKAGE is not within limit, or if any of the Required Actions and associated Completions Times cannot be ~~A.1 is not~~ met, the reactor must be brought to lower pressure conditions to reduce the severity of the LEAKAGE and its potential consequences. ~~It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~ The reactor must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. This action reduces the LEAKAGE and also reduces the factors that tend to degrade the pressure boundary.

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. In MODE 5, the pressure stresses acting on the RCPB are much lower, and further deterioration is much less likely.

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~~(continued)~~

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1

Verifying RCS LEAKAGE to be within the LCO limits ensures the integrity of the RCPB is maintained. Pressure boundary LEAKAGE would at first appear as unidentified LEAKAGE and can only be positively identified by inspection. ~~It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~ Unidentified LEAKAGE and identified LEAKAGE are determined by performance of an RCS water inventory balance.

The RCS water inventory balance must be met with the reactor at steady state operating conditions. The surveillance is modified by two notes. Note 1 states that this SR is required within 12 hours after reaching continuous steady state operation.

Steady state operation is required to perform a proper inventory balance; calculations during maneuvering are not useful and a Note requires the Surveillance to be met when steady state is established. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment sump level. ~~It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.~~ These leakage detection systems are specified in LCO 3.4.15, "RCS Leakage Detection Instrumentation."

Note 2 states that this SR is not applicable to primary to secondary LEAKAGE because LEAKAGE of 75 gallons per day cannot be measured accurately by an RCS water inventory balance.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)