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License Number NPF-3

Serial Number 2724

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Subject: Davis-Besse Nuclear Power Station
License Amendment Application to Revise Technical Specification 3/4.3.1, "Reactor Protection System Instrumentation," to Delete Action and Enhance Specification Clarity
(License Amendment Request No. 01-0008)

Ladies and Gentlemen:

Pursuant to 10 CFR 50.90, the following amendment is requested for the Davis-Besse Nuclear Power Station, Unit 1 (DBNPS). The proposed amendment would revise Technical Specification (TS) 3/4.3.1, "Reactor Protection System Instrumentation" to delete an action involving either reducing core thermal power and the high neutron flux reactor trip setpoint or monitoring quadrant power tilt when a Reactor Protection System (RPS) channel is inoperable. Additionally, changes to the content and format of TS Tables 3.3-1 and 4.3-1 are proposed to enhance specification clarity. Enclosure 1 to this letter contains the technical justification for these proposed changes and the proposed no significant hazards consideration determination.

Approval of the proposed amendment is requested by July 5, 2002, to ensure timely implementation of these proposed changes. Once approved, the amendment shall be implemented within 120 days following NRC issuance.

The proposed changes have been reviewed by the DBNPS Station Review Board and Company Nuclear Review Board.

A001

This proposed amendment has been prepared utilizing the Nuclear Energy Institute's "Standard Format for Operating License Amendment Requests from Commercial Reactor Licensees."

Should you have any questions or require additional information, please contact Mr. David H. Lockwood, Manager - Regulatory Affairs, at (419) 321-8450.

Very truly yours,

Enclosures

cc: J. E. Dyer, Regional Administrator, NRC Region III
S. P. Sands, NRC/NRR Project Manager
D. J. Shipley, Executive Director, Ohio Emergency Management Agency, State of Ohio (NRC Liaison)
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APPLICATION FOR AMENDMENT

TO

FACILITY OPERATING LICENSE NUMBER NPF-3

DAVIS-BESSE NUCLEAR POWER STATION

UNIT NUMBER 1

Attached are the requested changes to the Davis-Besse Nuclear Power Station, Unit Number 1, Facility Operating License Number NPF-3.

The proposed changes concern:

Appendix A, Technical Specifications (TS):

3/4.3.1, Reactor Protection System Instrumentation

I, Guy G. Campbell, state that (1) I am Vice President - Nuclear of the FirstEnergy Nuclear Operating Company, (2) I am duly authorized to execute and file this certification on behalf of the Toledo Edison Company and The Cleveland Electric Illuminating Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

By: Guy G. Campbell

Guy G. Campbell, Vice President - Nuclear

Affirmed and subscribed before me this 17th day of December, 2001.

Nora L. Flood

Notary Public, State of Ohio Nora L. Flood
My commission expires September 4, 2002.

Docket Number 50-346
License Number NPF-3
Serial Number 2724
Enclosure 1

# DAVIS-BESSE NUCLEAR POWER STATION
# EVALUATION
# FOR
# LICENSE AMENDMENT REQUEST NUMBER 01-0008

(40 pages follow)

**DAVIS-BESSE NUCLEAR POWER STATION
EVALUATION
FOR
LICENSE AMENDMENT REQUEST NUMBER 01-0008**

**Subject:** Revise Technical Specification 3/4.3.1, "Reactor Protection System Instrumentation," to Delete Action and Enhance Specification Clarity

## 1.0 DESCRIPTION

This submittal is a request to amend the Davis-Besse Nuclear Power Station (DBNPS), Unit Number 1, Facility Operating License Number NPF-3, Appendix A, Technical Specifications.

The proposed changes would revise the Operating License Technical Specification (TS) 3/4.3.1, "Reactor Protection System Instrumentation," by deleting the action of either reducing core thermal power and the high neutron flux reactor trip setpoint or monitoring quadrant power tilt when a single Reactor Protection System (RPS) instrument string channel is inoperable. Additionally, changes to the format and content of TS Tables 3.3-1, "Reactor Protection System Instrumentation," and 4.3-1, "Reactor Protection System Instrumentation Surveillance Requirements," are proposed to enhance specification clarity. Each of the proposed changes is described in detail in Section 2.0.

## 2.0 PROPOSED CHANGE

The proposed changes affect TS 3/4.3.1 and are shown in the marked-up TS pages in Attachment 1 to this LAR. Each of the proposed changes is described in more detail below.

<u>Deletion of TS Table 3.3-1, Action Statement 2, and Renumbering of Functional Units in TS Table 3.3-1 and TS Table 4.3-1</u>

The proposed changes would revise TS Table 3.3-1 to eliminate separate functional units for each trip function in the instrument strings. It would replace these separate functional units with a single "Instrument Strings" functional unit. The individual trip functions would be listed as part of this functional unit. A single set of Actions (3 and 10) would be utilized when an RPS instrument string is inoperable regardless of which trip functions within the RPS instrument string are affected. TS Table 3.3-1, Action 2, would be deleted since the functional units to which Action 2 now applies would be incorporated into the new "Instrument Strings" functional unit. Action 2 presently states:

> ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided both of the following conditions are satisfied:
>
> a. The inoperable channel is placed in the bypassed or tripped condition within one hour.
>
> b. Either, THERMAL POWER is restricted to $\leq$ 75% of RATED THERMAL POWER and the High Flux Trip Setpoint is reduced to $\leq$ 85% of RATED THERMAL POWER within 4 hours or the QUADRANT POWER TILT is monitored at least once per 12 hours.

Action 3 would be utilized in place of Action 2 for the High Flux or Flux-ΔFlux-Flow RPS functional units. Action 3 states:

> ACTION 3 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and POWER OPERATION may proceed provided the inoperable channel is placed in the bypassed or tripped condition within one hour.

This proposed change would eliminate the power reduction and the alternative quadrant tilt monitoring requirements of Action 2.b for an inoperable High Flux or Flux-ΔFlux-Flow RPS functional unit. Action 10 would continue to apply for all trip functions when two RPS channels are inoperable. Additional changes are being made to TS Table 3.3-1 to renumber the existing functional unit requirements as a result of the changes to TS Table 3.3-1 described below. TS Table 4.3-1 is being reformatted to maintain consistency with the proposed revised TS Table 3.3-1.

As discussed below in Section 4.0, "Technical Analysis," the proposed changes are consistent with NUREG-1430, "Standard Technical Specifications - Babcock and Wilcox Plant," Revision 2, dated April 2001.

<u>TS Table 3.3-1 and Table 4.3-1 Functional Units 1, 10, 12, 13, 15 and Action Statement 1</u>

The proposed changes would revise the "Applicable Modes" column of TS Table 3.3-1 and the "Modes in which Surveillance Required" column of Table 4.3-1 for Functional Units 1, 10, 12, 13, and 15 to make it clear that the condition defined by the asterisked footnotes of these tables can apply in Modes 3, 4, or 5.

The "Applicable Modes" column of Table 3.3-1, Reactor Protection System Instrumentation, presently reads "1, 2 and *" for the following Functional Units: 1, Manual Reactor Trip; 10, Intermediate Range, Neutron Flux and Rate; 12, Control Rod Drive Trip Breakers; 13, Reactor Trip Module; and 15, SCR Relays. The proposed changes would revise this column for these Functional Units to read "1, 2, 3*, 4*, 5*".

Action Statement 1 would be revised due to the addition of "3*, 4*, 5*" to the "Applicable Modes" column of Table 3.3-1. The proposed changes would require that the plant be placed in at least Hot Standby and the control rod drive trip breakers be opened within the next 6 hours if an inoperable channel could not be restored to operable status within the allowed time.

The "Modes in Which Surveillance Required" column of Table 4.3-1, Reactor Protection System Instrumentation Surveillance Requirements, presently reads "N.A." for Functional Unit 1, and "1, 2 and *" for Functional Units 10, 12, 13, and 15. The proposed changes would revise this column for these Functional Units to read "1, 2, 3*, 4*, 5*".

In addition, the proposed changes would revise the asterisked footnote to Table 3.3-1 and Table 4.3-1 to read:

* With any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal.

Related to these proposed changes, TS Bases Section 3/4.3.1 and 3/4.3.2, "Reactor Protection System and Safety System Instrumentation," is being revised. The marked up TS Bases pages are provided in Attachment 3. Since the TS Bases are not a formal part of the Technical Specifications, these pages are being provided for information only. TS Bases changes are processed under the DBNPS Technical Specifications Bases Control Program.

<u>TS Table 3.3-1 Functional Unit 11, and Action Statements 5 and 6</u>

Table 3.3-1 Functional Unit 11, Source Range, Neutron Flux and Rate, presently includes entries for two separate sub-units, 11.A, Startup, and 11.B, Shutdown. The proposed changes would combine these two sub-units into a single Functional Unit, Source Range, Neutron Flux and Rate, with the following requirements:

| | |
|---|---|
| Total No. of Channels: | 2 |
| Channels to Trip: | N/A |
| Minimum Channels Operable: | 2 |
| Applicable Modes: | 2##, 3, 4, 5 |
| Action: | 5, 6 |

Associated with this change, Table 3.3-1 Actions Statements 5 and 6 would be revised to read:

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above $10^{-10}$ amps on the IR instrumentation.

b. $> 10^{-10}$ amps on the IR instrumentation, operation may continue. Within one hour, initiate action to restore the affected channel to OPERABLE status.

ACTION 6 - With the number of channels OPERABLE two less than required by the Minimum Channels OPERABLE requirement, and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, immediately suspend operations involving positive reactivity changes, immediately initiate action to insert all control rods, and open all control rod drive trip breakers within one hour. Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 within one hour and at least once per 12 hours thereafter.

b. $>10^{-10}$ amps on the IR instrumentation, operation may continue. Within one hour, initiate action to restore affected channels to OPERABLE status.

TS Table 3.3-1 and Table 4.3-1 Functional Unit 14, and Table 3.3-1 Action Statement 11

Associated with the proposed changes to Table 3.3-1 Action Statements 5 and 6, the proposed changes would renumber the former Action Statement 6 as Action Statement 11. The renumbered Action Statement 11 would apply only to Functional Unit 14, Shutdown Bypass High Pressure.

In addition, the proposed changes would revise the double-asterisked footnote to Table 3.3-1 and Table 4.3-1 to read:

> ** When Shutdown Bypass is actuated with any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal.

TS Table 4.3-1 Functional Units 10 and 11, Notation (5)

The proposed changes would also modify Notation (5) of TS Table 4.3-1 to clarify that the one decade of overlap requirement for the intermediate range (Functional Unit 10) and source range (Functional Unit 11) instrumentation is verified *during* each reactor startup rather than *prior to* each reactor startup. Specifically, the proposed changes would modify Notation (5) of TS Table 4.3-1, to read:

> CHANNEL FUNCTIONAL TEST is not applicable. Verify at least one decade overlap once each reactor startup if not verified in previous 7 days.

This notation pertains to the Channel Functional Test requirements for Table 4.3-1 Functional Unit 10, Intermediate Range, Neutron Flux and Rate, and Functional Unit 11, Source Range, Neutron Flux and Rate.

Summary

In summary, the proposed amendment would revise Technical Specification (TS) requirements for the Reactor Protection System (RPS) instrumentation. The proposed change would eliminate the requirement to either reduce core thermal power and the RPS high neutron flux trip setpoint or to monitor core quadrant power tilt (QPT) at an increased frequency when a single channel of RPS High Flux or Flux-ΔFlux-Flow is inoperable. Additionally, TS Table 3.3-1, "Reactor Protection System Instrumentation," and TS Table 4.3-1, "Reactor Protection System Instrumentation Surveillance Requirements," would be revised to enhance TS clarity and make the TS more consistent with NUREG-1430, "Standard Technical Specifications - Babcock and Wilcox Plants," Revision 2, dated April 2001.

## 3.0 BACKGROUND

Reactor Protection System

The Reactor Protection System is described in DBNPS Updated Safety Analysis Report (USAR) Section 7.2, "Reactor Protection System (RPS)." The RPS is shown in DBNPS USAR Figure 7.2-1. The purpose of the RPS is to initiate a reactor trip when a sensed parameter (or group of parameters) exceeds a setpoint value indicating the approach of an unacceptable condition. In this manner, the reactor core is protected from exceeding design limits and the Reactor Coolant System (RCS) is protected from over-pressurization. The RPS consists of four physically separated, redundant instrument channels. The RPS monitors the following generating station variables:

1. Total out-of-core neutron flux
2. RCS coolant flow
3. RCS pump status
4. RCS reactor outlet temperature
5. RCS pressure
6. Containment Vessel pressure
7. Out-of-core neutron flux imbalance.

Each channel is served by its own independent sensors which are physically isolated from the sensors of the other protective channels. Each sensor supplies an input signal to one or more signal processing strings in the RPS channel. Each signal processing string terminates in a bistable which electronically compares the processed signal with trip setpoints. All bistable contacts are connected in series. In the normal untripped state, the contact associated with each bistable will be closed, thereby energizing the channel terminating relay. When any signal processing string's bistable contacts open, the channel terminating relay is de-energized (tripped). When the channel terminating relays for two out of the four RPS channels trip, each of the four RPS channels will cause their respective control rod drive trip breakers to open.

Each RPS channel is provided with a maintenance bypass which allows maintenance and periodic testing to be performed on individual channels. When initiated, the channel bypass will prevent the terminating relay of the bypassed channel from de-energizing (tripping) regardless of the state of each of the trip function bistable contacts. Therefore, when a channel is bypassed, the overall system trip coincidence is two-out-of-three. If two of the remaining three unbypassed channels trip, all four RPS channels will trip their associated control rod drive trip breakers.

The RPS shutdown bypass provides for bypassing certain functions of the RPS in order to permit control rod drive tests, zero power physics tests, and certain startup and shutdown procedures with the plant shut down. The shutdown bypass is initiated by turning the shutdown bypass key switch in each RPS channel. Turning the key switch removes the following trips from the logic train: power/imbalance/flow, power/pumps, RCS pressure-temperature, and low RCS pressure. The key switch also inserts the shutdown bypass high pressure trip. The setpoint of this trip is lower than the setpoint of the low pressure trip. During normal operation, the shutdown bypass high pressure trip bistable is normally tripped since operating pressure is greater than the trip setpoint. If the operator initiates the shutdown bypass with the unit at power, that RPS channel trips. The procedure for effecting this bypass is to wait until primary pressure is below the trip setpoint and the plant is shut down. The operator can then reset the tripped shutdown bypass bistable and turn the shutdown bypass key switch in each channel.

The RPS manual reactor trip is a redundant channel to the automatic RPS instrumentation channels, and provides the operators with manual reactor trip capability from the control room. Two manual trip switches in series are provided which are positioned downstream of the RPS reactor trip modules just before the input terminals of the Control Rod Drive Control System (CRDCS). Depressing either switch will interrupt power from all four RPS channels to the CRDCS. Because the manual trip is downstream of the automatic trips, no failure of the automatic trips will inactivate the manual trip. The two RPS trip switches are located in the control room and are mounted on either side of the control rod drive mechanism control system operator control panel.

Control Rod Drive Control System

The function of the Control Rod Drive Control System - Trip Portion is to interrupt power to the control rod drive mechanisms to insert control rods upon receipt of an RPS, Anticipatory Reactor Trip System (ARTS), Diverse SCRAM System (DSS), or manual trip signal.

A trip signal from the RPS or ARTS is applied to the undervoltage coils and the undervoltage relays of the CRD trip breakers causing the breakers to trip open, thereby removing power from the control rod drive motors, resulting in the insertion of control rods and a reactor trip.

The trip portion of the CRDCS is described in USAR Section 7.4.1.1, "Control Rod Drive Control System (CRDCS) - Trip Portion." The CRDCS trip logic is designed so that when power is removed from the control rod drive mechanisms, the roller nuts disengage from the lead screw, and a free-fall gravity insertion of the control rods occurs. Two diverse and independent trip methods, in series, are provided for removal of power to the mechanisms. First, a trip is initiated when power is interrupted to the undervoltage coils of the main A.C. feeder breakers and to the undervoltage relays in the shunt trip circuits. Second, a trip is initiated when the gating signals to the silicon controlled rectifiers (SCR) are interrupted. Since parallel power feeds are provided to the control rod drive mechanisms, interruption of both feeds is required for trip action in either method of trip. There are two CRD trip breakers per power feed, each associated with one of four Reactor Protection System channels.

The primary method of trip interrupts power to the CRD mechanism power supplies. Power circuit breakers equipped with instantaneous undervoltage coils and shunt trip devices are used as primary trip devices. The RPS channels energize the undervoltage coil of the breakers. A trip breaker can remain closed only if its undervoltage coil is energized. Upon loss of voltage at the undervoltage coil due to interruption by an RPS, ARTS or manual trip signal, the CRD trip breaker trips open. No external power is required to trip the breakers, which have stored-energy trip mechanisms. The trip breakers must be manually reset once tripped. Breaker reset is possible only after the trip signal is reset. The shunt trip undervoltage relay is installed in parallel with the undervoltage coil of the CRD trip breaker. Voltage interruption due to a trip signal deenergizes the undervoltage relay energizing the shunt trip device, which is powered from essential 125 VDC, thereby tripping the CRD trip breaker.

The second trip method interrupts the gate control signals to the SCRs in each of the nine CRD mechanisms motor power supplies, and the motor return power supply. The trip devices in this case are ten relays connected with their coils in parallel. Contacts of these relays interrupt the gate control signals to the SCRs in each power supply. When the gate signals are interrupted, the SCRs will revert to their open state on the next negative half-cycle of the applied A.C. voltage, thus removing all power at the outputs of the motor power supplies. Because the power supplies have redundant halves, two sets of ten relays each are provided. RPS channel 3 energizes one set of trip relays and RPS channel 4 energizes the other set through auxiliary relays in the breakers. The trip relays can remain in their non-tripped state only if the associated RPS channel is energized. When an RPS channel trips, the associated trip relays deenergize, interrupting the SCR gate control signals.

Nuclear Instrumentation (NI) System

The Nuclear Instrumentation (NI) System is described in USAR Section 7.8, "Nuclear Instrumentation (NI)." The NI System is designed to provide neutron flux information over the full range of reactor operations. To provide total monitoring, three ranges of neutron flux detectors are furnished: source range, intermediate range, and power range. The source and intermediate ranges are used for startup and shutdown indication. The intermediate range and power range are used for indication during power operations.

There are two source range channels, two intermediate range channels and four power range channels. This arrangement allows continuous monitoring of neutron flux level from source range to 125% of rated power. A minimum of one decade overlap between ranges is provided.

The source range instrumentation consists of two redundant channels, which use high sensitivity proportional counters as sensors. Each channel monitors neutron flux over the range of $10^{-1}$ to $10^{6}$ counts per second and provides readouts of log count rate and startup rate for operator information.

The intermediate range instrumentation consists of two redundant channels, which utilize gamma-compensated ion chambers as sensors. Each channel provides eight decades of flux level information in terms of the log of ion chamber current and startup rate. The ion chamber measuring range is from $10^{-11}$ to $10^{-3}$ amperes.

The power range instrumentation consists of four redundant, linear channels, which utilize uncompensated ion chambers as sensors. The channel output is directly proportional to reactor power and covers the range from 1% to 125% of rated power.

Each power range detector consists of two 72-inch sections with a single high voltage connection and two separate signal connections. The outputs of the two sections are amplified by linear amplifiers and then summed in the associated power range channel. A signal proportional to the differences in the percentage of rated power between the top and bottom halves of the core is derived from the difference in currents from the top and bottom sections of the detector. The difference signal is displayed on the control room console to permit the operator to maintain proper axial power distribution.

Incore Monitoring System

The Incore Monitoring System is described in DBNPS USAR Section 7.9, "Incore Monitor System." The IMS provides neutron flux detectors and core outlet thermocouples to monitor core performance. The IMS consists of assemblies of self-powered neutron detectors and thermocouples located at 52 positions within the core. The minimum incore detector requirements for calculating quadrant power tilt (QPT) are specified in the DBNPS Technical Requirements Manual (TRM) Section 3/4.3.3.2, "Monitoring Instrumentation - Incore Detectors." TRM Section 3/4.3.3.2 requires that at least 75% of the Symmetric Incore Detectors in each core quadrant be operable in order to use the IMS to determine QPT. The IMS provides input to the plant computer which provides an alarm when QPT exceeds the limits contained in the Core Operating Limits Report.

## 4.0 TECHNICAL ANALYSIS

Deletion of TS Table 3.3-1, Action Statement 2, and Renumbering of Functional Units in TS Table 3.3-1 and TS Table 4.3-1

Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.1.1 requires:

> As a minimum, the Reactor Protection System instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE.

TS Table 3.3-1 specifies the minimum operability requirements and required Actions for the eight instrument string trip functions (Functional Units 2 through 9) in addition to other RPS functions. The current Actions for a single inoperable instrument string Functional Unit are dependent upon which Functional Unit is inoperable. Action 2 is entered for a single inoperable High Flux or Flux-ΔFlux-Flow channel, and Action 3 is entered for a single inoperable Reactor Coolant (RC) High Temperature, RC Low Pressure, RC High Pressure, RC Pressure-Temperature, High Flux/Number of RC Pumps On, or Containment High Pressure channel. The only functional units affected by the proposed change are those for High Flux and Flux-ΔFlux-Flow channel. For these Functional Units, the proposed new Action for a single inoperable channel would be Action 3 rather than Action 2. The effect of this change would be that neither a reduction in the core thermal power and the high neutron flux reactor trip setpoint nor quadrant power tilt (QPT) monitoring at least once per 12 hours would be required when a single channel of High Flux or Flux-ΔFlux-Flow is inoperable.

The requirements of TS Table 3.3-1, Action 2, to reduce reactor thermal power and the high flux trip setpoint or monitor QPT at least once per 12 hours were apparently included to ensure appropriate actions were taken to compensate for the loss of QPT monitoring capability due to a loss of a power-range out-of-core neutron detector. However, the power-range out-of-core neutron detectors do not provide input to the quadrant power tilt alarm nor are they the preferred means to calculate quadrant power tilt. TS 3/4.2.4, "Quadrant Power Tilt," contains the limits on QPT and the requirements for monitoring QPT. TS Surveillance Requirement (SR) 4.2.4 states:

> The QUADRANT POWER TILT shall be determined to be $\leq$ the Steady State Limits provided in the CORE OPERATING LIMITS REPORT at least once every 7 days during operation above 15% of RATED THERMAL POWER except when the QUADRANT POWER TILT alarm is inoperable, then the QUADRANT POWER TILT shall be calculated at least once per 12 hours.

The Incore Monitoring System (IMS) is described is Section 7.9 of the DBNPS USAR. The IMS is used as both the input to the QPT alarm and the preferred input to calculating QPT which are used to satisfy TS SR 4.2.4. Operability requirements for the IMS are contained in DBNPS Technical Requirements Manual Section 3/4.3.3.2, "Monitoring Instrumentation - Incore Detectors." Although the out-of-core neutron detectors provide a redundant means of monitoring QPT, it is inappropriate to require a reduction in core power and high flux trip setpoint or increased monitoring of QPT, when the primary method (QPT alarm) and secondary method (calculating QPT using IMS) of monitoring QPT are available. Therefore, it is appropriate to remove the requirements to either reduce core thermal power and the high neutron flux reactor trip setpoint or increase monitoring of QPT when a High Flux or Flux-ΔFlux-Flow functional unit is inoperable. TS SR 4.2.4 will continue to ensure adequate monitoring of QPT. If QPT monitoring capability were lost, SR 4.2.4 could not be satisfied. With the requirements of SR 4.2.4 not satisfied, the reactor thermal power would be reduced to less than or equal to15% of rated thermal power in accordance with TS Action 3.2.4.d, whereby Limiting Condition for Operation 3.2.4 would no longer be applicable. Therefore, the proposed deletion of the TS Table 3.3-1, Action 2, requirements will have no adverse effect on nuclear safety.

The proposed formatting changes to TS Table 3.3-1 and Table 4.3-1 do not affect any Technical Specification requirements. The proposed changes would enhance the clarity of TS Table 3.3-1 and would revise TS Table 4.3-1 to be consistent with the revised format of TS Table 3.3-1. These proposed formatting changes are administrative in nature and will have no adverse effect on nuclear safety.

<u>TS Table 3.3-1 and Table 4.3-1 Functional Units 1, 10, 12, 13, 15 and Action Statement 1</u>

The proposed changes would modify the "Applicable Modes" column of Table 3.3-1 from "1, 2 and *" to "1, 2, 3*, 4*, 5*" for Functional Units 1, Manual Reactor Trip; 10, Intermediate Range, Neutron Flux and Rate; 12, Control Rod Drive Trip Breakers; 13, Reactor Trip Module; and 15, SCR Relays. A similar change is proposed for the "Modes in Which Surveillance Required" column of Table 4.3-1 for the same Functional Units. In addition, the asterisked footnotes to Table 3.3-1 and Table 4.3-1 would be revised to be consistent with each other.

These changes are consistent with NUREG-1430, Revision 2. The "Applicability" of NUREG-1430 Section 3.3.2, Reactor Protection System (RPS) Manual Reactor Trip, is "MODES 1 and 2, MODES 3, 4, and 5 with any CONTROL ROD drive (CRD) trip breaker in the closed position and the CRD System capable of rod withdrawal." The applicability statements of NUREG-1430 Section 3.3.3, Reactor Protection System (RPS) - Reactor Trip Module (RTM), Section 3.3.4, Control Rod Drive (CRD) Trip Devices, and Section 3.3.10, Intermediate Range Neutron Flux, are similar with the exception that the DBNPS TS applicability for intermediate range instrumentation additionally includes Mode 1.

The Functional Unit 1, "Manual Reactor Trip," in Table 3.3-1 currently is applicable in Modes 1 and 2. Table 4.3-1 currently lists the Manual Reactor Trip Functional Unit as not applicable in the "Modes in which Surveillance is Required" column. However, the Manual Reactor Trip surveillance requirement should be required whenever a control rod trip breaker is closed and the control rod drive trip system is capable of rod withdrawal. Accordingly, the "N.A." in Table 4.3-1 is being changed to "1, 2, 3*, 4*, 5*." Functional Units 1 and 12 must be operable whenever a control rod trip breaker is closed and the control rod drive trip system is capable of rod withdrawal; however, the channel functional test to demonstrate operability need only be performed within 7 days prior to each reactor startup, i.e., within 7 days prior to Mode 2 entry. This is consistent with the requirements of NUREG-1430, Revision 2.

Since the asterisked footnote currently applies to the applicability of each of these functional units (with the exception of the Manual Reactor Trip Functional Unit in Table 4.3-1 addressed above), and since the footnote-described condition of a control rod drive breaker being in a closed position and the control rod drive system capable of withdrawal can not occur in Mode 6, these changes will have no adverse effect on nuclear safety.

Action Statement 1 for Table 3.3-1 would be changed to reflect the addition of Modes "3*, 4*, 5*" to the "Applicable Modes" column. The proposed changes would require that the plant be placed in at least Hot Standby and the control rod drive trip breakers be opened within the next 6 hours if an inoperable channel could not be restored to operable status within the allowed time of 48 hours. The revised Action statement is similar to the required actions for NUREG-1430, Section 3.3.2, and will have no adverse effect on nuclear safety.

<u>TS Table 3.3-1 Functional Unit 11, and Action Statements 5 and 6</u>

The proposed changes would combine Table 3.3-1 Functional Units 11.A and 11.B into a single Functional Unit, Source Range, Neutron Flux and Rate. The combined Functional Unit 11 would require two channels operable in Modes 2, 3, 4, and 5, irrespective of whether the control rod drive trip breakers are in the closed position and the control rod drive system is capable of rod withdrawal.

These changes are consistent with NUREG-1430 Section 3.3.9, Source Range Neutron Flux, which requires two source range channels to be operable in Modes 2, 3, 4, and 5, also irrespective of whether the control rod drive trip breakers are in the closed position and the control rod drive system capable of rod withdrawal. In addition, these proposed changes would clarify the applicability requirements for source range instrumentation when the plant is undergoing a shutdown or a startup.

The proposed changes would also modify Table 3.3-1 Actions Statements 5 and 6 consistent with the NUREG-1430 Section 3.3.9 Actions. With only one of the two Source Range, Neutron Flux and Rate channels operable during the applicable Modes, Action 5 applies. Action 5 currently only applies to the Functional Unit 11.A, Source Range, Neutron Flux and Rate during startup, and the proposed change will also apply to the Source Range, Neutron Flux and Rate during shutdown in Modes 3, 4, and 5. In Modes 3, 4, and 5, the instrumentation will provide an early indication of reactivity changes. Action 5 will continue to require the restoration of an inoperable channel to operable status prior to increasing thermal power above $10^{-10}$ amps on the Intermediate Range instrumentation. Action 5 will be modified to also require the initiation of action to restore the inoperable Source Range, Neutron Flux and Rate channel if Action 5.b has been entered. This change provides an additional action to be taken when only one Source Range, Neutron Flux and Rate channel is operable.

With one of the two Source Range, Neutron Flux and Rate channels inoperable, Action 6 will no longer require verification of the shutdown margin within one hour and at least once per 12 hours thereafter. This is acceptable because Action 5 requirements will apply when one channel remains operable. The revised Action 6 will only apply when both Source Range, Neutron Flux and Rate channels are inoperable and will require the verification of shutdown margin within one hour and once per 12 hours thereafter with less than $10^{-10}$ amps on the Intermediate Range (IR) instrumentation. Additionally, all positive reactivity changes must be suspended, control rods inserted, and CRD trip breakers opened within one hour. With greater than $10^{-10}$ amps on the IR instrumentation, the loss of both channels will not prevent operation from continuing, however, action to restore both channels must be initiated within one hour. This is acceptable because the Source Range instrumentation does not perform a safety function during high power operation.

The revised action statements will ensure that appropriate actions are taken based on Intermediate Range instrumentation status. Therefore, these changes will have no adverse effect on nuclear safety.

TS Table 3.3-1 and Table 4.3-1 Functional Unit 14, and Table 3.3-1 Action Statement 11

Associated with the proposed changes to Table 3.3-1 Action Statements 5 and 6, the former Action Statement 6 is proposed to be renumbered as Action Statement 11. The renumbered Action Statement 11 would apply only to Functional Unit 14, Shutdown Bypass High Pressure. Previously, it had also applied to Functional Unit 11.b, Source Range, Neutron Flux and Rate - Shutdown, but was replaced with revised Action 5 as discussed above. This is an administrative change that will have no adverse effect on nuclear safety.

In addition, the proposed changes would revise the double-asterisked footnote to Table 3.3-1 and Table 4.3-1, which presently states "When Shutdown Bypass is actuated," expanding it to include the stipulation that the Functional Unit 14 requirements are applicable "with any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal." This change is consistent with NUREG-1430 Table 3.3.1-1, Reactor

Protection System Instrumentation, notation (b), which reads: "During shutdown bypass operation with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal." Since the safety function of the RPS is to trip the control rods, and since with the control rod trip breakers already open or the rods incapable of withdrawal, the RPS would not be hindered from performing its safety function, this change will have no adverse effect on nuclear safety.

TS Table 4.3-1 Functional Units 10 and 11, Notation (5)

The proposed change would modify Notation (5) of TS Table 4.3-1 to clarify that the one decade overlap requirement for the intermediate range (Functional Unit 10) and source range (Functional Unit 11) instrumentation is verified *during* each reactor startup rather than *prior to* each reactor startup. Use of the terminology "prior to reactor startup" could be construed to mean prior to Mode 2 entry since TS Table 1.1, Operational Modes, equates "Mode 2" and "Startup." However, Mode 2 entry is administratively declared prior to Control Rod Group 2 withdrawal, at which time the intermediate range instrumentation would not be on-scale, i.e., there could not be one decade of overlap. Therefore, the correct use of the surveillance requirement is to verify one decade of overlap *during* each reactor startup. This is an administrative change that will have no adverse effect on nuclear safety.

## 5.0 REGULATORY SAFETY ANALYSIS

### 5.1 No Significant Hazards Consideration

The proposed amendment would revise Technical Specification (TS) requirements for the Reactor Protection System (RPS) instrumentation. The proposed change would eliminate the requirement to either reduce core thermal power and the RPS high neutron flux trip setpoint or to monitor core quadrant power tilt (QPT) at an increased frequency when a single channel of RPS High Flux or Flux-ΔFlux-Flow is inoperable. Additionally, TS Table 3.3-1, "Reactor Protection System Instrumentation," and TS Table 4.3-1, "Reactor Protection System Instrumentation Surveillance Requirements," would be revised to enhance TS clarity and make the TS more consistent with NUREG-1430, "Standard Technical Specifications - Babcock and Wilcox Plants," Revision 2, dated April 2001.

An evaluation has been performed to determine whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

The proposed change does not result in an increase in the probability of an accident previously evaluated because no change is being made to any accident initiator. The proposed change does not result in an increase in the consequences of an accident previously evaluated because TS 3/4.2.4, "Quadrant Power Tilt," continues to ensure the radial power distribution of the core is within the limits assumed in the accident analyses. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

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

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

   Response: No.

   The proposed change does not alter any safety limit or any initial conditions contributing to accident severity or consequences. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment 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.

## 5.2 Applicable Regulatory Requirements/Criteria

The regulatory basis of TS 3/4.3.1, "Reactor Protection System Instrumentation," is to ensure that 1) the associated action and/or trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for the RPS purposes from diverse parameters. The proposed content and formatting changes to TS Table 3.3-1 and Table 4.3-1 are consistent with the NRC guidance provided in NUREG-1430, Revision 2, and would not affect the DBNPS's compliance with regulatory requirements.

Due to the date of the issuance of its construction permit, the DBNPS was not required to meet 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants." However, the following discusses how the DBNPS meets the intent of relevant General Design Criteria.

General Design Criterion (GDC) 12, "Suppression of Reactor Power Oscillations," requires protection systems, such as the RPS, be designed to assure that power oscillations which can result in conditions exceeding specified acceptable fuel design limits are reliably and readily detected and suppressed.

GDC 13, "Instrumentation and Control," requires instrumentation, such as RPS instrumentation, be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety.

GDC 20, "Protection System Functions," requires the protection system to be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

GDC 21, "Protection System Reliability and Testability," requires the protection system to be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed.

GDC 22, "Protection System Independence," requires the protection system to be designed to assure that the effects of natural phenomena, and of normal operating, maintenance, testing, and postulated accident conditions on redundant channels do not result in loss of the protection function, or shall be demonstrated to be acceptable on some other defined basis.

GDC 23, "Protection System Failure Modes," requires the protection system to be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the system, loss of energy (e.g., electric power, instrument air), or postulated adverse environments (e.g., extreme heat or cold, fire, pressure, steam, water, and radiation) are experienced.

GDC 24, "Separation of Protection and Control Systems," requires the protection system to be separated from control systems to the extent that failure of any single control system component or channel, or failure or removal from service of any single protection system component or channel which is common to the control and protection systems leaves intact a system satisfying all reliability, redundancy, and independence requirements of the protection system.

GDC 25, "Protection System Requirements for Reactivity Control Malfunctions," requires the protection system to be designed to assure that specified acceptable fuel design limits are not exceeded for any single malfunction of the reactivity control systems, such as accidental withdrawal (not ejection or dropout) of control rods.

GDC 29, "Protection Against Anticipated Operational Occurrences," requires the protection and reactivity control systems to be designed to assure an extremely high probability of accomplishing their safety functions in the event of anticipated operational occurrences.

Institute of Electrical and Electronics Engineers (IEEE) Standard 279-1968, "Criteria for Protection Systems for Nuclear Power Generating Stations," contains system design requirements applicable to the RPS.

The proposed changes to TS 3/4.3.1, "Reactor Protection System Instrumentation," do not change the design of the RPS. The intent of the GDC will continue to be met by the DBNPS RPS as described in DBNPS USAR Appendix 3D, "Conformance with the NRC General Design Criteria, Safety Guides, and Information Guides." IEEE Standard 279-1968 will continue to be met as described in DBNPS USAR Section 7.2.2.1, "Compliance with IEEE Standard 279-1968."

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 of the DBNPS 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.

## 6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment 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 amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment 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 amendment.

## 7.0 REFERENCES

1. DBNPS Operating License NPF-3, Appendix A Technical Specifications through Amendment 247.

2. DBNPS Updated Safety Analysis Report through Revision 22.

3. NUREG-1430, Standard Technical Specifications - Babcock and Wilcox Plants, Revision 2, dated April 2001.

## 8.0 ATTACHMENTS

1. Proposed Mark-Up of Technical Specification Pages

2. Proposed Retyped Technical Specification Pages

3. Technical Specification Bases Pages

**PROPOSED MARK-UP
OF
TECHNICAL SPECIFICATION PAGES**

(12 pages follow)

INFORMATION ONLY

QUADRANT POWER TILT

LIMITING CONDITION FOR OPERATION

3.2.4 THE QUADRANT POWER TILT shall not exceed the Steady State Limit for QUADRANT POWER TILT provided in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: MODE 1 above 15% of RATED THERMAL POWER.*

ACTION:

a. With the QUADRANT POWER TILT determined to exceed the Steady State Limit but less than or equal to the Transient Limit provided in the CORE OPERATING LIMITS REPORT:

   1. Within 2 hours:

      a) Either reduce the QUADRANT POWER TILT to within its Steady State Limit, or

      b) Reduce THERMAL POWER so as not to exceed THERMAL POWER, including power level cutoff, allowable for the reactor coolant pump combination less at least 2% for each 1% of QUADRANT POWER TILT in excess of the Steady State Limit and within 4 hours, reduce the High Flux Trip Setpoint and the Flux-Δ Flux-Flow Trip Setpoint at least 2% for each 1% of QUADRANT POWER TILT in excess of the Steady State Limit.

   2. Verify that the QUADRANT POWER TILT is within its Steady State Limit within 24 hours after exceeding the Steady State Limit or reduce THERMAL POWER to less than 60% of THERMAL POWER allowable for the reactor coolant pump combination within the next 2 hours and reduce the High Flux Trip Setpoint to $\leq$ 65.5% of THERMAL POWER allowable for the reactor coolant pump combination within the next 4 hours.

   3. Identify and correct the cause of the out of limit condition prior to increasing THERMAL POWER; subsequent POWER OPERATION above 60% of THERMAL POWER allowable for the reactor coolant pump combination may proceed provided that the QUADRANT POWER TILT is verified within its Steady State Limit at least once per hour for 12 hours or until verified acceptable at 95% or greater RATED THERMAL POWER.

*See Special Test Exception 3.10.1.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

b. With the QUADRANT POWER TILT determined to exceed the Transient Limit but less than the Maximum Limit provided in the CORE OPERATING LIMITS REPORT, due to misalignment of either a safety, regulating or axial power shaping rod:

1. Reduce THERMAL POWER at least 2% for each 1% of indicated QUADRANT POWER TILT in excess of the Steady State Limit within 30 minutes.

2. Verify that the QUADRANT POWER TILT is within its Transient Limit within 2 hours after exceeding the Transient Limit or reduce THERMAL POWER to less than 60% of THERMAL POWER allowable for the reactor coolant pump combination within the next 2 hours and reduce the High Flux Trip Setpoint to $\leq$ 65.5% of THERMAL POWER allowable for the reactor coolant pump combination within the next 4 hours.

3. Identify and correct the cause of the out of limit condition prior to increasing THERMAL POWER; subsequent POWER OPERATION above 60% of THERMAL POWER allowable for the reactor coolant pump combination may proceed provided that the QUADRANT POWER TILT is verified within its Steady State Limit at least once per hour for 12 hours or until verified acceptable at 95% or greater RATED THERMAL POWER

c. With the QUADRANT POWER TILT determined to exceed the Transient Limit but less than the Maximum Limit provided in the CORE OPERATING LIMITS REPORT, due to causes other than the misalignment of either a safety, regulating or axial power shaping rod:

1. Reduce THERMAL POWER to less than 60% of THERMAL POWER allowable for the reactor coolant pump combination within 2 hours and reduce the High Flux Trip Setpoint to $\leq$ 65.5% of THERMAL POWER allowable for the reactor coolant pump combination within the next 4 hours.

2. Identify and correct the cause of the out of limit condition prior to increasing THERMAL POWER; subsequent POWER OPERATION above 60% of THERMAL POWER allowable for the reactor coolant pump combination may proceed provided that the QUADRANT POWER TILT is verified within its Steady State Limit at least once per hour for 12 hours or until verified at 95% or greater RATED THERMAL POWER.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

d. With the QUADRANT POWER TILT determined to exceed the Maximum Limit provided in the CORE OPERATING LIMITS REPORT, reduce THERMAL POWER to ≤ 15% of RATED THERMAL POWER within 2 hours.

SURVEILLANCE REQUIREMENTS

4.2.4 The QUADRANT POWER TILT shall be determined to be ≤ the Steady State Limits provided in the CORE OPERATING LIMITS REPORT at least once every 7 days during operation above 15% of RATED THERMAL POWER except when the QUADRANT POWER TILT alarm is inoperable, then the QUADRANT POWER TILT shall be calculated at least once per 12 hours.


(Next page is 3/4 2-13)

# INFORMATION ONLY

## 3/4.3 INSTRUMENTATION

### 3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

3.3.1.1 As a minimum, the Reactor Protection System instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

ADDITIONAL CHANGES PREVIOUSLY PROPOSED BY LETTER
Serial No. 2625 Date 4/1/01

#### SURVEILLANCE REQUIREMENTS

4.3.1.1.1 Each Reactor Protection System instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.1.2 The total bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.1.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME* of each reactor trip function shall be demonstrated to be within its limit at least once per REFUELING INTERVAL. Neutron detectors are exempt from response time testing; the response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of the first electronic component in the channel. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

* The response times include the sensor (except for the neutron detectors), Reactor Protection System instrument delay, and the control rod drive breaker delay. A delay time has been assumed for the Reactor Coolant Pump monitor in the determination of the response time of the High Flux/Number of Reactor Coolant Pumps On functional unit.

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|
| 1. Manual Reactor Trip | 2 | 1 | 2 | 1, 2, 3*, 4*, 5* ~~and *~~ | 1 |
| 2. Instrument Strings | 4 | 2 | 3 | 1, 2 | 3~~2~~#, 10 |
| a. High Flux | | | | | |
| b. ~~3.~~ RC High Temperature | ~~4~~ | ~~2~~ | ~~3~~ | ~~1, 2~~ | ~~3#, 10~~ |
| c. ~~4.~~ Flux - ΔFlux - Flow (a)(b) | ~~4~~ | ~~2(a)(b)~~ | ~~3~~ | ~~1, 2~~ | ~~2#, 10~~ |
| d. ~~5.~~ RC Low Pressure (a) | ~~4~~ | ~~2(a)~~ | ~~3~~ | ~~1, 2~~ | ~~3#, 10~~ |
| e. ~~6.~~ RC High Pressure | ~~4~~ | ~~2~~ | ~~3~~ | ~~1, 2~~ | ~~3#, 10~~ |
| f. ~~7.~~ RC Pressure-Temperature (a) | ~~4~~ | ~~2(a)~~ | ~~3~~ | ~~1, 2~~ | ~~3#, 10~~ |
| g. ~~8.~~ High Flux/Number of Reactor Coolant Pumps On (a)(b) | ~~4~~ | ~~2(a)(b)~~ | ~~3~~ | ~~1, 2~~ | ~~3#, 10~~ |
| h. ~~9.~~ Containment High Pressure | ~~4~~ | ~~2~~ | ~~3~~ | ~~1, 2~~ | ~~3#, 10~~ |
| 3~~10~~. Intermediate Range, Neutron Flux and Rate | 2 | N/A | 2(c) | 1, 2, 3*, 4*, 5* ~~and *~~ | 4 |
| 4~~11~~. Source Range, Neutron Flux and Rate | | | | | |
| ~~A. Startup~~ | 2 | N/A | 2 | 2 ##, 3, 4, 5 ~~and *~~ | 5, 6 |
| ~~B. Shutdown~~ | ~~2~~ | ~~N/A~~ | ~~1~~ | ~~3, 4 and 5~~ | 6 |
| 5~~12~~. Control Rod Drive Trip Breakers | 2 per trip system | 1 per trip system | 2 per trip system | 1, 2, 3*, 4*, 5* ~~and *~~ | 7#, 8# |
| 6~~13~~. Reactor Trip Module | 2 per trip system | 1 per trip system | 2 per trip system | 1, 2, 3*, 4*, 5* ~~and *~~ | 7# |
| 7~~14~~. Shutdown Bypass High Pressure | 4 | 2 | 3 | 2**, 3** 4**, 5** | ~~6~~11# |
| 8~~15~~. SCR Relays | 2 | 2 | 2 | 1, 2, 3*, 4*, 5* ~~and *~~ | 9# |

TABLE 3.3-1 (Continued)

TABLE NOTATION

* With ~~the~~ any control rod drive trip breaker~~s~~ in the closed position and the control rod drive system capable of rod withdrawal.

** When Shutdown Bypass is actuated with any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal.

# The provisions of Specification 3.0.4 are not applicable.

## High voltage to detector may be de-energized above $10^{-10}$ amps on both Intermediate Range channels.

(a) Trip may be manually bypassed when RCS pressure ≤ 1820 psig by actuating Shutdown Bypass provided that:

(1) The High Flux Trip Setpoint is ≤ 5% of RATED THERMAL POWER,

(2) The Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and

(3) The Shutdown Bypass is removed when RCS pressure > 1820 psig.

(b) Trip may be manually bypassed when Specification 3.10.3 is in effect.

(c) The minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY ~~within the next 6 hours~~ and ~~/or~~ open the control rod drive trip breakers within the next 6 hours.

ACTION 2 - Deleted ~~With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided both of the following conditions are satisfied:~~

~~a. The inoperable channel is placed in the bypassed or tripped condition within one hour.~~

~~b. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL POWER and the High Flux Trip Setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours or the QUADRANT POWER TILT is monitored at least once per 12 hours.~~

ACTION STATEMENTS (Continued)

ACTION 3 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and POWER OPERATION may proceed provided the inoperable channel is placed in the bypassed or tripped condition within one hour.

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. ≤ 5% of RATED THERMAL POWER restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

b. > 5% of RATED THERMAL POWER, POWER OPERATION may continue.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above $10^{-10}$ amps on the IR instrumentation.

b. $> 10^{-10}$ amps on the IR instrumentation, operation may continue. Within one hour, initiate action to restore the affected channel to OPERABLE status.

ACTION 6 - ~~With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 within one hour and at least once per 12 hours thereafter.~~ With the number of channels OPERABLE two less than required by the Minimum Channels OPERABLE requirement, and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, immediately suspend operations involving positive reactivity changes, immediately initiate action to insert all control rods, and open all control rod drive trip breakers within one hour. Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 within one hour and at least once per 12 hours thereafter.

b. $>10^{-10}$ amps on the IR instrumentation, operation may continue. Within one hour, initiate action to restore affected channels to OPERABLE status.

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided all of the following conditions are satisfied:

a. Within 1 hour:

1. Place the inoperable channel in the tripped condition, or

2. Remove power supplied to the control rod trip device associated with the inoperative channel.

b. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1, and the inoperable channel above may be bypassed for up to 30 minutes in any 24 hour period when necessary to test the trip breaker associated with the logic of the channel being tested per Specification 4.3.1.1.1. The inoperable channel above may not be bypassed to test the logic of a channel of the trip system associated with the inoperable channel.


(Next page is 3/4 3-5a.)

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 8 - With one of the Reactor Trip Breaker diverse trip features (undervoltage or shunt trip devices) inoperable, restore it to OPERABLE status in 48 hours or place the breaker in trip in the next hour.

ACTION 9 - With one or both channels of SCR Relays inoperable, restore the channels to OPERABLE status during the next COLD SHUTDOWN exceeding 24 hours.

ACTION 10 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, within one hour, place one inoperable channel in trip and the second inoperable channel in bypass, and restore one of the inoperable channels to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and open the reactor trip breakers.

ACTION 11 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 within one hour and at least once per 12 hours thereafter.


(Next page is 3/4 3-6.)

INFORMATION ONLY

DELETED

TABLE 4.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. Manual Reactor Trip | N.A. | N.A. | S/U(1) | 1, 2, 3*, 4*, 5*~~N.A.~~ |
| 2. Instrument Strings | | | | |
| a. High Flux | S | D(2), and Q(6,9) | N.A. | 1, 2 |
| b. ~~3.~~ RC High Temperature | S | R | SA(9) | 1, 2 |
| c. ~~4.~~ Flux - ΔFlux - Flow | S(4) | M(3) and Q(6,7,9) | N.A. | 1, 2 |
| d. ~~5.~~ RC Low Pressure | S | R | SA(9) | 1, 2 |
| e. ~~6.~~ RC High Pressure | S | R | SA(9) | 1, 2 |
| f. ~~7.~~ RC Pressure-Temperature | S | R | SA(9) | 1, 2 |
| g. ~~8.~~ High Flux/Number of Reactor Coolant Pumps On | S | Q(6,9) | N.A. | 1, 2 |
| h. ~~9.~~ Containment High Pressure | S | E | SA(9) | 1, 2 |
| 3~~10~~. Intermediate Range, Neutron Flux and Rate | S | E(6) | N.A.(5) | 1, 2, 3*, 4*, 5* ~~and *~~ |
| 4~~11~~. Source Range, Neutron Flux and Rate | S | E(6) | N.A.(5) | 2, 3, 4 and 5 |
| 5~~12~~. Control Rod Drive Trip Breakers | N.A. | N.A. | Q(8,9) and S/U(1)(8) | 1, 2, 3*, 4*, 5* ~~and *~~ |
| 6~~13~~. Reactor Trip Module Logic | N.A. | N.A. | Q(9) | 1, 2, 3*, 4*, 5* ~~and *~~ |
| 7~~14~~. Shutdown Bypass High Pressure | S | R | SA(9) | 2**, 3**, 4**, 5** |
| 8~~15~~. SCR Relays | N.A. | N.A. | R | 1, 2, 3*, 4*, 5* ~~and *~~ |

## TABLE 4.3-1 (Continued)

Notation

(1) - If not performed in previous 7 days.

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - When THERMAL POWER [TP] is above 50% of RATED THERMAL POWER [RTP], and at a steady state, compare out-of-core measured AXIAL POWER IMBALANCE [$API_O$] to incore measured AXIAL POWER IMBALANCE [$API_I$] as follows:

$$\frac{RTP}{TP}[API_O - API_I] = \text{Offset Error}$$

Recalibrate if the absolute value of the Offset Error is ≥ 2.5%.

(4) - AXIAL POWER IMBALANCE and loop flow indications only.

(5) - CHANNEL FUNCTIONAL TEST is not applicable. Verify at least one decade overlap ~~prior to~~once each reactor startup if not verified in previous 7 days.

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) - Flow rate measurement sensors may be excluded from CHANNEL CALIBRATION. However, each flow measurement sensor shall be calibrated at least once each REFUELING INTERVAL.

(8) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the Reactor Trip Breakers.

(9) - Performed on a STAGGERED TEST BASIS.

* - With any control rod drive trip breaker in the closed~~.~~ position and the control rod drive system capable of rod withdrawal.

** - When Shutdown Bypass is actuated~~.~~ with any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal.

**PROPOSED RETYPED
TECHNICAL SPECIFICATION PAGES**
(6 pages follow)

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT | TOTAL NO. OF CHANNELS | CHANNELS TO TRIP | MINIMUM CHANNELS OPERABLE | APPLICABLE MODES | ACTION |
|---|---|---|---|---|---|
| 1. Manual Reactor Trip | 2 | 1 | 2 | 1, 2, 3*, 4*, 5* | 1 |
| 2. Instrument Strings | 4 | 2 | 3 | 1, 2 | 3#, 10 |
| a. High Flux | | | | | |
| b. RC High Temperature | | | | | |
| c. Flux - ΔFlux - Flow (a)(b) | | | | | |
| d. RC Low Pressure (a) | | | | | |
| e. RC High Pressure | | | | | |
| f. RC Pressure-Temperature (a) | | | | | |
| g. High Flux/Number of Reactor Coolant Pumps On (a)(b) | | | | | |
| h. Containment High Pressure | | | | | |
| 3. Intermediate Range, Neutron Flux and Rate | 2 | N/A | 2(c) | 1, 2, 3*, 4*, 5* | 4 |
| 4. Source Range, Neutron Flux and Rate | 2 | N/A | 2 | 2 ##, 3, 4, 5 | 5, 6 |
| 5. Control Rod Drive Trip Breakers | 2 per trip system | 1 per trip system | 2 per trip system | 1, 2, 3*, 4*, 5* | 7#, 8# |
| 6. Reactor Trip Module | 2 per trip system | 1 per trip system | 2 per trip system | 1, 2, 3*, 4*, 5* | 7# |
| 7. Shutdown Bypass High Pressure | 4 | 2 | 3 | 2**, 3** 4**, 5** | 11# |
| 8. SCR Relays | 2 | 2 | 2 | 1, 2, 3*, 4*, 5* | 9# |

TABLE 3.3-1 (Continued)

TABLE NOTATION

* With any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal.

** When Shutdown Bypass is actuated with any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal.

# The provisions of Specification 3.0.4 are not applicable.

## High voltage to detector may be de-energized above $10^{-10}$ amps on both Intermediate Range channels.

(a) Trip may be manually bypassed when RCS pressure ≤ 1820 psig by actuating Shutdown Bypass provided that:

(1) The High Flux Trip Setpoint is ≤ 5% of RATED THERMAL POWER,

(2) The Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and

(3) The Shutdown Bypass is removed when RCS pressure > 1820 psig.

(b) Trip may be manually bypassed when Specification 3.10.3 is in effect.

(c) The minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY and open the control rod drive trip breakers within the next 6 hours.

ACTION 2 - Deleted

ACTION STATEMENTS (Continued)

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above $10^{-10}$ amps on the IR instrumentation.

b. $> 10^{-10}$ amps on the IR instrumentation, operation may continue. Within one hour, initiate action to restore the affected channel to OPERABLE status.

ACTION 6 - With the number of channels OPERABLE two less than required by the Minimum Channels OPERABLE requirement, and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, immediately suspend operations involving positive reactivity changes, immediately initiate action to insert all control rods, and open all control rod drive trip breakers within one hour. Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 within one hour and at least once per 12 hours thereafter.

b. $>10^{-10}$ amps on the IR instrumentation, operation may continue. Within one hour, initiate action to restore affected channels to OPERABLE status.

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided all of the following conditions are satisfied:

a. Within 1 hour:

1. Place the inoperable channel in the tripped condition, or

2. Remove power supplied to the control rod trip device associated with the inoperative channel.

b. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1, and the inoperable channel above may be bypassed for up to 30 minutes in any 24 hour period when necessary to test the trip breaker associated with the logic of the channel being tested per Specification 4.3.1.1.1. The inoperable channel above may not be bypassed to test the logic of a channel of the trip system associated with the inoperable channel.


(Next page is 3/4 3-5a.)

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 8 - With one of the Reactor Trip Breaker diverse trip features (undervoltage or shunt trip devices) inoperable, restore it to OPERABLE status in 48 hours or place the breaker in trip in the next hour.

ACTION 9 - With one or both channels of SCR Relays inoperable, restore the channels to OPERABLE status during the next COLD SHUTDOWN exceeding 24 hours.

ACTION 10 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, within one hour, place one inoperable channel in trip and the second inoperable channel in bypass, and restore one of the inoperable channels to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and open the reactor trip breakers.

ACTION 11 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 within one hour and at least once per 12 hours thereafter.


(Next page is 3/4 3-6.)

TABLE 4.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES IN WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. Manual Reactor Trip | N.A. | N.A. | S/U(1) | 1, 2, 3*, 4*, 5* |
| 2. Instrument Strings | | | | |
| a. High Flux | S | D(2), and Q(6,9) | N.A. | 1, 2 |
| b. RC High Temperature | S | R | SA(9) | 1, 2 |
| c. Flux - ΔFlux - Flow | S(4) | M(3) and Q(6,7,9) | N.A. | 1, 2 |
| d. RC Low Pressure | S | R | SA(9) | 1, 2 |
| e. RC High Pressure | S | R | SA(9) | 1, 2 |
| f. RC Pressure-Temperature | S | R | SA(9) | 1, 2 |
| g. High Flux/Number of Reactor Coolant Pumps On | S | Q(6,9) | N.A. | 1, 2 |
| h. Containment High Pressure | S | E | SA(9) | 1, 2 |
| 3. Intermediate Range, Neutron Flux and Rate | S | E(6) | N.A.(5) | 1, 2, 3*, 4*, 5* |
| 4. Source Range, Neutron Flux and Rate | S | E(6) | N.A.(5) | 2, 3, 4 and 5 |
| 5. Control Rod Drive Trip Breakers | N.A. | N.A. | Q(8,9) and S/U(1)(8) | 1, 2, 3*, 4*, 5* |
| 6. Reactor Trip Module Logic | N.A. | N.A. | Q(9) | 1, 2, 3*, 4*, 5* |
| 7. Shutdown Bypass High Pressure | S | R | SA(9) | 2**, 3**, 4**, 5** |
| 8. SCR Relays | N.A. | N.A. | R | 1, 2, 3*, 4*, 5* |

TABLE 4.3-1 (Continued)

Notation

(1) - If not performed in previous 7 days.

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - When THERMAL POWER [TP] is above 50% of RATED THERMAL POWER [RTP], and at a steady state, compare out-of-core measured AXIAL POWER IMBALANCE [$API_O$] to incore measured AXIAL POWER IMBALANCE [$API_I$] as follows:

$$\frac{RTP}{TP}[API_O - API_I] = \text{Offset Error}$$

Recalibrate if the absolute value of the Offset Error is ≥ 2.5%.

(4) - AXIAL POWER IMBALANCE and loop flow indications only.

(5) - CHANNEL FUNCTIONAL TEST is not applicable. Verify at least one decade overlap once each reactor startup if not verified in previous 7 days.

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) - Flow rate measurement sensors may be excluded from CHANNEL CALIBRATION. However, each flow measurement sensor shall be calibrated at least once each REFUELING INTERVAL.

(8) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the Reactor Trip Breakers.

(9) - Performed on a STAGGERED TEST BASIS.

* - With any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal.

** - When Shutdown Bypass is actuated with any control rod drive trip breaker in the closed position and the control rod drive system capable of rod withdrawal.

**TECHNICAL SPECIFICATION BASES PAGES**
(3 pages follow)

*Note: The Bases pages are provided for information only.*

3/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND SAFETY SYSTEM INSTRUMENTATION

The OPERABILITY of the RPS, SFAS and SFRCS instrumentation systems ensure that 1) the associated action and/or trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for RPS, SFAS and SFRCS purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability. The response time limits for these instrumentation systems are located in the Updated Safety Analysis Report and are used to demonstrate OPERABILITY in accordance with each system's response time surveillance requirements.

As indicated in RPS Table 4.3-1 for Functional Units 1 and 5, a CHANNEL FUNCTIONAL TEST is required to be performed for the Manual Reactor Trip function and the CRD Trip Breakers function once prior to each reactor startup, i.e., prior to Mode 2 entry, if not performed within the previous 7 days. These surveillance requirements ensure the OPERABILITY of these Functional Units prior to achieving criticality.

With THERMAL POWER $\geq 10^{-10}$ amps on the intermediate range neutron flux instrumentation during the applicable MODES in Table 3.3-1, continued operation is allowed with one or more source range neutron flux and rate channels inoperable. The ability to continue operation is justified because the instrumentation does not provide a safety function during high power operation. However, actions are required to be initiated within one hour to restore the channel(s) to OPERABLE status for future availability. The completion time of one hour is sufficient to initiate a corrective action program report, maintenance deficiency tag, or other means to ensure prompt corrective action for the inoperable channel.

For the RPS, SFAS Table 3.3-4 Functional Unit Instrument Strings b, c, d, e, and f, and Interlock Channel a, and SFRCS Table 3.3-12 Functional Unit 2:

> Only the Allowable Value is specified for each Function. Nominal trip setpoints are specified in the setpoint analysis. The nominal trip setpoints are selected to ensure the setpoints measured by CHANNEL FUNCTIONAL TESTS do not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable provided that operation and testing are consistent with the assumptions of the specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis to account for instrument uncertainties appropriate to the trip parameter. These uncertainties are defined in the specific setpoint analysis.

3/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND SAFETY SYSTEM INSTRUMENTATION (Continued)

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. Setpoints must be found within the specified Allowable Values. Any setpoint adjustment shall be consistent with the assumptions of the current specific setpoint analysis.

A CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the setpoint analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the setpoint analysis.

The frequency is justified by the assumption of an 18 or 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

The measurement of response time at the specified frequencies provides assurance that the RPS, SFAS, and SFRCS action function associated with each channel is completed within the time limit assumed in the safety analyses.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

The SFRCS RESPONSE TIME for the turbine stop valve closure is based on the combined response times of main steam line low pressure sensors, logic cabinet delay for main steam line low pressure signals and closure time of the turbine stop valves. This SFRCS RESPONSE TIME ensures that the auxiliary feedwater to the unaffected steam generator will not be isolated due to a SFRCS low pressure trip during a main steam line break accident.

Surveillance Requirement 4.3.2.2.3 requires demonstration that each SFRCS function can be performed within the applicable SFRCS RESPONSE TIME. When this surveillance requirement can not be met due to an inoperable SFRCS-actuated component, the LCO ACTION associated with the inoperable actuated component should be entered. When the SFRCS RESPONSE TIME surveillance requirement can not be met due to inoperable components within the SFRCS, ACTION 16 of Table 3.3-11 should be followed.

The actuation logic for Functional Units 4.a., 4.b., and 4.c. of Table 3.3-3, Safety Features Actuation System Instrumentation, is designed to provide protection and actuation of a single train of safety features equipment, essential bus or emergency diesel generator. Collectively, Functional Units 4.a., 4.b., and 4.c. function to detect a degraded voltage condition on either of the two 4160 volt essential buses, shed connected loads, disconnect the affected bus(es) from the offsite power source and start the associated emergency diesel generator. In addition, if an SFAS actuation signal is present under these conditions, the sequencer channels for the two SFAS channels which actuate the train of safety

BASES

3/4.3.1 and 3/4.3.2 REACTOR PROTECTION SYSTEM AND SAFETY SYSTEM INSTRUMENTATION (Continued)

features equipment powered by the affected bus will automatically sequence these loads onto the bus to prevent overloading of the emergency diesel generator. Functional Unit 4.a. has a total of four units, one associated with each SFAS channel (i.e., two for each essential bus). Functional Units 4.b. and 4.c. each have a total of four units, (two associated with each essential bus); each unit consisting of two undervoltage relays and an auxiliary relay.

An SFRCS channel consists of 1) the sensing device(s), 2) associated logic and output relays, and 3) power sources. The SFRCS output signals that close the Main Feedwater Block Valves (FW-779 and FW-780) and trip the Anticipatory Reactor Trip System (ARTS) are not required to mitigate any accident and are not credited in any safety analysis. Therefore, LCO 3.3.2.2 does not apply to these functions.

Safety-grade anticipatory reactor trip is initiated by a turbine trip (above 45 percent of RATED THERMAL POWER) or trip of both main feedwater pump turbines. This anticipatory trip will operate in advance of the reactor coolant system high pressure reactor trip to reduce the peak reactor coolant system pressure and thus reduce challenges to the pilot operated relief valve. This anticipatory reactor trip system was installed to satisfy Item II.K.2.10 of NUREG-0737.

Docket Number 50-346
License Number NPF-3
Serial Number 2724
Enclosure 2

## COMMITMENT LIST

THE FOLLOWING LIST IDENTIFIES THOSE ACTIONS COMMITTED TO BY THE DAVIS-BESSE NUCLEAR POWER STATION (DBNPS) IN THIS DOCUMENT. ANY OTHER ACTIONS DISCUSSED IN THE SUBMITTAL REPRESENT INTENDED OR PLANNED ACTIONS BY THE DBNPS. THEY ARE DESCRIBED ONLY FOR INFORMATION AND ARE NOT REGULATORY COMMITMENTS. PLEASE NOTIFY THE MANAGER – REGULATORY AFFAIRS (419-321-8450) AT THE DBNPS OF ANY QUESTIONS REGARDING THIS DOCUMENT OR ANY ASSOCIATED REGULATORY COMMITMENTS.

| COMMITMENTS | DUE DATE |
|---|---|
| None | N/A |