ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNITS 1, 2, AND 3

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE TS-390
DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

INDEX

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I. DESCRIPTION OF THE PROPOSED CHANGES

The proposed TS changes for Unit 2 and 3 operation consist of increasing nominal 18-month surveillance intervals to 24 months (30 months when employing SR 3.0.2). The proposed TS changes include changes for Unit 1 equipment required to support Units 2 and 3 operation and maintain Unit 1 in shutdown condition.

TVA divided the affected TS SRs into two groups. SRs for which the proposed change does not constitute a change to an instrument calibration interval (non-instrument calibration SRs) were designated Group 1. For example, pump and valve functional tests, flow tests, logic system functional tests and response time tests are Group 1 type SRs. All other SRs (i.e., those for which the proposed change constitutes an increased instrument calibration interval) were designated Group 2.

The Group 1 SRs are listed in Table 1. TVA proposes to change the surveillance intervals for these SRs based on supporting information provided in accordance with the guidance of Generic Letter 91-04 (Reference 1). Proposed changes to TS surveillance intervals for the Group 2 SRs will be provided in a forthcoming supplement.

II. REASON FOR THE PROPOSED CHANGE

TVA intends to implement 24-month fuel cycles for BFN Units 2 and 3. However, a number of SRs can only be performed during a plant shutdown, while for other surveillances it is preferable to have the plant in a shutdown condition to avoid the possibility of unnecessary plant transients. The plant TSs currently require these SRs to be performed on an 18-month frequency, consistent with the current 18-month fuel cycles. Therefore, to synchronize these requirements with a 24-month fuel cycle, it is necessary to extend the existing 18-month surveillance Frequencies to 24 months. This change will allow BFN to take advantage of improved fuel designs which support a 24-month refueling interval.

III. SAFETY ANALYSIS

A. Non-Instrument Calibration SRs

The non-instrument drift related SRs requiring evaluation for increased surveillance intervals are listed Table 1 provided. Evaluations were performed in accordance with the guidance set forth in Generic Letter 91-04 which requires licensees to: (1) evaluate (qualitatively) the effect on safety of an increase in 18-month surveillance intervals to accommodate a 24-month fuel cycle, (2) confirm that plant historical data supports the effect on safety conclusions, and (3) confirm that assumptions in the plant licensing basis would not be invalidated on the basis of performing any surveillance at the bounding surveillance interval limit provided to accommodate a 24-month fuel cycle.

Each item in Table 1 was qualitatively evaluated (including consideration of safety function, Final Safety Analysis Report (FSAR) event type, and purpose of the surveillance test) to determine the potential effect of the increased test interval on plant safety. These evaluations were based on the plant design and on the information contained in the BFN proposed Improved Technical Specifications (ITS) and Bases that were previously submitted with Reference 2 (as revised through Supplement 19), and Reference 3. The conclusion for each item is that the effect on plant safety is small. These conclusions are supported by the results of an extensive survey of plant-specific and industry historical maintenance and surveillance data. In addition to these evaluations, the Updated FSAR, ITS, and other applicable documentation were reviewed to determine if the proposed surveillance interval extensions would invalidate any licensing basis assumptions. This review did not reveal any conflicts between surveillance extension to 30 months (24 months + 25%) and the assumptions in the plant licensing basis.

Additional details of the qualitative assessments and historical data review are provided in the following summaries.

Summary of Qualitative Assessments for Individual SRs

Individual assessments for each of the SRs in the table are provided in the Attachment. When considered appropriate, due to the common requirements relative to

a specific system, a single assessment addresses more than one SR.

Each of the SRs was categorized into one of eight types (A through H), as indicated in the table. The effect on plant safety from extending the 18-month surveillance interval to a 24-month interval for each of the eight surveillance categories is as follows:

A) Functional Tests of systems/components not part of the primary success path for reactor shutdown.

Surveillance tests in this category are associated with equipment and component functions which do not contribute to the primary success path for reactor shutdown. Therefore, extending the surveillance interval from 18 to 24 months would have only a small effect on plant safety. This category includes Scram Discharge Volume Vent and Drain Valves, Reactor Mode Switch (Shutdown Position), Backup Control System, Reactor Core Isolation Cooling (RCIC) System, and Battery Chargers.

B) Response Time Tests.

This category includes the Scram Discharge Volume Vent and Drain Valves, and the Main Turbine Bypass System. For both these systems, other more frequent testing of the equipment would indicate any serious degradation of response time. Therefore, increasing the surveillance interval for the response time test from 18 to 24 months would have only a small effect on plant safety.

C) Logic System Functional Tests.

Systems/components included in this category are Reactor Protection System (RPS), Feedwater/Main Turbine High Water Level, End-of-Cycle Recirculation Pump Trip (RPT), Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT), Emergency Core Cooling System (ECCS), RCIC, Primary and Secondary Containment Isolation, Control Room Emergency Ventilation (CREV), and Loss of Power Monitoring. This type of surveillance test is conducted to demonstrate the satisfactory functioning of the particular instrumentation logic as a complete system involving all the redundant features. Such tests are intended to reveal the possibility of failure of individual circuit components which might not be discovered during the more frequent channel

functional testing. In all cases, the level of redundancy is such that multiple failures would be needed to seriously degrade the system safety function. The more frequent channel functional testing throughout the fuel cycle ensures the safety function is preserved. Therefore, changing the overall logic system functional test from 18 to 24 months would have only a small effect on plant safety.

D) Simulated Automatic Actuation Tests.

These tests involve the following systems/components: RPS Power Monitoring, ECCS, 480 volt Motor Operated Valve (MOV) Boards, RCIC, Primary and Secondary Containment Isolation, Excess Flow Check Valves, Standby Gas Treatment, Emergency Equipment Cooling Water, CREV, Main Turbine Bypass, and Diesel Generators (DGs). This type of test is essentially a supplementary test to the individual channel functional tests of the instrumentation and mechanical equipment of each system which are performed more frequently during the fuel cycle. While the simulated automatic actuation test provides for a complete test from sensor to actuated device, it is, nevertheless, a redundant test in terms of validating system performance. As a result of functional redundancy within each system, together with the additional channel functional test throughout the fuel cycle, extending the surveillance period for the simulated automatic actuation tests from 18 to 24 months would have only a small effect on plant safety.

E) Functional tests of systems/components supporting low frequency accident initiators.

Systems/components involved in this category are the Standby Liquid Control, High Pressure Coolant Injection, Traversing Incore Probe, Suppression Chamber-to-Drywell Vacuum Breakers, and Alternating Current (AC) Sources (diesel generators). The surveillance tests described by this category are essentially related to equipment which are required to respond to postulated accidents and events of relatively low frequency. Due to the redundancy of function designed into this equipment, plus other supporting surveillance, extending these tests from 18 to 24 months would have only a small effect on plant safety.

F) Functional tests of systems/components where redundancy exists and low failure rate experience.

This category includes the Main Steam Relief Valves and ADS Valves, Suppression Chamber-to-Drywell Vacuum Breakers, Standby Gas Treatment, CREV, Control Room Air Conditioning, Diesel Generators, and Batteries. Considering the nature of these tests, the redundancy of the equipment comprising the systems and the low failure rate experience, it is concluded that extending the surveillance from 18 to 24 months would have only a small effect on plant safety.

G) Leak Rate Tests.

These tests are associated with the Primary Containment (Drywell to Suppression Chamber), Standby Gas Treatment, and CREV systems. Leak testing experience obtained at the BFN units indicates that extending the surveillance interval from 18 to 24 months would have only a small effect on plant safety.

H) Inspections.

One SR is considered in this category and it relates to the Standby Liquid Control System. Monitoring of the sodium pentaborate solution parameters on a monthly basis as prescribed ensures the requisite enrichment is maintained. Therefore, extending the period between analyses of the sodium pentaborate enrichment from 18 to 24 months would have only a small effect on plant safety.

In summary, many of the affected systems and components have other forms of testing performed on a more frequent basis that would discover possible failures. Others have multiple redundant channels and redundant functions that could accomplish the safety function. Therefore, the qualitative assessments conclude that extending the surveillance intervals to accommodate 24-month fuel cycles would have only a small effect on plant safety.

Summary of Historical Maintenance and Surveillance Data

Historical maintenance and surveillance data from the following sources was reviewed to determine if this data supports the preceding conclusion about effect on safety:

- Nuclear Plant Reliability Data System (NPRDS)

- Limiting Conditions for Operation (LCO) Tracking Logs
- Problem Evaluation Reports (PERs)
- License Event Reports (LERs)
- Completed 18-month Surveillance Tests
- Maintenance Rule

Based on the results of that review, as described below, it is concluded that the historical maintenance and surveillance data for BFN support the conclusion that the effect on safety from extending the surveillance intervals to 24-months is small.

NPRDS Failure Rate Comparison

NPRDS failure data searches, for system comparison with the rest of the industry, were conducted for the 12 year period from 1985 through 1996. During this period, failure data for Unit 1 equipment required to support Units 2 and 3 operation was included in the NPRDS data reported for Unit 2. The industry failure rate was established from a pool of plants with the same systems and NSSS supplier (GE) as Browns Ferry Units 1, 2, and 3. The Browns Ferry Units 2 and 3 system failure rate was then compared with the industry failure rate. If the failure rate for the BFN system was less than the industry average, then no further evaluation was performed. For these cases, the NPRDS data was considered to support the conclusion that the effect on safety from extending the surveillance intervals to 24-months is small. If the failure rate was higher than the industry average, then a closer inspection of the data was warranted.

Air Conditioning (including Shutdown Board Room & CREV) is not NPRDS reportable and, therefore, was not included in these comparisons.

The following BFN systems were found to have failure rates below the industry average:

- Main Steam & Turbine Generator Control
- Reactor Feedwater & Feedwater Level Control
- Reactor Water Recirc. & Recirc. Flow Control
- Reactor Core Coolant Injection
- Containment:
  - Primary Containment Isolation
  - Primary Containment Integrity
  - Secondary Containment
- Emergency Equipment Cooling Water
- High Pressure Coolant Injection
- Standby Gas Treatment
- Residual Heat Removal
- DC Power Systems
- Standby Liquid Control
- Traversing Incore Probe
- Core Spray
- Control Rod Drive
- Reactor Protection System
- Standby Diesel Generator

In one NPRDS category, AC Power Systems (which includes some systems not of interest to this evaluation), BFN was found to have a failure rate higher than the industry average. Reviewing the failure history on a year-by-year basis revealed a significant downtrend in failures since the BFN Units were returned to service after being down for extended outages. Almost 92 percent (88 of 96) of the failures were reported while both Units were in their extended outages. There have been eight failures reported on Unit 2 and no failures on Unit 3 since being returned to service. This equates to a failure rate significantly lower than the industry average for this period. Only one of the eight failures was on a system of interest to this evaluation. Based on the downtrend in failures and the type of failures found since the Units were returned to service, it was concluded that the extension of surveillance test intervals relative to AC Power Systems would have only a small effect on safety.

Logic System Functional Tests (LSFT) do not have a direct category for which to perform an NPRDS search. Several of the surveillances that are being extended are LSFT. As a generic model, NPRDS searches were configured to search the component categories that could possibly contain LSFT testable components. NPRDS searches for the period after each Unit was returned to service following their extended outages were then performed with these tighter screening criteria for those systems which had a LSFT as part of that system circuitry in addition to the preceding NPRDS searches performed.

The failure rate for the following systems was found to be significantly lower than the industry average:

- Main Steam & Turbine Generator Control
- Reactor Feedwater & Feedwater Level Control
- High Pressure Coolant Injection
- Reactor Protection System
- Reactor Core Isolation Cooling
- AC Power Systems
- Residual Heat Removal
- Core Spray
- Radiation Monitoring
- Reactor Water Cleanup
- Containment:
  - Primary Containment Isolation
  - Primary Containment Integrity
  - Reactor Building Ventilation
  - Secondary Containment

The failure rate for LSFT of Standby Liquid Control (SLC) was found to be higher than the industry average. However, there were only two reportable failures. Both reported failures were on Unit 2 and both were failures of SLC continuity monitor circuit status indicator for a Squib Valve. The device is used for indication only and had no effect on the system function or plant operation. Therefore, it was concluded that extending the LSFT for the SLC system will have only a small effect on safety.

The failure rate for LSFT of Reactor Water Recirculation, which includes Recirculation Flow Control System, was also found to be higher than the industry average. Of the 12 failures reported, 11 were on Unit 2, and 1 was reported on Unit 3. Of the 12 failures, 10 were related to Recirculation Pump speed control problems. The other 2 failures were due to a normal feeder breaker for a Motor-Generator set failing to close and to a normal feeder breaker for a Recirculation Pump tripping. None of these failures involved a failure of the logic components or the fast acting circuit breakers that function to interrupt power to the recirculation pump motors on an EOC-RPT and ATWS-RPT signal. Therefore, it was concluded that extending the LSFT for the Reactor Water Recirculation system EOC-RPT and ATWS-RPT features will have only a small effect on safety.

License Event Reports (LERs), Problem Evaluation Reports (PERs), Limiting Conditions for Operation (LCO) Tracking Logs, and Maintenance Rule (MR).

Data from each program (LERs, PERs, LCOs, and MR) was compiled and evaluated for adverse trends or excessive failures for any particular system or component. Since Units 2 and 3 were both down for an extended period

(about 6 years for Unit 2 and 10 years for Unit 3), the evaluation was conducted for the period after each Unit was returned to service (May 1991 - June 1997 for Unit 2 and November 1995 - June 1997 for Unit 3). This evaluation did not reveal any adverse trends or excessive failures for any system or component that would have more than a small effect on plant safety.

B. Appendix J Leak Rate and ASME Inservice Testing Programs

Generic Letter 91-04 provides guidance for resolving potential conflicts between 10 CFR 50, Appendix J requirements and changing the associated surveillance intervals from a nominal 18 to 24 months. The proposed ITS for BFN address Appendix J requirements in Section 5.5.12, Primary Containment Leak Rate Testing Program. Additionally, the proposed ITS for BFN address the American Society of Mechanical Engineers (ASME) Inservice Testing requirements in Section 5.5.6, Inservice Testing Program. Although specific reference is not made to ASME Inservice Testing in the generic letter, the impact of 24-month refueling intervals on this program is addressed below for completeness.

Primary Containment Leak Rate Testing Program (ITS Specification 5.5.12)

Plant documentation was reviewed, with regard to 10 CFR 50, Appendix J requirements, to determine if changes are required as a result of changing the fuel cycle length from 18 months to 24 months. Appendix J requires periodic leak-rate testing of the primary containment isolation valves. In October 1995, the NRC amended Appendix J, adding Option B, which established performance-based requirements. The original prescriptive requirements of Appendix J were retained as Option A. Option B allows Types A, B, and C leak-rate testing intervals to be extended beyond the originally-specified (Option A) intervals based on a demonstrated history of acceptable performance.

Implementation of Option B, as specified in Nuclear Energy Institute (NEI) report NEI 94-01, Revision 0 (Industry Guideline for Implementing Performance-based Option of 10 CFR 50, Appendix J, July 26, 1995), and endorsed by Regulatory Guide 1.163 (Performance-based Containment Leak-test Program, September, 1995) requires Type A testing to be performed at least once every 48 months, with extensions of up to once every 10 years based on acceptable performance. Implementation

of Option B requires Type B and C testing to be performed at least once every 30 months, with extensions of up to once every 10 years based on acceptable performance.

BFN has already implemented Option B, as reflected in the BFN ITS (Section 5.5.12, Primary Containment Leak Rate Testing Program). Therefore, no exemptions or TS changes are required to comply with the guidance of Generic Letter 91-04.

Inservice Testing Program (ITS Specification 5.5.6)

Inservice Testing (IST) surveillance requirements are controlled by the Inservice Testing Program required by Section 5.5.6 of the BFN proposed ITS. Because IST program details are located outside the TS, the need for any specific TS changes is precluded. Any inservice testing which requires modification to accommodate the change from 18 to 24-month fuel cycles will be addressed by appropriate changes in the implementing plant procedures.

C. Bases Changes

Section A above addresses those issues raised in Generic Letter 91-04 that involve specific changes to the TSs. In most instances, the associated Bases changes follow directly from the proposed changes to the corresponding TS SR frequency and, therefore, require no additional clarification. The following paragraphs address only those changes to the TS bases which are considered to warrant additional clarification.

1. Bases page B 3.1-45 - SR 3.1.7.7 and SR 3.1.7.8

Surveillance Requirements 3.1.7.7 and 3.1.7.8 ensure that there is a functioning flow path from the boron solution tank to the reactor pressure vessel including the firing of an explosive valve. These surveillances are performed during a planned outage to avoid the potential for an unplanned transient if the testing was performed during power operation. SR 3.1.7.7 includes a provision for testing each of the separate flow paths from the pump into the reactor pressure vessel on a STAGGERED TEST BASIS (i.e., test each of the SLC subsystems at half the normal refueling outage frequency). Therefore, if the refueling outage is

changed from an 18 to a 24-month cycle, the individual flow path tests for SR 3.1.7.7 will change from "*every 36 months at alternating 18 month intervals*" to "*every 48 months at alternating 24 month intervals.*" The justification for the 24 month frequency, similarly justifies a 48 month period for the individual flow path test required by SR 3.1.7.7.

2. Bases page B 3.8-54 & 56 - SR 3.8.4.3 and Reference 9 Respectively

SR 3.8.4.3 verifies that the Unit and Shutdown Board batteries have adequate capacity to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test. The bases for this SR currently states that "The frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 8) and Regulatory Guide 1.129 (Ref. 9), which state, in part, that the battery service test should be performed with intervals between tests not to exceed 18 months." It is believed that the intent of these Regulatory Guides is to require the specified test at least once every refueling interval, and that the 18-month frequency is simply a reflection of the fact that 18 months was the prevailing refueling interval at the time the Regulatory Guide was published. As described in the qualitative assessment provided in Attachment 1, changing the frequency of SR 3.8.4.3 to 24 months is acceptable based on the availability of redundant DC sources and other supporting surveillance testing that is performed at more frequent intervals. Therefore, as shown in Enclosure 2, the bases text is revised to state that "The frequency of 24 months is consistent with the plant conditions required to perform the Surveillance, plus other supporting Surveillance Requirements." Reference 9, on page B 3.8-56 is no longer needed, and therefore is deleted, while Reference 8 is retained due to its support of other bases discussions (e.g., SR 3.8.4.2 and SR 3.8.4.5 on page B 3.8-53).

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

TVA has concluded that operation of Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3 in accordance with the proposed changes to the TSs does not involve a significant hazards consideration. TVA's conclusion is based on its evaluation, in accordance with 10 CFR 50.91(a)(1), of the three standards set forth in 10 CFR 50.92(c).

A. The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed amendment changes the surveillance frequency from 18 months to 24 months for SRs in the Units 2 and 3 TS that are normally a function of the refueling interval. In addition, the proposed amendment changes the surveillance frequency from 18 months to 24 months for those SRs in the Unit 1 TS that control the test interval for components and systems that are common to Units 1, 2, and 3. Under certain circumstances SR 3.0.2 would allow a maximum surveillance interval of 30 months for these SRs. The evaluations in Section III have shown that the reliability of protective instrumentation and equipment will be preserved for the maximum allowable surveillance interval. The proposed changes do not involve any change to the design or functional requirements of plant systems, and the surveillance test methods will be unchanged. The proposed changes will not give rise to any increase in operating power level, fuel operating limits, or effluents. In addition, the proposed changes will not significantly increase any radiation levels. Based on the foregoing considerations and the evaluations completed in accordance with the guidance of Generic Letter 91-04, it is concluded that the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

B. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment requires no change to the plant design or the mode of operation, for any item of equipment. No new equipment is either added or substituted for any existing equipment. Based on the Section III evaluations, the extension of surveillance intervals is shown to have no significant impact on

equipment performance. The proposed changes do not create the possibility of any new failure mechanisms. Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

C. The proposed amendment does not involve a significant reduction in a margin of safety.

The proposed amendment seeks to change surveillance intervals from 18 to 24 months. Although the proposed TS changes will result in an increase in the interval between surveillance tests, the impact on system availability is small based on other, more frequent testing or redundant systems or equipment. There is no evidence of any failures that would impact the availability of the systems. This change does not alter the existing setpoints, TS allowable values or analytical limits. The assumptions in the current safety analyses are not impacted and the proposed amendment does not reduce a margin of safety.

Therefore, it is concluded that the proposed amendment does not involve a significant reduction in a margin of safety.

V. ENVIRONMENTAL IMPACT CONSIDERATION

The proposed change does not involve a significant hazards consideration, a significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, or a significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

VI. REFERENCES

1. NRC Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle (Generic Letter 91-04)," April 2, 1991.

2. TVA letter to NRC dated, September 6, 1996, in regards to TVA-BFN-TS-362, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Technical Specification (TS) Change TS-362 - Request to Convert Current TSs to Improved Standard TS (ITS) Consistent With NUREG-1433, Revision 1.

3. TVA letter to NRC dated April 11, 1997, in regards to TVA-BFN-TS-353S1, Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Technical Specifications (TS) Change TS-353S1 - Power Range Neutron Monitor (PRNM) Upgrade With Implementation of Average Power Range Monitor (APRM) And Rod Block Monitor (RBM) TS (ARTS) Improvements And Maximum Extended Load Line Limit (MELLL) Analyses - Supplement 1 - Improved Standard Technical Specifications (ITS) Format.

Table 1
Non-Instrument Calibration Surveillances
(◆ Unit 1 Surveillance Requirements that support Units 2 and 3 operation)

Surveillance	Page	Spec: SR Description	Category
SR 3.1.7.6	3.1-23	SLC System: pump flow rate and discharge pressure	E
SR 3.1.7.7	3.1-23	SLC System: flow path from pump into RPV	E
SR 3.1.7.8	3.1-23	SLC System: piping from storage tank to pump suction is unblocked	E
SR 3.1.7.9	3.1-24	SLC System: sodium pentaborate enrichment is within limits	H
SR 3.1.8.3	3.1-27	SDV Vent and Drain Valves: response time and functional test	A / B
SR 3.3.1.1.12	3.3-5	RPS: Reactor Mode Switch - Shutdown Position, Channel Functional Test	A
SR 3.3.1.1.14	3.3-5	RPS: Logic System Functional Test 1.a. IRM Neutron Flux - High 1.b. IRM Inoperable 2.e. APRM 2-Out-Of-4 Voter 3. Reactor Vessel Steam Dome Pressure - High 4. Reactor Vessel Water Level - Low, Level 3 5. MSIV - Closure 6. Drywell Pressure - High 7.a. SDV Water Level - High, RTD 7.b. SDV Water Level - High, Float Switch 8. Turbine Stop Valve - Closure 9. TCV Fast Closure, Trip Oil Pressure - Low 10. Reactor Mode Switch - Shutdown Position 11. Manual Scram 13. Low Scram Pilot Air Header Pressure	C
SR 3.3.2.1.6	3.3-18	CRB: Reactor Mode Switch - Shutdown Position, Channel Functional Test	A
SR 3.3.2.2.4	3.3-22	FW and Main Turbine High Water Level Trip: Logic Sys Functional Test	C
SR 3.3.3.2.1	3.3-28	Backup Control System: control circuit and transfer switch	A
SR 3.3.4.1.4	3.3-31	EOC-RPT: Logic System Functional Test	C
SR 3.3.4.2.4	3.3-34	ATWS-RPT: Logic System Functional Test	C

Table 1 (continued)
Non-Instrument Calibration Surveillances
(◆ Unit 1 Surveillance Requirements that support Units 2 and 3 operation)

Surveillance	Page	Spec: SR Description	Category
SR 3.3.5.1.6	3.3-41	ECCS: Logic System Functional Test 1.a. Reactor Vessel Water Level - Low Low Low, Level 1 1.b. Drywell Pressure - High 1.c. Reactor Steam Dome Pressure - Low (Injection Permissive and ECCS Initiation) 1.e. CS Pump Start Time Delay Relay - Pumps A, B, C, D (Diesel & Normal power) 2.a. Reactor Vessel Water Level - Low Low Low, Level 1 2.b. Drywell Pressure - High 2.c. Reactor Steam Dome Pressure - Low (Injection Permissive and ECCS Initiation) 2.d. Reactor Steam Dome Pressure - Low (Recirc. Disch. Valve Permissive) 2.e. Reactor Vessel Water Level - Level 0 2.f. LPCI Pump Start Time Delay Relay - Pumps A, B, C, D (Diesel & Normal power) 3.a. Reactor Vessel Water Level - Low Low, Level 2 3.b. Drywell Pressure - High 3.c. Reactor Vessel Water Level - High, Level 8 3.d. Condensate Header Level - Low 3.e. Suppression Pool Water Level - High 3.f. HPCI Pump Discharge Flow - Low (Bypass) 4.a. Reactor Vessel Water Level - Low Low Low, Level 1 (Sys A) 4.b. Drywell Pressure - High (Sys A) 4.c. ADS Initiation Timer (Sys A) 4.d. Reactor Vessel Water Level - Low, Level 3 (Sys A) 4.e. Core Spray Pump Discharge Pressure - High (Sys A) 4.f. LPCI Pump Discharge Pressure - High (Sys A) 4.g. ADS High Drywell Pressure Bypass Timer (Sys A) 5.a. Reactor Vessel Water Level - Low Low Low, Level 1 (Sys B) 5.b. Drywell Pressure - High (Sys B) 5.c. ADS Initiation Timer (Sys B) 5.d. Reactor Vessel Water Level - Low, Level 3 (Sys B) 5.e. Core Spray Pump Discharge Pressure - High (Sys B) 5.f. LPCI Pump Discharge Pressure - High (Sys B) 5.g. ADS High Drywell Pressure Bypass Timer (Sys B)	C
SR 3.3.5.2.4	3.3-49	RCIC System: Logic System Functional Test 1. Reactor Vessel Water Level - Low Low, Level 2 2. Reactor Vessel Water Level - High, Level 8	C

Table 1 (continued)
Non-Instrument Calibration Surveillances
(◆ Unit 1 Surveillance Requirements that support Units 2 and 3 operation)

Surveillance	Page	Spec: SR Description	Category
SR 3.3.6.1.6	3.3-55	Primary Containment Isol.: Logic System Functional Test Note: This Logic System Functional Test includes a calibration of time delay relays and timers necessary for proper functioning of the logic. The effect of changing calibration intervals to 24 months will be addressed in the follow-up submittal. 1.a. MSL Isol: Reactor Vessel Water Level - Low Low Low, Level 1 1.b. MSL Isol: MSL Pressure - Low 1.c. MSL Isol: MSL Flow - High 1.d. MSL Isol: Main Steam Tunnel Temperature - High 2.a. PC Isol: Reactor Vessel Water Level - Low, Level 3 2.b. PC Isol: Drywell Pressure - High 3.a. HPCI Isol: HPCI Steam Line Flow - High 3.b. HPCI Isol: HPCI Steam Line Pressure - Low 3.c. HPCI Isol: HPCI Turbine Exhaust Diaphragm Pressure - High 3.d. HPCI Isol: HPCI Steam Line Space HPCI Pump Room Area Temp. - High 3.e. HPCI Isol: HPCI Steam Line Space Torus Area (Exit) Temperature - High 3.f. HPCI Isol: HPCI Steam Line Space Torus Area (Midway) Temperature - High 3.g. HPCI Isol: HPCI Steam Line Space Torus Area (Entry) Temperature - High 4.a. RCIC Isol: RCIC Steam Line Flow - High 4.b. RCIC Isol: RCIC Steam Supply Line Pressure - Low 4.c. RCIC Isol: RCIC Turbine Exhaust Diaphragm Pressure - High 4.d. RCIC Isol: RCIC Steam Line Space RCIC Pump Room Area Temp. - High 4.e. RCIC Isol: RCIC Steam Line Space Torus Area (Exit) Temperature - High 4.f. RCIC Isol: RCIC Steam Line Space Torus Area (Midway) Temperature - High 4.g. RCIC Isol: RCIC Steam Line Space Torus Area (Entry) Temperature - High 5.a. RWCU Isol: Main Steam Valve Vault Area Temperature - High 5.b. RWCU Isol: Pipe Trench Area Temperature - High 5.c. RWCU Isol: Pump Room A Area Temperature - High 5.d. RWCU Isol: Pump Room B Area Temperature - High 5.e. RWCU Isol: Heat Exchanger Room Area (West Wall) Temp. - High 5.f. RWCU Isol: Heat Exchanger Room Area (East Wall) Temp. - High 5.g. RWCU Isol: SLC System Initiation 5.h. RWCU Isol: Reactor Vessel Water Level - Low, Level 3 6.a. SDC Isol: Reactor Steam Dome Pressure - High 6.b. SDC Isol: Reactor Vessel Water Level - Low, Level 3 6.c. SDC Isol: Drywell Pressure - High	C

Table 1 (continued)
Non-Instrument Calibration Surveillances
(◆ Unit 1 Surveillance Requirements that support Units 2 and 3 operation)

Surveillance	Page	Spec: SR Description	Category
SR 3.3.6.2.4	3.3-61	Secondary Cont. Isol.: Logic System Functional Test 1. Reactor Vessel Water Level - Low, Level 3 2. Drywell Pressure - High 3. Reactor Zone Exhaust Radiation - High 4. Refueling Floor Exhaust Radiation - High	C
SR 3.3.7.1.6	3.3-65	CREV System: Logic System Functional Test 1. Reactor Vessel Water Level - Low, Level 3 2. Drywell Pressure - High 3. Reactor Zone Exhaust Radiation - High 4. Refueling Floor Exhaust Radiation - High	C
SR 3.3.8.1.3◆	3.3-70	Loss of Power (LOP): Logic System Functional Test 4.16 kV Shutdown Board Undervoltage (Loss of Voltage): 1.a. - Board Undervoltage 1.b. - Diesel Start Initiation Time Delay 4.16 kV Shutdown Board Undervoltage (Degraded Voltage): 2.a. - Board Undervoltage 2.b.1 - Time Delay 2.b.2 - Time Delay 2.b.3 - Time Delay 2.b.4 - Time Delay	C
SR 3.3.8.2.3	3.3-73	RPS Electric Power Monitoring: system functional test	D
SR 3.4.3.2	3.4-8	Safety / Relief Valves (S/RVs): manual actuation	F
SR 3.5.1.8	3.5-6	ECCS-Operating: HPCI pump flow rate (Low pressure test)	E
SR 3.5.1.9	3.5-6	ECCS-Operating: injection/spray subsystems, Automatic Actuation	D
SR 3.5.1.10	3.5-7	ECCS-Operating: ADS, Automatic Actuation	D
SR 3.5.1.11	3.5-7	ECCS-Operating: ADS valve manual actuation	F
SR 3.5.1.12	3.5-7	ECCS-Operating: auto transfer of 480 V MOV Board power supply	D
SR 3.5.2.5	3.5-11	ECCS-Shutdown: injection/spray subsystems, Automatic Actuation	D
SR 3.5.3.4	3.5-13	RCIC System: pump flow rate (Low pressure test)	A
SR 3.5.3.5	3.5-14	RCIC System: Automatic Actuation	D
SR 3.6.1.1.2	3.6-2	Primary Containment: drywell to suppression chamber delta P, Leak Rate	G
SR 3.6.1.3.7	3.6-14	PCIVs: Automatic Actuation	D
SR 3.6.1.3.8	3.6-14	PCIVs: instrument line Excess Flow Check Valve, Automatic Actuation	D
SR 3.6.1.3.9	3.6-14	PCIVs: TIP squib valves	E
SR 3.6.1.6.3	3.6-20	Suppression Chamber-to-Drywell Vacuum Breakers: open setpoint	E / F
SR 3.6.4.1.3◆	3.6-37	Secondary Containment: SGT System draw down rate	G
SR 3.6.4.1.4◆	3.6-37	Secondary Containment: SGT System flow rate maintains vacuum	G
SR 3.6.4.2.2◆	3.6-41	SCIVs: Automatic Actuation	D
SR 3.6.4.3.2◆	3.6-44	SGT System: filter testing in accordance with VFTP (spec 5.5.7)	F

Table 1 (continued)
Non-Instrument Calibration Surveillances
(◆ Unit 1 Surveillance Requirements that support Units 2 and 3 operation)

Surveillance	Page	Spec: SR Description	Category
SR 3.6.4.3.3◆	3.6-44	SGT System: Automatic Actuation	D
SR 3.7.2.3◆	3.7-7	EECW System and UHS: EECW pump, Automatic Actuation Note: This SR includes a calibration of the EECW pump timers (both normal power and diesel power). The effect of changing calibration intervals to 24 months will be addressed in the follow-up submittal.	D
SR 3.7.3.2◆	3.7-11	CREV System: filter testing in accordance with VFTP (spec 5.5.7)	F
SR 3.7.3.3◆	3.7-11	CREV System: Automatic Actuation	D
SR 3.7.3.4◆	3.7-11	CREV System: flow rate maintains positive pressure	G
SR 3.7.4.1◆	3.7-14	Control Room AC System: heat removal capability	F
SR 3.7.5.2	3.7-16	Main Turbine Bypass System: Automatic Actuation	D
SR 3.7.5.3	3.7-16	Main Turbine Bypass System: response time	B
SR 3.8.1.5◆	3.8-9	AC Sources-Operating: DG load rejection	E / F
SR 3.8.1.6◆	3.8-9	AC Sources-Operating: DG, Automatic Actuation	D
SR 3.8.1.7◆	3.8-10	AC Sources-Operating: DG 24 hour operation	E / F
SR 3.8.1.8◆	3.8-10	AC Sources-Operating: DG load sequencer logic	E / F
SR 3.8.1.9.a◆	3.8-11	AC Sources-Operating: LOP/LOCA signal, De-energize emergency buses	D
SR 3.8.1.9.b◆	3.8-11	AC Sources-Operating: LOP/LOCA signal, Load shedding	D
SR 3.8.1.9.c◆	3.8-11	AC Sources-Operating: LOP/LOCA signal, DG auto-starts from standby	D
SR 3.8.4.2◆	3.8-21	DC Sources-Operating: battery charger test	A
SR 3.8.4.3◆	3.8-21	DC Sources-Operating: battery capacity test	F

VII. ATTACHMENT 1 Assessment of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Standby Liquid Control System (SLCS)

TECH SPEC NO: (Units 2 and 3 only)	PAGE NO:
SR 3.1.7.6	3.1-23
SR 3.1.7.7	3.1-23
SR 3.1.7.8	3.1-23

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Verification of an adequate pump flow rate and a fully functional flow path from the storage tank to the reactor vessel.

SAFETY FUNCTION:

Bring the reactor from full power to cold, xenon-free subcritical conditions at the most reactive point in the fuel cycle with no credit for control rods.

FSAR EVENT TYPE:

The SLCS is not assumed to function in any DBA or transient and is not the primary success path of a safety sequence analysis. It is a reactivity backup to the control rods and is included when analyzing Anticipated Transients Without Scram (ATWS). ATWS is considered a special event and is outside the plant design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- The available volume of sodium pentaborate (SPB) is verified at least once per 24 hours. Weight of available Boron-10 is verified monthly.
- The concentration of SPB is verified monthly and within 24 hours if water or SPB is added to the solution.
- The continuity of the explosive charge is verified monthly.
- Flow path restriction due to precipitation of SPB from the solution is precluded by the frequent checks on concentration.

SURVEILLANCE CATEGORY: E

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Standby Liquid Control System (SLCS)

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.1.7.9 3.1-24

TYPE OF SURVEILLANCE:

Inspection

PURPOSE:

Verify adequate Boron enrichment by analysis of a sample of the sodium pentaborate solution.

SAFETY FUNCTION:

Bring the reactor from full power to cold, xenon free subcritical conditions at the most reactive point in the fuel cycle with no credit for control rods.

FSAR EVENT TYPE:

The SLCS is not assumed to function in any Design Bases Accident or transient and is not the primary success path of a safety sequence analysis. It is a reactivity backup to the control rods and is included when analyzing the Anticipated Transient Without Scram (ATWS). ATWS is considered a special event and is outside the plant design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Monitoring the sodium pentaborate parameters on at least a monthly basis ensures adequate enrichment is maintained.
- The enrichment analysis is repeated after any additions are made to the SLCS storage tank.

SURVEILLANCE CATEGORY: H

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Scram Discharge Volume (SDV) Vent and Drain Valves

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.1.8.3 3.1-27

TYPE OF SURVEILLANCE:

Functional and Response Time Test

PURPOSE:

Demonstrate that the SDV vent and drain valves actuate as specified and within the required response time.

SAFETY FUNCTION:

The SDV vent and drain valves are not required to function to mitigate a Design Bases Accident or transient. These valves are not considered part of the reactor coolant pressure boundary ("Generic Safety Evaluation Report Regarding integrity of BWR Scram System Piping", NUREG-0803, August 1981). The SDV vent and drain valves are normally open during reactor operation such that leakage into the SDV will drain. The valves will close on a scram signal.

FSAR EVENT TYPE:

Not part of primary design basis success path for reactor shutdown.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Actuation of these valves occurs during reactor startup and shutdown.
- Predominate valve failure modes would be detected during these actuations.

SURVEILLANCE CATEGORY: A / B

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Reactor Mode Switch - Shutdown Position

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.1.1.12 3.3-5

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Ensure reactor mode switch operates in the shutdown position.

SAFETY FUNCTION:

Selection of shutdown mode for the RPS logic causes the reactor to scram and other selected functions to be bypassed.

FSAR EVENT TYPE:

Not part of the primary success path. Safety analysis is based on automatic scram functions.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Not critical to reactor shutdown function.
- Low switch failure rate.
- Contribution of switch failure in RPS logic is negligible.
- Redundant manual scram function is provided.

SURVEILLANCE CATEGORY: A

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Reactor Protection System (RPS) Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.1.1.14 3.3-5

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verify the capability of individual instrumentation channels in association with the RPS logic to provide the designed scram functions.

SAFETY FUNCTION:

Initiate scram signal when measured plant parameters exceed specified limits.

FSAR EVENT TYPE:

Reactivity Control

EFFECT ON PLANT SAFETY:

No measurable effect:

- The RPS logic is one-out-of-two-twice.
- Diverse scram signals (flux, pressure, water level, and position switch) will respond to transient events.
- Individual channel checks (daily) and channel functional tests (at least quarterly) preserve the integrity of the RPS instrumentation. Significant component failures are detected by these supplementary tests.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Reactor Mode Switch - Shutdown Position

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.2.1.6 3.3-18

TYPE OF SURVEILLANCE:

Functional test

PURPOSE:

Verify control rod withdrawal is prevented by reactor Mode Switch in the Shutdown position.

SAFETY FUNCTION:

Ensures no control rod withdrawal when operating in the Shutdown Mode.

FSAR EVENT TYPE:

Reactivity Control.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Not a function of fuel cycle extension.
- Test conducted normally during plant shutdown.

SURVEILLANCE CATEGORY: A

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Feedwater and Main Turbine High Water Level Trip Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.2.2.4 3.3-22

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Demonstrate that the instrumentation channels and associated logic will provide a feedwater pump trip and main turbine trip, including closure of the main turbine valves.

SAFETY FUNCTION:

Respond to feedwater control system failure (maximum demand) to prevent excess water carryover to the main turbine. Also, to preserve operating limits (e.g., MCPR, MAPLHGR).

FSAR EVENT TYPE:

Decrease in core coolant temperature.

Excess water carryover.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant trip systems.
- Channel functional tests are conducted quarterly which would identify individual component failures.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Backup Control System

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.3.2.1 3.3-28

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Verification of each control circuit and transfer switch function.

SAFETY FUNCTION:

Allow reactor to be shutdown in a controlled manner when access to main control room is unavailable.

FSAR EVENT TYPE:

Not an Engineered Safety Feature required to respond to any DBA or transient considered in the safety analysis. Function is only required in response to a situation calling for evacuation of the main control room.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Not part of the primary success path for reactor shutdown.
- Incorrect positioning of the transfer switches can be detected during plant operation and corrected.

SURVEILLANCE CATEGORY: A

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.4.1.4 3.3-31

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verify the capability of individual instrumentation channels, in association with the EOC-RPT logic, to provide the designed trip function.

SAFETY FUNCTION:

Initiate a recirculation pump trip when a main turbine trip or generator load rejection occurs when reactor THERMAL POWER is ≥ 30% RTP.

FSAR EVENT TYPE:

Reactivity Control.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant channels exist to initiate recirculation pump trip.
- Channel Functional Tests which are conducted quarterly would detect significant failures of the EOC-RPT instrumentation.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

ATWS Recirculation Pump Trip (ATWS-RPT) Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.4.2.4 3.3-34

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verify the capability of individual instrumentation channels, in association with the ATWS-RPT logic, to provide the designed trip function.

SAFETY FUNCTION:

Provides backup reactivity control by tripping the recirculation pumps on reactor vessel low water level or high reactor dome pressure.

FSAR EVENT TYPE:

Is not part of the primary design basis success path. Included when analyzing Anticipated Transients Without Scram (a special event).

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant channels exist to initiate recirculation pump trip.
- Channel Functional Tests which are conducted quarterly would detect significant failures of the ATWS-RPT instrumentation.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Emergency Core Cooling System (ECCS) Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.5.1.6 3.3-41

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verify the capability of individual instrumentation channels, in association with the ECCS logic, to provide the designed initiation functions.

SAFETY FUNCTION:

Initiate ECCS on loss of coolant inventory.

FSAR EVENT TYPE:

Decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant instrumentation channels exist to initiate the ECCS subsystems.
- Individual channel checks (daily) and channel functional tests (at least quarterly) preserve the integrity of the ECCS instrumentation. Significant component failures are detected by these supplementary tests.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Reactor Core Isolation Cooling (RCIC) System Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.5.2.4 3.3-49

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verify the capability of individual instrumentation channels, in association with the RCIC logic, to provide the designed initiation and isolation functions.

SAFETY FUNCTION:

Restores coolant inventory loss following isolation of the reactor from the primary heat sink. Also provides high pressure source of coolant inventory makeup.

FSAR EVENT TYPE:

Not part of the primary success path for design basis events.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant instrumentation channels exist to initiate or isolate the RCIC system.
- Individual channel checks (daily) and channel functional tests (at least quarterly) preserve the integrity of the RCIC instrumentation. Significant component failures are detected by these supplementary tests.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Primary Containment Isolation (PCI) Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.6.1.6 3.3-55

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verifies the capability of individual instrumentation channels, in association with the PCI logic, to provide the designed isolation functions.

SAFETY FUNCTION:

Provides trip signals to PCI valves when specified plant parameters exceed design limits.

FSAR EVENT TYPE:

Radioactive release basis during and following design basis events.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant inboard/outboard isolation valves with diverse power sources.
- Redundant and diverse trip signals for major transient events.
- Individual channel checks (daily) and channel functional tests (at least quarterly) preserve the integrity of the PCI instrumentation. Significant component failures are detected by these supplementary tests.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Secondary Containment Isolation (SCI) Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.6.2.4 3.3-61

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verify the capability of individual instrumentation channels, in association with the SCI logic, to provide the designed isolation functions.

SAFETY FUNCTION:

Provide trip signals to SCI valves and for initiation of the Standby Gas Treatment System when specified plant parameters exceed design limits.

FSAR EVENT TYPE:

Radioactive release basis during and following design basis events. Containment during operational events when primary containment is not required.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant isolation valves provided.
- Individual channel checks (daily) and channel functional tests (at least quarterly) preserve the integrity of the SCI instrumentation. Significant component failures are detected by these supplementary tests.
- Logic System Functional Tests of radiation instrument channels are conducted at least once every six months.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Control Room Emergency Ventilation (CREV) System Instrumentation

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.7.1.6 3.3-65

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verify the capability of individual instrumentation channels, in association with the CREV logic, to provide the designed initiation of the CREV system.

SAFETY FUNCTION:

To ensure habitability of the control room under all plant operating conditions.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Two redundant CREV systems are available for the design function.
- Individual channel checks (daily) and channel functional tests (at least quarterly) preserve the integrity of the CREV instrumentation. Significant component failures are detected by these supplementary tests.
- Control room air supply duct radiation monitors have logic system functional tests conducted at least once every six months.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Loss of Power (LOP) Instrumentation

TECH SPEC NO: SR 3.3.8.1.3

PAGE NO: 3.3-70

TYPE OF SURVEILLANCE:

Logic System Functional Test

PURPOSE:

Verify the capability of individual instrumentation channels, in association with the LOP logic, to provide adequate power monitoring of the 4.16 kV shutdown boards.

SAFETY FUNCTION:

To replace the offsite power supplies to the shutdown boards with diesel generator power in the event the offsite power becomes inadequate.

FSAR EVENT TYPE:

Decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Each shutdown board is monitored for both loss of voltage and degraded voltage. The degraded voltage trip is considered redundant to loss of voltage.
- BFN plant design includes two independent offsite AC power sources.
- Multiple redundancy of shutdown boards and associated AC power sources.

SURVEILLANCE CATEGORY: C

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

RPS Electric Power Monitoring (RPS-EPM)

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.3.8.2.3 3.3-73

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate capability of the RPS-EPM system to automatically open the associated contractors in response to a system voltage or frequency signal which exceeds established limits.

SAFETY FUNCTION:

Preserve the integrity of the equipment comprising the electrical load of the RPS-MG set, with regard to over-voltage, under-voltage, or under-frequency.

FSAR EVENT TYPE:

Primarily reactivity control.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant protective channels provided.
- Additional channel functional tests are performed at least once every six months.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Manual Operation of Main Steam Relief Valves and Designated ADS Valves

TECH SPEC NO: (Units 2 and 3 only)	PAGE NO:
SR 3.4.3.2	3.4-8
SR 3.5.1.11	3.5-7

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Demonstrate capability of each Main Steam Relief Valve and ADS valve to open and provide an adequate flow path.

SAFETY FUNCTION:

Mitigate the consequences of DBA LOCAs and transients.

FSAR EVENT TYPE:

Reactor vessel overpressure protection.

Decrease in reactor coolant inventory (ADS).

EFFECT ON PLANT SAFETY:

No measurable effect:

- Analysis shows that the 1375 psig code limit for overpressure would be preserved with fewer than the available Main Steam Relief Valves coincident with failure of the primary scram function.
- Any four of the designated six ADS valves are sufficient to provide an adequate margin for depressurization.
- Two coolant injection systems (HPCI and RCIC) are available (in lieu of ADS in combination with LPCI and Core Spray) to maintain coolant inventory with the reactor coolant system still pressurized during a design basis event.

SURVEILLANCE CATEGORY: F

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

High Pressure Coolant Injection (HPCI) System

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.5.1.8 3.5-6

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Demonstrate HPCI system capability to develop required flow at a low reactor pressure condition.

SAFETY FUNCTION:

Provide make-up for loss of coolant inventory.

FSAR EVENT TYPE:

Decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Several alternate water injection sources are available for reactor low pressure conditions.
- Restriction of the flow path would be detected during the HPCI pump flow test at high pressure which is performed at least once per 92 days (quarterly).
- The quarterly high pressure test also demonstrates operability of the HPCI at the system level.

SURVEILLANCE CATEGORY: E

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Emergency Core Cooling Systems (ECCS)

TECH SPEC NO: (Units 2 and 3 only)	PAGE NO:
SR 3.5.1.9	3.5-6
SR 3.5.1.10	3.5-7
SR 3.5.2.5	3.5-11

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate the capability of the ECCS to initiate in response to an actual or simulated automatic initiation signal.

SAFETY FUNCTION:

Mitigate the consequences of DBA LOCAs.

FSAR EVENT TYPE:

Decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant instrumentation channels to provide actuation.
- Redundant water injection systems available.
- Individual channel checks (daily) and channel functional tests (at least quarterly) preserve the integrity of the ECCS instrumentation. Significant component failures are detected by these supplementary tests.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

480 Volt Reactor MOV Boards (ECCS)

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.5.1.12 3.5-7

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate the capability to automatically transfer the power supply from the normal source to the alternate source for the MOV Board supplying power to the LPCI subsystem inboard injection valve and recirculation pump discharge valve.

SAFETY FUNCTION:

To ensure availability of a 480 Volt power supply to the LPCI inboard injection valve and the recirculation pump discharge valve actuators in the event that the power is lost to one of the 4kV Shutdown Boards.

FSAR EVENT TYPE:

Decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant power supplies available to the 4kV Shutdown Boards.
- Availability of normal power supplies to the 4kV Shutdown Boards is verified at least once every seven days.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Reactor Core Isolation Cooling (RCIC) System

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.5.3.4 3.5-13

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Demonstrate RCIC system capability to develop required flow at a low reactor pressure condition.

SAFETY FUNCTION:

Provide make-up for loss of coolant inventory associated with isolation transients. Redundant high pressure water source to HPCI for certain events other than design basis.

FSAR EVENT TYPE:

Not part of the primary success path, particularly under low reactor pressure conditions.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Several alternate water injection sources are available for low reactor pressure conditions.
- Restriction of the flow path would be detected during the RCIC pump flow test at high pressure which is performed at least once every 92 days (quarterly).
- The quarterly high pressure test also demonstrates operability of the RCIC at the system level.

SURVEILLANCE CATEGORY: A

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Reactor Core Isolation Cooling (RCIC) System

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.5.3.5 3.5-14

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate the capability of the RCIC system to initiate in response to an actual or simulated automatic initiation signal.

SAFETY FUNCTION:

Provide make-up for loss of coolant inventory associated with isolation transients. Redundant high pressure water source to HPCI for certain events other than design basis.

FSAR EVENT TYPE:

Not part of the primary success path for any design basis event.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Backup by HPCI for RCIC system functions.
- Redundant instrument channels provide actuation.
- Individual channel checks (daily) and channel functional tests (at least quarterly) preserve the integrity of the RCIC instrumentation. Significant component failures are detected by these supplementary tests.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Drywell to Suppression Chamber

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.6.1.1.2 3.6-2

TYPE OF SURVEILLANCE:

Leak Rate Test

PURPOSE:

To verify that leakage from the drywell to the suppression chamber is maintained within allowable limits.

SAFETY FUNCTION:

Ensures that the suppression chamber condensing capability is maintained such that overpressurization of the primary containment does not occur.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Reliability is not affected by increase in testing interval because the testing plan is self correcting if failure occurs.
- If a test fails to meet a specified limit, the test schedule for subsequent tests is required to be reviewed and approved by the NRC.
- If two consecutive tests fail to meet the specified limit, a test schedule of every 9 months is instituted until two consecutive tests are determined to be acceptable.

SURVEILLANCE CATEGORY: G

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Primary Containment Isolation Valves (PCIVs)

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.6.1.3.7 3.6-14

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Tests

PURPOSE:

Demonstrate the capability of each PCIV to actuate to the isolation position on an actual or simulated isolation signal.

SAFETY FUNCTION:

Maintains potential radioactive releases within limits.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant inboard/outboard isolation valves are provided.
- PCIVs are tested following maintenance, repair or replacement.
- The Inservice Testing Program, based on the ASME Boiler and Pressure Vessel Code, Section XI, results in additional and more frequent testing of the PCIVs.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Excess Flow Check Valves (EFCVs)

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.6.1.3.8 3.6-14

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Tests.

PURPOSE:

Demonstrate the capability of each EFCV to actuate to the isolation position on an actual or simulated instrument line break signal.

SAFETY FUNCTION:

Maintain potential radioactive releases within limits.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Low probability of instrument line break coincident with failure of EFCV would result in only a small break.
- Manual closure of an upstream isolation valve is available in the event of EFCV failure.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Traversing Incore Probe (TIP) Squib Valves

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.6.1.3.9 3.6-14

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Provide assurance of the operability of the TIP shear isolation valves which are actuated by an explosive squib charge.

SAFETY FUNCTION:

Maintain potential radioactive releases within limits by isolating the TIP system on containment isolation signal.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Explosive squib charge is removed, fired and replaced by a squib from the same batch or another batch containing a squib that has been successfully tested.
- Redundant inboard/outboard isolation valves are provided.
- Continuity checks of explosive squib charge are performed monthly.
- TIP system is only used infrequently (e.g., LPRM calibration).
- Shelf and operating life of explosive squib charge are not exceeded by the increased test interval.

SURVEILLANCE CATEGORY: E

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Suppression Chamber-to-Drywell Vacuum Breakers

TECH SPEC NO: (Units 2 and 3 only) PAGE NO:

SR 3.6.1.6.3 3.6-20

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Verify that the vacuum breaker will open, and that the required force for opening is within the limit assumed in the safety analysis.

SAFETY FUNCTION:

Preserve the containment integrity by relieving drywell vacuum when the drywell atmosphere is depressurized below suppression chamber pressure.

FSAR EVENT TYPE:

Decrease in reactor coolant inventory (LOCA), inadvertent drywell spray actuation, cooling cycles, etc.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant reactor suppression chamber-to-drywell vacuum breakers.
- Additional, more frequent functional tests of the vacuum breakers are performed in accordance with the Inservice Testing Program.

SURVEILLANCE CATEGORY: E / F

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Standby Gas Treatment (SGT) System

TECH SPEC NO:	PAGE NO:
SR 3.6.4.1.3	3.6-37
SR 3.6.4.1.4	3.6-37

TYPE OF SURVEILLANCE:

Leak Rate Tests

PURPOSE:

To ensure that the Secondary Containment boundary remains intact along with SGT System design capability.

SAFETY FUNCTION:

To prevent the release of radioactive material to the environment whenever secondary containment is required by maintaining a lower relative containment pressure.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Inspection of all Secondary Containment access doors and equipment hatches for proper placement every 31 days.
- Redundant SGT subsystems are provided.
- Each SGT subsystem is initiated and operated for at least 10 hours on a monthly basis.
- Predominant failure modes are detected during monthly operational tests.

SURVEILLANCE CATEGORY: G

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Secondary Containment Isolation Valves (SCIVs)

TECH SPEC NO: SR 3.6.4.2.2

PAGE NO: 3.6-41

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Tests

PURPOSE:

Demonstrate the capability of each SCIV to actuate to the isolation position on an actual or simulated isolation signal.

SAFETY FUNCTION:

Maintain potential radioactive releases within limits.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant isolation valves are provided.
- Isolation valve times are verified in accordance with the Inservice Testing Program.
- Predominant failure modes are detected during the above tests.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Standby Gas Treatment (SGT) System

TECH SPEC NO: SR 3.6.4.3.2

PAGE NO: 3.6-44

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Verify the functional capability of the SGT system filters as defined in the Ventilation Filter Testing Program.

SAFETY FUNCTION:

The operability of the SGT system ensures that sufficient iodine removal capability will be available in the event of a LOCA. The reduction in containment iodine inventory reduces the resulting site boundary doses associated with containment leakage.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- There are redundant SGT subsystems.
- Each SGT subsystem is initiated and operated for at least 10 hours at least once per 31 days.
- Predominant failure modes are detected during the above operational tests.

SURVEILLANCE CATEGORY: F

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Standby Gas Treatment (SGT) System

TECH SPEC NO: SR 3.6.4.3.3

PAGE NO: 3.6-44

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate the capability of each SGT subsystem to start on an actual or simulated initiation signal.

SAFETY FUNCTION:

The operability of the SGT system ensures that sufficient iodine removal capability will be available in the event of a LOCA. The reduction in containment iodine inventory reduces the resulting site boundary doses associated with containment leakage.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- There are redundant SGT subsystems.
- Each SGT subsystem is initiated and operated for at least 10 hours at least once per 31 days.
- Predominant failure modes are detected during the above operational tests.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Emergency Equipment Cooling Water (EECW) System

TECH SPEC NO: SR 3.7.2.3

PAGE NO: 3.7-7

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate that each required EECW pump actuates on an actual or simulated initiation signal.

SAFETY FUNCTION:

Provides cooling water to support operation of several systems that are required to function in achieving safe reactor shutdown following a Design Basis Accident or transient.

FSAR EVENT TYPE:

Decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Two independent and redundant EECW system loops are provided with two pumps per loop.
- Any two of the four pumps can meet system requirements, and three pumps are required to be OPERABLE.
- All valve alignments are checked at least once per 31 days.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Control Room Emergency Ventilation (CREV) System

TECH SPEC NO:	PAGE NO:
SR 3.7.3.2	3.7-11

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Verify the functional capability of the CREV system filters as defined in the Ventilation Filter Testing Program.

SAFETY FUNCTION:

To ensure the habitability of the main control room and provide a radiologically controlled environment following a design basis accident.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Two redundant CREV subsystems are provided and required to be OPERABLE.
- Each CREV subsystem is initiated and operated for at least 10 hours at least once per 31 days.
- Predominant failure modes are detected during the above operational tests.

SURVEILLANCE CATEGORY: F

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Control Room Emergency Ventilation (CREV) System

TECH SPEC NO: SR 3.7.3.3

PAGE NO: 3.7-11

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate the capability of each CREV subsystem to start on an actual or simulated initiation signal.

SAFETY FUNCTION:

To ensure the habitability of the main control room and provide a radiologically controlled environment following a design basis accident.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Two redundant CREV subsystems are provided and required to be OPERABLE.
- Each CREV subsystem is initiated and operated for at least 10 hours at least once per 31 days.
- Predominant failure modes are detected during the above operational tests.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Control Room Emergency Ventilation (CREV) System

TECH SPEC NO: SR 3.7.3.4

PAGE NO: 3.7-11

TYPE OF SURVEILLANCE:

Leak Rate Test

PURPOSE:

Verify the in-leakage rate of potentially contaminated air is within acceptable limits.

SAFETY FUNCTION:

To ensure the habitability of the main control room and provide a radiologically controlled environment following a design basis accident.

FSAR EVENT TYPE:

Radioactive release design basis.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Two redundant CREV subsystems are provided and required to be OPERABLE.
- Each CREV subsystem is initiated and operated for at least 10 hours at least once per 31 days.
- Predominant failure modes are detected during the above operational tests.

SURVEILLANCE CATEGORY: G

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Control Room Air Conditioning (AC) System

TECH SPEC NO: SR 3.7.4.1

PAGE NO: 3.7-14

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Verify that each control room AC subsystem is capable of removing the assumed heat load.

SAFETY FUNCTION:

To ensure adequate control temperature under all normal and accident conditions.

FSAR EVENT TYPE:

All design basis accidents.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant AC subsystems are provided.
- Redundant detectors and controls are used for control room temperature control.

SURVEILLANCE CATEGORY: F

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

Main Turbine Bypass System

TECH SPEC NO: (Units 2 and 3 only)	PAGE NO:
SR 3.7.5.2	3.7-16
SR 3.7.5.3	3.7-16

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation/Response Time Test

PURPOSE:

Demonstrate that the Main Turbine Bypass valves actuate to their required positions on an actual or simulated initiation signal, and that valve movement occurs within the specified time limits.

SAFETY FUNCTION:

The Main Turbine Bypass system is a part of the primary success path which functions to mitigate the consequences of a feedwater controller failure (maximum demand), generator load rejection, or turbine trip event.

FSAR EVENT TYPE:

Increase in reactor pressure.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Industry reliability studies for Boiling Water Reactors (BWRs), prepared by the BWR Owners Group (GE topical report NEDC-30936P-A) show that the overall safety systems' reliabilities are not dominated by the reliabilities of the logic systems, but by that of the mechanical components, (e.g., pumps and valves), which are consequently tested on a more frequent basis.
- Each Main Turbine Bypass valve is cycled through one cycle of full travel at least once per 31 days.

SURVEILLANCE CATEGORY: D / B

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

AC Sources-Operating; Diesel Generators (DGs)

TECH SPEC NO:	PAGE NO:
SR 3.8.1.5	3.8-9
SR 3.8.1.7	3.8-10

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Demonstrate that each DG can reject a load greater than or equal to its associated single largest post-accident load and remain within its prescribed voltage and frequency limits. Demonstrate that each DG can operate continuously for 24 hours under prescribed conditions.

SAFETY FUNCTION:

Provide sufficient AC power sources to supply the safety-related equipment and instrumentation required for the safe shutdown of the facility and the mitigation and control of DBA and transient conditions within the facility.

FSAR EVENT TYPE:

Increase in reactor pressure and/or decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant AC power supplies are provided to the safety-related front-line systems.
- DGs are functionally tested to start and achieve prescribed voltage and frequency conditions, including operation at rated load for one hour, at least once per 31 days.
- Available quantities of DG fuel oil are verified at least once per 31 days.

SURVEILLANCE CATEGORY: E / F

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

AC Sources-Operating/Shutdown; Diesel Generators (DGs)

TECH SPEC NO: SR 3.8.1.6

PAGE NO: 3.8-9

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate that each DG will start automatically on an actual or simulated accident (LOCA) signal.

SAFETY FUNCTION:

Provide sufficient AC power sources to supply the safety-related equipment and instrumentation required for the safe shutdown of the facility and the mitigation and control of DBA and transient conditions within the facility.

FSAR EVENT TYPE:

Increase in reactor pressure and/or decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant AC power supplies are provided to the safety-related front-line systems.
- DGs are functionally tested to start and achieve prescribed voltage and frequency conditions, including operation at rated load for one hour, at least once per 31 days.
- Pressure in each required DG air start receiver is checked at least once per 31 days.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

AC Sources-Operating; Diesel Generators (DGs)

TECH SPEC NO: SR 3.8.1.8

PAGE NO: 3.8-10

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Verify correct sequencing for load connection to the DGs.

SAFETY FUNCTION:

Provide sufficient AC power sources to supply the safety-related equipment and instrumentation required for the safe shutdown of the facility and the mitigation and control of DBA and transient conditions within the facility.

FSAR EVENT TYPE:

Increase in reactor pressure and/or decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant AC power supplies are provided to the safety-related front-line systems.
- Verification is supported by SR 3.3.5.1.5 (Core Spray and LPCI pump start timer calibration), SR 3.7.2.3 (EECW pump simulated start tests), and SR 3.8.1.9.b (load shedding from emergency buses).

SURVEILLANCE CATEGORY: E / F

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

AC Sources-Operating; Diesel Generators (DGs)

TECH SPEC NO:	PAGE NO:
SR 3.8.1.9.a	3.8-11
SR 3.8.1.9.b	3.8-11
SR 3.8.1.9.c	3.8-11

TYPE OF SURVEILLANCE:

Simulated Automatic Actuation Test

PURPOSE:

Demonstrate the following occur on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal:

a. De-energization of emergency buses.

b. Load shedding from emergency buses.

c. DG auto-starts and correctly supplies required loads within 10 seconds.

SAFETY FUNCTION:

Provide sufficient AC power sources to supply the safety-related equipment and instrumentation required for the safe shutdown of the facility and the mitigation and control of DBA and transient conditions within the facility.

FSAR EVENT TYPE:

Increase in reactor pressure and/or decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Similar DG starts are performed at least once per six months plus less demanding starts on a monthly basis.
- Redundant AC power supplies are provided to the safety-related front line systems.
- Independent verification is made for the load sequencing timer instrumentation.

SURVEILLANCE CATEGORY: D

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

DC Sources-Operating; Battery Chargers

TECH SPEC NO: SR 3.8.4.2

PAGE NO: 3.8-21

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Demonstrate the capability of the battery charger to fully charge the battery after designed duty cycle testing.

SAFETY FUNCTION:

To support the battery in providing sufficient DC power sources to supply the safety-related equipment and instrumentation required for the safe shutdown of the facility and the mitigation and control of DBA and transient conditions within the facility.

FSAR EVENT TYPE:

Increase in reactor pressure and/or decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant DC power supplies are provided to the safety-related front line systems.
- Battery float voltage is verified on a weekly basis and is indicative of charger availability.

SURVEILLANCE CATEGORY: A

Assessment Of BFN Units 1, 2, and 3 Surveillance Interval Extension For Non-Instrument Calibration SRs

SYSTEM/COMPONENT SURVEILLANCE:

DC Sources Operating; Battery Capacity

TECH SPEC NO: SR 3.8.4.3

PAGE NO: 3.8-21

TYPE OF SURVEILLANCE:

Functional Test

PURPOSE:

Demonstrate the capability of the battery to meet the designed discharge rate and time (battery duty cycle).

SAFETY FUNCTION:

To provide sufficient DC power sources to supply the safety-related equipment and instrumentation required for the safe shutdown of the facility and the mitigation and control of DBA and transient conditions within the facility.

FSAR EVENT TYPE:

Increase in reactor pressure and/or decrease in reactor coolant inventory.

EFFECT ON PLANT SAFETY:

No measurable effect:

- Redundant DC power supplies are provided to the safety-related front line systems.
- Battery parameters (electrolyte level, float voltage and specific gravity) are checked at least once per 7 days (pilot cells) and all cells at least once per 3 months.

SURVEILLANCE CATEGORY: F