FENOC

FirstEnergy Nuclear Operating Company

5501 North State Route 2
Oak Harbor, Ohio 43449

Mark B. Bezilla
Vice President - Nuclear

419-321-7676
Fax: 419-321-7582

Docket Number 50-346

10 CFR 50.90

License Number NPF-3

Serial Number 3009

May 5, 2004

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Subject: Davis-Besse Nuclear Power Station
License Amendment Application to Revise Technical Specification (TS) 3/4.3.2.1, Safety Features Actuation System Instrumentation Setpoints and Surveillance Testing Requirements (License Amendment Request (LAR) 03-0014)

Ladies and Gentlemen:

Pursuant to 10 CFR 50.90, the following amendment is requested for the Davis-Besse Nuclear Power Station, Unit 1 (DBNPS). These changes are primarily being requested as a result of a review and update of related setpoint calculations. The proposed amendment would revise Technical Specification (TS) Table 1.2, "Frequency Notation;" TS 3/4.3.2, "Safety System Instrumentation" – "Safety Features Actuation System Instrumentation;" TS 3/4.3.2.1 Table 3.3-3, "Safety Features Actuation System Instrumentation;" TS 3/4.3.2.1 Table 3.3-4, "Safety Features Actuation System Instrumentation Trip Setpoints;" and TS 3/4.3.2.1 Table 4.3-2, "Safety Features Actuation System Instrumentation Surveillance Requirements." The proposed changes would add a definition of "annual" frequency for use in the TS. The proposed changes also remove the "Trip Setpoint" values for Functional Unit Sequence Logic Channel "a", "Essential Bus Feeder Breaker Trip (90%)", and Functional Unit Sequence Logic Channel "b", "Diesel Generator Start, Load Shed on Essential Bus (59%)" and rename these trip relays to more accurately reflect their design function. The proposed amendment would also revise the "Allowable Values" entries and would establish annual calibration requirements for these same Functional Units, consistent with updated calculations and current setpoint methodology.

The proposed changes incorporate administrative limits presently maintained by the DBNPS to ensure adequate voltage is provided to safety-related loads, and to preclude inadvertent actuation of the 4160 Volt Loss of Voltage Relay (LVR) logic. Accordingly, the DBNPS requests that this

A001

license amendment be approved by December 7, 2004. Once approved, the amendment will be implemented within 120 days.

The proposed changes have been reviewed by the DBNPS onsite review board and the offsite nuclear review board.

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

The statements contained in this submittal, including its associated enclosures and attachments, are true and correct to the best of my knowledge and belief. I declare under penalty of perjury that I am authorized by the FirstEnergy Nuclear Operating Company to make this request and the foregoing is true and correct.

Executed on: May 5, 2004

By: MWB Bezilla
Mark B. Bezilla, Vice President-Nuclear

MSH

Enclosures

cc: Regional Administrator, NRC Region III
J. B. Hopkins, NRC/NRR Senior Project Manager
D. J. Shipley, Executive Director, Ohio Emergency Management Agency, State of Ohio (NRC Liaison)
C. S. Thomas, NRC Region III, DB-1 Senior Resident Inspector
Utility Radiological Safety Board

Docket Number 50-346
License Number NPF-3
Serial Number 3009
Enclosure 1

DAVIS-BESSE NUCLEAR POWER STATION EVALUATION FOR LICENSE AMENDMENT REQUEST NUMBER 03-0014

(45 pages follow)

DAVIS-BESSE NUCLEAR POWER STATION
EVALUATION
FOR
LICENSE AMENDMENT REQUEST NUMBER 03-0014

Subject: License Amendment Application to Revise Technical Specification (TS) 3/4.3.2.1, Safety Features Actuation System Instrumentation Setpoints and Surveillance Testing Requirements

1.0 DESCRIPTION

This letter is a request to amend the Davis-Besse Nuclear Power Station, Unit Number 1 (DBNPS) Facility Operating License Number NPF-3 Appendix A Technical Specifications (TS). These changes are primarily being requested as a result of a review and update of Degraded Voltage Relay (DVR) and Loss of Voltage Relay (LVR) setpoint calculations, as discussed below.

The proposed changes are as follows:

TS Table 1.2, "Frequency Notation"
- Add a definition of "annual" frequency, with notation "A".

TS 3/4.3.2, "Safety System Instrumentation" – "Safety Features Actuation System Instrumentation," Limiting Condition for Operation (LCO) 3.3.2.1
- Remove discussion of the Trip Setpoint column of Table 3.3-4, since the remaining setpoints are being removed from the table.

TS Table 3.3-3, "Safety Features Actuation System Instrumentation"
- Rename the "90%" and "59%" relays to "Degraded Voltage Relay (DVR)" and "Loss of Voltage Relay (LVR)," respectively, to more accurately reflect their design function.

TS Table 3.3-4, "Safety Features Actuation System Instrumentation Trip Setpoints"
- Remove the Trip Setpoint column. (Sequence Logic Channel Trip Setpoints are the only setpoints currently remaining in this column, and these are being relocated to the DBNPS Updated Safety Analysis Report.)
- Update the Sequence Logic Channel Allowable Values, consistent with updated calculations and current setpoint methodology.
- Replace "Trip Setpoints" in the table heading with "Allowable Values."
- Apply footnote "##," "Allowable Values for CHANNEL FUNCTIONAL TEST," to the Sequence Logic Channels.
- Remove footnote "#," "Allowable Value for CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION," from Sequence Logic Channel item b. (LVR).

TS Table 4.3-2, "Safety Features Actuation System Instrumentation Surveillance Requirements"
- Divide Sequence Logic Channel requirements into separate entries for the Sequencer, DVRs, and LVRs.
- Assign an annual Channel Calibration requirement for the DVRs and LVRs.
- Relocate explanation of code "**" to below the heading "TABLE NOTATION."

Associated changes to the TS Bases would be made under the provisions of the TS Bases Control Program. The affected TS Bases pages are included in Attachment 3 for information.

2.0 PROPOSED CHANGE

The proposed changes affect TS Table 1.2, "Frequency Notation," and TS 3/4.3.2, "Safety Features Actuation System Instrumentation," including Tables 3.3-3, 3.3-4 and 4.3-2 as follows (note: Attachment 1 contains the TS markup with the proposed changes):

Table 1.2, "Frequency Notation"

Table 1.2 contains the frequency notation definitions utilized throughout the TS. As noted above, an "annual" channel calibration frequency requirement is proposed to be added to Table 4.3-2 for new Functional Units 4.b and 4.c. Since an "annual" frequency notation is not currently included in Table 1.2, one is proposed to be added, to be defined as "At least once per 12 months", or 366 days.

Table 3.3-3, "Safety Features Actuation System Instrumentation"

It is proposed to revise the terminology for the Sequence Logic Channels by replacing "(90%)" with "Degraded Voltage Relay (DVR)" and "(59%)" with "Loss of Voltage Relay (LVR)". These relays are set based on equipment requirements (including specified voltage requirements of safety-related equipment, load flow results, and instrument uncertainties) rather than adherence to the "59%" or "90%" nominal values, and the DVR and LVR terminology more closely matches the terminology used in NUREG-1430, "Improved Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors," Revision 2, LCO 3.3.8.

Table 3.3-4, "Safety Features Actuation System Instrumentation Trip Setpoints"

The "Trip Setpoint" values for Functional Unit Sequence Logic Channel "a", "Essential Bus Feeder Breaker Trip (90%)", and Functional Unit Sequence Logic Channel "b", "Diesel Generator Start, Load Shed on Essential Bus (59%)", are proposed to be removed from TS. Consistent with NUREG-1430, only the Allowable Value would be specified for each of these Functional Units. Since the remaining trip setpoints in Table 3.3-4 were removed in accordance with prior license amendments, it is proposed to remove the entire "Trip Setpoint" column from the table. Nominal trip setpoints for the Sequence Logic Channels are specified in the setpoint analysis maintained at the DBNPS. The two trip setpoints being removed from the TS will be listed in the DBNPS Updated Safety Analysis Report (USAR) no later than the implementation of the requested license amendment. Future changes to these trip setpoints will be under the regulatory controls of 10 CFR 50.59, "Changes, Tests, and Experiments." These changes will be submitted to the NRC in accordance with the USAR revision requirements of 10 CFR 50.71(e) and 10 CFR 50.59(b).

It is proposed to change "Trip Setpoints" in the table title to "Allowable Values," since trip setpoints will no longer be listed in the table, but relocated to the USAR.

The "Allowable Value" for Functional Unit Sequence Logic Channel "a", "Essential Bus Feeder Breaker Trip (90%)", is proposed to be changed from "≥ 3558 volts ≤ 7.8 sec" to "≥ 3712 volts (dropout) and ≤ 3771 volts (pickup) with a time delay of ≥ 6.4 and ≤ 7.9 sec". Adding the upper voltage limit and lower time limit will create closer agreement between the DBNPS TS and Section 3.3.8 of NUREG-1430, and the LVR TS requirements. This change reflects updated analyses to ensure that the DVRs will not interfere with load sequencing or EDG breaker closure. The new Allowable Values will also protect against inadvertent actuation of the DVRs.

The "Allowable Value" for Functional Unit Sequence Logic Channel "b", "Diesel Generator Start, Load Shed on Essential Bus (59%)", is proposed to be changed from "≥ 2071 and ≤ 2450 volts for 0.5 ± 0.1 sec" to "≥ 2071 volts (dropout) and ≤ 2492 volts (pickup) with a time delay of ≥ 0.42 and ≤ 0.58 sec". This change reflects updated setpoint and EDG transient response analyses to ensure that the LVRs will not interfere with load sequencing or EDG operation.

In Table 3.3-4, footnote "#" signifies that the Allowable Value applies to both the Channel Functional Test and Channel Calibration. Footnote "##" signifies that the Allowable Value applies to the Channel Functional Test. Footnote "#" is proposed to be removed from the Allowable Value for Functional Unit Sequence Logic Channel "b" and the requirements of footnote "##" are proposed to be added to the Allowable Values for Functional Unit Sequence Logic Channels "a" and "b". The proposed changes would modify the Table 3.3-4 footnotes applicable to the Allowable Values to clarify the surveillance testing requirements. The current Table 4.3-2, "Safety Features Actuation System Instrumentation Surveillance Requirements," states that Channel Calibration is "NA" (Not Applicable) for Functional Unit 4, Sequence Logic Channels. However, footnote "#" of the current Table 3.3-4, applicable to Functional Unit Sequence Logic Channel "b", implies that the Allowable Value for the Sequence Logic Channel is required to be verified during a Channel Calibration as well as during a Channel Functional Test. The proposed changes would resolve this inconsistency by applying footnote "##" (Channel Functional Test only) to the Allowable Values for the Sequence Logic Channels, and adding a new annual Channel Calibration requirement in Table 4.3-2 for these relays identified in Table 3.3-4 as Functional Unit Sequence Logic Channel "a" and Functional Unit Sequence Logic Channel "b". Since "##" has already been applied to the other functional units listed in Table 3.3-4, "##" is proposed to be added to the Allowable Values heading, and removed from the individual functional unit entries.

In addition, it is proposed in Table 3.3-4 to replace "(90%)" with "Degraded Voltage Relay (DVR)" and "(59%)" with "Loss of Voltage Relay (LVR)", similar to the change proposed for Table 3.3-3, described above.

<u>Limiting Condition for Operation (LCO) 3.3.2.1</u>

Consistent with the above changes, LCO 3.3.2.1 is proposed to be revised to remove the discussion pertaining to Table 3.3-4 trip setpoints.

<u>Table 4.3-2, Safety Features Actuation System Instrumentation Surveillance Requirements</u>

It is proposed to expand Functional Unit 4, "Sequence Logic Channels", into three separate line entries: Functional Unit 4.a, "Sequencer"; Functional Unit 4.b, "Essential Bus Feeder Breaker Trip, Degraded Voltage Relay (DVR)"; and Functional Unit 4.c, "Diesel Generator Start, Load

Shed on Essential Bus, Loss of Voltage Relay (LVR)". This structure would be consistent with the present structure of Table 3.3-3, "Safety Features Actuation System Instrumentation". The proposed Table 4.3-2 entries for new Functional Unit 4.a would be the same as for current Functional Unit 4. The proposed Table 4.3-2 entries for Functional Units 4.b and 4.c would also be the same as for current Functional Unit 4, with the exception of the addition of annual Channel Calibration surveillance requirements.

As an editorial change, existing footnote "**" would be moved from its present position on page 3/4 3-22 to under the "TABLE NOTATION" area.

Summary

In summary, the proposed changes to TS 3/4.3.2.1 would remove the remaining "Trip Setpoint" values from TS Table 3.3-4, "Safety Features Actuation System Instrumentation Trip Setpoints," revise LCO 3.3.2.1 to reflect this change to Table 3.3-4, revise the "Allowable Values" for the Sequence Logic Channel Functional Units in Table 3.3-4, and add an annual Channel Calibration requirement for the Sequence Logic Channel Functional Units in Table 4.3-2.

3.0 BACKGROUND

The proposed changes affect the requirements for the 4160 Volt System undervoltage protection scheme, identified in TS Table 3.3-3 as "Sequence Logic Channels", "Essential Bus Feeder Breaker Trip (90%)", and "Load shed on Essential Bus (59%)".

Section 8.3.1, "AC Power System," of the DBNPS Updated Safety Analysis Report (USAR) describes the functions of the on-site power systems. Normally, unit power from the main generator is supplied to the 4160 Volt Essential Buses via the Auxiliary Transformer. When the main generator is unavailable, offsite power is provided from the DBNPS switchyard to the 4160 Volt Essential Buses from two redundant Start-Up Transformers. A fast bus transfer scheme from the Auxiliary Transformer to the Start-Up Transformers provides for continued powering of the 4160 Volt Essential Buses after the main generator trips off line. The 4160 Volt Essential Buses provide power to various 4160 Volt essential loads.

The 4160 Volt Essential Bus undervoltage protection is described in USAR Section 8.3.1.1.3, "4160 Volt Auxiliary System." Each 4160 Volt Essential Bus is provided with two levels of voltage protection. Four relays per bus at each voltage level (two per functional unit) operate with coincidental logic to preclude spurious trips of the offsite source. The undervoltage trip setpoints and associated time delays are provided in Technical Specification Table 3.3-4, "Safety Features Actuation System Trip Setpoints." The time delays associated with the relays are chosen to minimize the possibility that short duration disturbances will unnecessarily reduce the availability of the offsite source, to ensure that the time duration of a degraded voltage condition will not cause failure of a safety system or component, and to ensure that the equipment starting times assumed in the accident analysis are not exceeded. The Degraded Voltage ("90%") Relays (DVRs) automatically disconnect the off-site source whenever the bus voltage drops below the relay setpoint for a period longer than allowed by the relay time delay setpoint. Disconnecting the off-site source will cause the Loss of Voltage ("59%") Relays to actuate. The Loss of Voltage Relays (LVRs) disconnect the off-site source, load-shed the bus, and start the associated Emergency Diesel Generator whenever the bus voltage drops below the relay setpoint for a period longer than the relay time delay setpoint.

The Degraded Voltage and Loss of Voltage Relays were included in the original DBNPS Technical Specification issued with the Operating License, dated April 22, 1977. The need for Degraded Voltage Relays had been identified following review of a degraded voltage condition at Millstone Unit 2. The Millstone event was described in an October 1, 1976 NRC letter to the DBNPS (Toledo Edison (TE) Log Number 120). The original Trip Setpoint for the Degraded Voltage Relays, as specified in the original TS was ≥ 3744 volts for 10 ± 1.5 seconds. The original Allowable Value was ≥ 3558 for 10 ± 1.5 seconds.

Amendment 7 to the DBNPS Operating License (TE Log Number 304, dated November 29, 1977) revised the Trip Setpoint and Allowable Value time delay for the Degraded Voltage Relays to 7 ± 1.5 seconds. The accompanying NRC Safety Evaluation noted that the new time delay increased the margin in the response time of the Emergency Core Cooling System, and accounted for inaccuracies and drift in the timer plus a dead band setting, in conformance with the requirements of Regulatory Guide 1.105, "Instrument Setpoints," Revision 1, November 1976.

Amendment 58 to the DBNPS Operating License (TE Log Number 1279, dated May 5, 1983) revised the Trip Setpoint and Allowable Value time delay for the Degraded Voltage Relays to their current value, ≤ 7.8 seconds. The accompanying NRC Safety Evaluation noted that the new time delay accounts for instrument uncertainties. The associated License Amendment Request, dated October 14, 1982 (TE Serial Number 862), explained the basis for the change as follows:

> The maximum allowable operating delay for these "90% voltage" relays is 9 seconds as assumed in the accident analysis. In determining the Technical Specification trip setpoint for the time delay, the maximum error and drift inherent in the relay must be subtracted from the 9 seconds to ensure that the accident analysis value is not exceeded. The tolerance in the time delay is ± 10% (of setpoint) with an additional ± 5% (of setpoint) for drift. Therefore, the maximum error including drift would be ± 15% of setpoint. Therefore, the setpoint should be ≤ 7.8 seconds.

The current Allowable Value for Degraded Voltage Relay voltage, in TS since 1977, would permit operation with some motor-operated valve (MOV) terminal voltages below the minimum voltage required for proper operation as defined by Generic Letter (GL) 89-10, "Safety-Related Motor Operated Valve Testing and Surveillance," June 28, 1989. Other essential equipment would receive less voltage than required by its associated purchase specifications. In addition, the current Allowable Value does not balance the concern of operating with degraded voltage against the concern of inadvertent actuation of the Degraded Voltage Relays. This license amendment application proposes changes to the Degraded Voltage Relay Allowable Value for voltage, consistent with updated calculations and current setpoint methodology, to eliminate this situation.

The Loss of Voltage Relays have contacts in the EDG breaker logic as well as the SFAS sequencer timing circuit. To preclude undesired interaction between the Loss of Voltage Relays and the EDG loading sequence, the upper Loss of Voltage Relay voltage Analytical Limit is established at the minimum EDG transient analysis voltage, including margin applied in the EDG transient analysis. The results of the EDG transient response analysis, combined with the latest setpoint uncertainty analysis indicate that a small increase is appropriate for the upper Loss of Voltage Relay voltage Allowable Value. In addition, small changes are requested in the LVR and DVR Allowable Values for time, to ensure that the response to a degraded voltage event does not unnecessarily delay EDG breaker closure. These changes range from a 0.1 second increase for the existing DVR Allowable Value for time to a narrowing of the LVR Allowable Value band by 0.02 seconds at each end.

4.0 TECHNICAL ANALYSIS

A summary of the setpoint analysis for the Degraded Voltage Relays (DVRs) supporting the proposed Allowable Values, including the time delay, is provided below.

The associated setpoint calculations were based on the following design inputs:

- The observed, certified, or specified performance characteristics of DBNPS safety-related equipment.

- The required voltages at the terminals of essential equipment, including MOVs.

- The lowest expected 345,000 Volt DBNPS switchyard voltage (98.3%), aside from a loss of all offsite power.

- 10 CFR 50 Appendix A, Criterion 17 – Electric Power Systems, considerations to minimize the probability of losing electrical power.

The Degraded Voltage and Loss of Voltage setpoint calculations use methods from ANSI/ISA-S67.04.01-2000, "Setpoints for Nuclear Safety-Related Instrumentation." This document was prepared by the Instrument Society of America (ISA) with a goal of providing uniformity in the field of instrumentation. ISA-RP67.04.02-2000 presents guidelines and examples of methods for the implementation of ANSI/ISA-67.04.01-2000. Regulatory Guide 1.105 endorses the use of ISA-S67.04-1994 as an acceptable method for determining safety-related setpoints. The applicable portions of ANSI/ISA-67.04-01-2000 and ISA-RP67.04.02-2000 are equivalent to the corresponding NRC-endorsed sections of ISA-S67.04-1994.

ANSI/ISA-S67.04.01-2000 definition 3.1 and ISA-RP67.04.02-2000 definition 3.1 define the Allowable Value as "a limiting value that the trip setpoint may have when tested periodically, beyond which appropriate action shall be taken." ISA-RP67.04.02-2000, paragraph 7.1 further interprets "appropriate action" as an evaluation for operability. ANSI/ISA-S67.04.01-2000 paragraph 4.3.2 states that "The purpose of the Allowable Value is to identify a value that, if exceeded, may mean that the instrument has not performed within the assumptions of the setpoint calculation." TS 3.3.2.1 Action a requires that "With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4." This analysis is based on Method 2 from ISA-RP67.04.02-2000, Section 7.3. "Method 2" determines the AV by calculating the instrument channel uncertainty without including Drift and uncertainties observed during normal operation. This result is then added to or subtracted from the Analytical Limit (AL) to establish the AV:

AV = AL +/- Z, where Z is the combination of systematic and other uncertainties not observed during normal operation or routine surveillance.

The Trip Setpoint (TS) is determined by adding or subtracting the instrument channel uncertainties to the AL, dependent upon the conservative direction of the process variable. For process variables that decrease toward the AL, the instrument channel uncertainty and margin terms are added to the AL. For process variables that increase toward the AL, the instrument channel uncertainty and margin terms are subtracted from the AL.

TS = AL +/- (CU + Margin), where CU is the combination of all applicable uncertainties including systematic, drift, and those associated with routine surveillance.

DVR Voltage

Analytical Limit

The lower Analytical Limit is the lowest voltage that results in all safety-related loads having sufficient voltage to perform their safety-related functions. With 4160 Volt essential bus voltages at 3700 Volts, all voltages are sufficient to meet this definition of the lower Analytical Limit. For conservatism, the setting calculation uses 3700 Volts as the lower Analytical Limit.

The upper Analytical Limit corresponds to the lowest bus voltage that will ensure reset of the DVRs, as well as preclude unnecessary operation of the DVRs on a temporary voltage dip. The DVR reset point was calculated by determining the recovery voltage following a Large Break Loss of Coolant Accident coincident with the lowest predicted steady state 345 kV bus voltage (98.3%), and applying the relay manufacturer's minimum deadband (0.5%) for reset. This value is 3786 Volts.

Note: Generic Letter 89-10 Recommended Action (f) required consideration of degraded voltage when evaluating Motor-Operated Valve performance and switch settings. The worst case degraded voltage is the lowest voltage that will not result in a Degraded Voltage Relay trip; i.e., without starting the Emergency Diesel Generators.

Channel Uncertainties

The expected uncertainties stem from the following sources:

M&TE	Measurement and Test Equipment
D	drift (annual calibration frequency)
R	repeatability, with constant temperature
T	repeatability, with temperature variation
PS	power supply voltage variation
PT	Potential Transformer inaccuracy or non-linearity

Allowable Value

The Allowable Value was determined by calculating the instrument Channel Uncertainty (CU) without including drift, calibration uncertainties, and uncertainties observed during normal operation, and adding or subtracting this result (± 12 Volts), as appropriate, to the Analytical Limit. An additional 3 Volts was subtracted from the Allowable Value (upper) for consistency with the Davis-Besse Nuclear Power Station AC Power Distribution Analyses.

Allowable Value (lower) = 3700 Volts + 12 Volts = 3712 Volts (dropout)
Allowable Value (upper) = 3786 Volts – 12 Volts – 3 Volts = 3771 Volts (pickup)

Trip Setpoint

The trip setpoint was determined by adding or subtracting the instrument channel uncertainties to the Analytical Limit, dependent upon the conservative direction of the process variable with respect to the Analytical Limit, according to the formula described above. Further discussion of the trip setpoint is not included here, because the trip setpoint is being removed from the TS.

<u>DVR Time</u>

Analytical Limit

The lower Analytical Limit for the Degraded Voltage Relays is 6.21 seconds, which is the bounding acceleration time for 4160 Volt motors expected to start due to a Safety Features Actuation Signal (SFAS), based on the High Pressure Injection Pump Motors' start time at 70% of nominal voltage. The relay time delay is independent of bus voltage. The NRC's Safety Evaluation supporting Amendment 58 to facility Operating License NPF-3 defined a maximum allowable Degraded Voltage Relay operating time of nine seconds. This time delay continues to be conservative, as shown below:

After the Degraded Voltage Relays are actuated, the feeder breaker to 4160 Volt Bus C1 (D1) is tripped. This causes the voltage to decay, tripping the Loss of Voltage Relays

(LVRs). After a 0.5 second delay, load shedding occurs, an undervoltage signal is sent to the SFAS sequencer, and a start signal is sent to the corresponding emergency diesel generator (EDG). After an additional 0.5 second delay, the dead bus timer sends a permissive to close to the EDG output breaker AC101 (AD101); when approximately 3990 Volts is available at the EDG output, relays complete the close logic for AC101 (AD101). Each EDG is capable of attaining rated frequency and voltage approximately 10 seconds after the engine start signal is received. The latest DBNPS analyses include allowances for feeder breaker trip time, field collapse time, and EDG breaker closure time. Thus, the proposed Degraded Voltage Relay and Loss of Voltage Relay time delays will lead to no more than a 19.4 second delay before the EDG is ready to start accepting load, if no SFAS signal is present. The EDGs also start following an SFAS signal. In the event of a simultaneous degraded voltage condition with SFAS actuation, the DVR, LVR, and dead bus time delays would run during the EDG start, so that the SFAS sequence time is not increased by the DVR and LVR time delays.

The NRC's Safety Evaluation supporting Amendment No. 7, November 29, 1977, states, "To increase the margin in the response time of the emergency core cooling system, the Toledo Edison Company stated that the ten second time delay setting to trip the incoming 4.16 kilovolt source breakers would be changed to 9 seconds to assure that emergency core cooling system low pressure injection was assured with the 30 seconds required by accident analysis." Since 1977, the accident analysis has been revised. The revisions have increased the analyzed delay to 40 seconds, measured from the low pressure SFAS signal to simultaneous initiation of High Pressure Injection and Low Pressure Injection, including acceleration of the associated pumps.

In addition, FENOC has chosen to deduct 0.9 seconds from the existing DVR Analytical Limit to account for feeder breaker trip time, field collapse time, EDG breaker closure time, and uncertainties in the LVR and dead bus timer settings, so that these delays, combined with delays from the DVRs ($\leq$ 8.1 seconds) and the LVRs ($\leq$ 0.6 seconds) do not exceed the maximum EDG start time (10 seconds). In the event of a simultaneous degraded voltage condition and SFAS actuation, the EDGs would start on the SFAS signal. If the EDGs start in less time than assumed in the USAR, it is possible that the EDG breaker closure could be momentarily delayed by the DVR and LVR time delays, but total delay will not be greater than is already assumed for an EDG start without the DVR delay. Use of the 8.1 second DVR time delay analytical limit is conservative.

Therefore, the Analytical Limits for the time delay for the Degraded Voltage Relays are 6.21 seconds (lower) and 8.1 seconds (upper).

Channel Uncertainties

The expected uncertainties stem from the following sources:

M&TE	Measurement and Test Equipment
D	drift (annual calibration frequency)
R	repeatability, with constant temperature

T	repeatability, with temperature variation
PS	power supply voltage variation
Time Dial	inaccuracy of time dial setting on the relay

Allowable Value

The upper Allowable Value is determined by calculating the instrument channel uncertainty without including drift calibration uncertainties and uncertainties observed during normal operation. The result is then subtracted from the Analytical Limit to establish the Allowable Value. Channel uncertainty was based on an annual calibration interval.

The uncertainties were determined to be equal to ± 0.16 seconds. An additional margin was added to allow for small changes in the design inputs to be made in the future without processing a License Amendment.

Allowable Value (upper) = 8.1 - 0.16 – additional margin = 7.9 seconds

The lower Allowable Value is determined by calculating the instrument channel uncertainty without including drift calibration uncertainties and uncertainties observed during normal operation. The result is then added to the Analytical Limit to establish the Allowable Value. Channel uncertainty was based on an annual calibration interval.

The uncertainties were determined to be equal to ± 0.16 seconds. An additional margin was added to allow for small changes in the design inputs to be made in the future without processing a License Amendment.

Allowable Value (lower) = 6.21 + 0.16 + additional margin = 6.4 seconds

Trip Setpoint

The trip setpoint was determined by adding or subtracting the instrument channel uncertainties to the Analytical Limit, dependent upon the conservative direction of the process variable with respect to the Analytical Limit, according to the formula described above. Further discussion of the trip setpoint is not included here, because the trip setpoint is being removed from the TS.

These proposed Allowable Values are consistent with updated calculations and current setpoint methodology, providing confidence that the Analytical Limits will not be violated, and that there will be no adverse effect on nuclear safety.

The proposed removal from TS of Trip Setpoint values for the Degraded Voltage and Loss of Voltage Relays is consistent with NUREG-1430, "Improved Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors", Revision 2. Nominal trip setpoints are specified in the setpoint analysis, and are included in the DBNPS Relay Setting Manual, a DBNPS-controlled document. These trip setpoints will also be listed in the USAR and subject to evaluation under the regulatory requirements of 10 CFR 50.59 prior to changing their values in the future. This is an administrative change and will have no adverse effects on nuclear safety.

As previously described, there is an inconsistency between the current Table 4.3-2, which states that Channel Calibration is "NA" (Not Applicable) for Functional Unit 4, Sequence Logic Channels, and Footnote "#" of the current Table 3.3-4, which implies that the Allowable Values for the Sequence Logic Channels (59%) are required to be verified during the Channel Functional Test as well as during the Channel Calibration. Since setpoint verifications for these channels are currently being performed during the monthly Channel Functional Test, and since TS Surveillance Requirement 4.3.2.1.1 refers to Table 4.3-2 (which specifies that a Channel Calibration for these channels is not applicable) footnote "##" (which is specific to the Channel Functional Test only) is the appropriate footnote. Therefore, these changes are an administrative clarification of the existing testing requirements for these channels, and will have no adverse effect on nuclear safety.

<u>LVR Voltage</u>

Upper Allowable Value

A small change is also requested for the upper LVR voltage Allowable Value. The Loss of Voltage Relays have contacts in the EDG breaker logic as well as the SFAS sequencer timing circuit. To preclude undesired interaction between the Loss of Voltage Relays and the EDG loading sequence, the upper LVR voltage Analytical Limit is established at the minimum EDG transient analysis voltage, including margin applied in the EDG transient analysis. A detailed EDG transient analysis was recently performed for the first time. The results of the EDG transient analysis indicate that the minimum expected EDG transient voltage is expected to be not less than approximately 2600 Volts. After applying a margin for analysis uncertainties, FENOC has calculated an Analytical Limit of 2500 Volts.

The Loss of Voltage Relays have recently been upgraded to a solid state design similar to the Degraded Voltage Relays, and the same method was used to determine the systematic uncertainties. The Allowable Value was determined by calculating the instrument Channel Uncertainty (CU) without including drift, calibration uncertainties, and uncertainties observed during normal operation, and subtracting this result (8 Volts), from the Analytical Limit.

Allowable Value (LVR voltage - upper) = 2500 Volts - 8 Volts = 2492 Volts (pickup)

No change is proposed for the LVR Voltage Lower Allowable Value.

Trip Setpoint

The trip setpoint was determined by adding or subtracting the instrument channel uncertainties to the Analytical Limit, dependent upon the conservative direction of the process variable with respect to the Analytical Limit, according to the formula described above. Further discussion of the trip setpoint is not included here, because the trip setpoint is being removed from the TS.

LVR Time

An LVR Analytical Limit for time delay was established at a level equal to the current Allowable Value. The new upper Analytical Limit (0.6 seconds) takes into account the combined degraded voltage relay response time using Analytical Limits for each relay (DVR, LVR, dead bus timer). The new lower Analytical Limit is intended to preclude spurious trips due to transient events that may occur on the transmission system or within the onsite electrical distribution system. The new value is created by considering the typical fast bus transfer time in the onsite electrical distribution system (12 cycles; i.e., 0.2 seconds) and multiplying by a safety factor of two (i.e., 0.4 seconds). The resulting Allowable Value band will be reduced, but is achievable due to recent replacement of the original electromechanical LVRs with solid state relays similar to the DVRs. Channel uncertainties were analytically derived, using the same methods as previously described for the DVR time delay.

The upper Allowable Value is determined by calculating the instrument channel uncertainty without including drift calibration uncertainties and uncertainties observed during normal operation. The result is then subtracted from the Analytical Limit to establish the Allowable Value. Channel uncertainty was based on an annual calibration interval.

The uncertainties were determined to be equal to ± 0.012 seconds.

Allowable Value (upper) = 0.6 - 0.012 - additional margin = 0.58 seconds

The lower Allowable Value is determined by calculating the instrument channel uncertainty without including drift calibration uncertainties and uncertainties observed during normal operation. The result is then added to the Analytical Limit to establish the Allowable Value. Channel uncertainty was based on an annual calibration interval.

The uncertainties were determined to be equal to ± 0.012 seconds.

Allowable Value (lower) = 0.40 + 0.012 + additional margin = 0.42 seconds

Trip Setpoint

The trip setpoint was determined by adding or subtracting the instrument channel uncertainties to the Analytical Limit, dependent upon the conservative direction of the process variable with respect to the Analytical Limit, according to the formula described above. Further discussion of the trip setpoint is not included here, because the trip setpoint is being removed from the TS.

The preceding discussion supports the proposed changes to the Degraded Voltage and Loss of Voltage Relay Allowable Values. The remaining changes, discussed below, are administrative, and have no adverse effect on nuclear safety.

Table 1.2, Frequency Notation

The proposed new frequency code for TS Table 1.2 is associated with the changes to Table 4.3-2, and is an administrative change that will have no adverse effect on nuclear safety.

Limiting Condition for Operation (LCO) 3.3.2.1

The proposed LCO change for TS 3.3.2.1 is associated with the changes to Table 3.3-4, and is an administrative change that will have no adverse effect on nuclear safety.

Table 3.3-3, Safety Features Actuation System Instrumentation

In addition to the changes described above, it is proposed that the "90%" and "59% relays be renamed "Degraded Voltage Relay" and "Loss of Voltage Relay." This is an administrative change requested for consistency with NUREG-1430, and will have no adverse effect on nuclear safety.

Table 3.3-4, Safety Features Actuation System Instrumentation Trip Setpoints

In addition to the changes described above, it is proposed that the "90%" and "59%" relays be renamed "Degraded Voltage Relay" and "Loss of Voltage Relay". This change is similar to the change requested for Table 3.3-3. As discussed above, it is also proposed that the footnotes applied to the Sequence Logic Channels be revised to apply footnote "##" (Channel Functional Test only). This change will resolve an inconsistency between Table 3.3-4 and Table 4.3-2. These changes will have no adverse effect on nuclear safety.

It is also proposed that "Trip Setpoints" in the table's title be changed to "Allowable Values," since the trip setpoints will be removed while the allowable values will remain in the table.

Table 4.3-2, Safety Features Actuation System Instrumentation Surveillance Requirements

In addition to the changes described above, it is proposed that the surveillance requirements for the Sequence Logic Channels be divided into separate line items for the different types of Sequence Logic Channel Functional Units, and that an annual frequency code "A" be added to the Channel Calibration requirements for the Degraded Voltage and Loss of Voltage Relays. This change adds a new TS surveillance frequency requirement to ensure that the Channel Calibration frequency is consistent with the calibration frequency assumed in the associated setpoint drift analyses. The existing calibration procedure is implemented on-line, by placing the undervoltage logic for the affected bus in a half-trip condition, and this practice would be continued under the proposed TS annual calibration requirement. Since the proposed change will not affect implementation of the calibration procedure, this change will have no adverse effect on nuclear safety.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

The Emergency Diesel Generators (EDG) provide a source of emergency power when offsite power is either unavailable or when voltage levels drop too low to adequately serve all required safe shutdown equipment. Protective relays will generate an EDG start signal in the event a loss of voltage or degraded voltage condition occurs on the 4160 Volt Essential Buses.

Four Degraded Voltage Relays (DVRs) are provided on each 4160 Volt essential bus to detect a sustained degraded voltage condition. If a sustained degraded voltage condition is detected, the relays isolate the affected essential buses from the offsite source. After the essential buses are isolated, a second set of undervoltage relays with a lower voltage setpoint and a shorter time delay act to re-power the essential buses from their associated emergency diesel generators.

The proposed amendment would revise Technical Specification (TS) requirements for the Degraded Voltage Relays and the Loss of Voltage Relays (LVRs). The proposed changes revise the Degraded Voltage trip setpoint Allowable Values for consistency with the Davis-Besse Nuclear Power Station (DBNPS) distribution system voltage analyses and industry standards for establishing nuclear safety-related setpoints. The proposed changes also make a number of administrative revisions to the TS that will not affect how the relays operate.

Details of the changes include raising the minimum voltage allowable value for DVR actuation, establishing a maximum voltage allowable value for DVR actuation that presently does not exist in TS, establishing a minimum time delay allowable value for DVR actuation that presently does not exist, adjusting the LVR allowable values for voltage to reflect the latest EDG transient analysis, reducing the allowable LVR time band, defining an annual frequency in TS Table 1.2, "Frequency Notation," establishing an annual calibration requirement, addressing an inconsistency in the requirements for channel calibration between TS Tables 4.3-2 and 3.3-4, and removing trip setpoint information consistent with the content of NUREG-1430, "Improved Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors."

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 new DVR voltage and minimum time delay Allowable Values are more restrictive than the existing TS limits. The proposed new DVR maximum time delay is based on the existing analytical limit, and is only increased to the extent permitted by the methods endorsed by Regulatory Guide (RG) 1.105. Annual channel calibrations are already performed, and adding them to TS ensures from a regulatory perspective that the relay drift is consistent with the setpoint calculations. The proposed new LVR voltage upper Allowable Value is based on a comprehensive EDG transient analysis, and is only increased to the extent permitted by the methods endorsed by Regulatory Guide (RG) 1.105. The proposed new LVR time delay allowable values are more restrictive than the existing TS limits, and are within the existing TS range of allowable values. Accident initial conditions, probability, and assumptions remain as previously analyzed. The remaining portions of the amendment request are administrative changes that will have no effect on operation of the relays. The Degraded Voltage and Loss of Voltage Relays are not accident initiators; therefore, a malfunction of these relays will have no significant effect on accident initiation frequency. The proposed changes do not invalidate the assumptions used in evaluating the radiological consequences of any accident. Therefore, the proposed changes do 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 new DVR voltage and minimum time delay Allowable Values are more restrictive than the existing TS limits. The proposed new DVR maximum time delay is based on the existing analytical limit, and is only increased to the extent permitted by the methods endorsed by Regulatory Guide (RG) 1.105. Annual channel calibrations are already performed, and adding them to TS ensures from a regulatory perspective that the relay drift is consistent with the setpoint calculations. The proposed new LVR voltage upper Allowable Value is based on a comprehensive EDG transient analysis, and is only increased to the extent permitted by the methods endorsed by Regulatory Guide (RG) 1.105. The proposed new LVR time delay allowable values are more restrictive than the existing TS limits, and are within the existing TS range of allowable values. Accident initial conditions and assumptions remain as previously analyzed. The remaining portions of the amendment request are administrative changes that will have no effect on operation of the relays.

The proposed changes do not introduce any new or different accident initiators. Therefore, the proposed changes do 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 changes to the DVR Allowable Values will ensure an adequate margin of safety is maintained between the lowest allowable voltage setpoint and the highest per unit voltage required by safety-related equipment, while at the same time establishing an Allowable Value, not previously provided, that ensures a sufficient margin of safety between the highest allowable voltage setpoint and the lowest expected per unit source voltages.

The proposed changes to the DVR Allowable Values will ensure an adequate margin of safety is maintained between the longest allowable time delay and the longest time delay assumed by the accident analyses, while at the same time establishing an Allowable Value, not previously provided, that ensures a sufficient margin of safety between the shortest allowable time delay and the longest acceleration time for 4160 Volt continuously energized Safety Features Actuation System motors.

The proposed new LVR voltage upper Allowable Value is based on a comprehensive EDG transient analysis, and is only increased to the extent permitted by the methods endorsed by Regulatory Guide (RG) 1.105. In addition, the new Allowable Value reflects improvements in channel uncertainties that were made possible by upgrading the relays to solid state units.

The proposed new LVR time delay allowable values are more restrictive than the existing TS limits, and are within the existing TS range of allowable values.

A new requirement to perform an annual channel calibration of the Degraded Voltage and Loss of Voltage Relays is proposed. This new requirement to demonstrate proper channel operation will not adversely affect a margin of safety. The remaining changes are administrative, and will have no effect on margin of safety.

Therefore, the proposed changes do 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, there is a finding of "no significant hazards consideration."

5.2 Applicable Regulatory Requirements/Criteria

As described in USAR Appendix 3D, 10 CFR 50 Appendix A, "General Design Criterion 17 – Electric Power Systems" requires that provisions be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies. The proposed TS changes provide requirements to assure proper operation of the onsite power supplies following loss of the offsite power sources, and this criterion as described in the USAR will continue to be met.

As described in USAR Appendix 3D, 10 CFR 50 Appendix A, "General Design Criterion 18 – Inspection and Testing of Electric Power Systems" requires that the electric power systems important to safety be designed to permit appropriate periodic testing of the operability and functional performance of components of the systems, including relays such as the Degraded Voltage and Loss of Voltage Relays. The proposed TS changes do not affect the testability of these relays and this criterion as described in the USAR will continue to be met.

10 CFR 50.36, "Technical Specifications," section (2), "Limiting Conditions for Operation," describes, in general, the content of a limiting condition for operation (LCO) for safe plant operation. The proposed removal of the SFAS instrumentation Trip Setpoints from Table 3.3-4, which is referenced in LCO 3.3.2.1, has been reviewed against these requirements. The SFAS instrumentation Allowable Values provide assurance the required action will occur as assumed in the safety analysis described in the USAR. Since the SFAS instrumentation Allowable Values are being retained in Table 3.3-4 and will continue to be required to be met in accordance with Surveillance Requirement 4.3.2.1.1, the required LCO content requirements of 10 CFR 50.36 section (2) will continue to be met.

The updated instrumentation setpoint calculations have been prepared in accordance with Instrument Society of America (ISA) Standard S67.04.01-2000, "Setpoints for Nuclear Safety-Related Instrumentation," and Recommended Practice ISA-RP67.04.02, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." The applicable portions of ANSI/ISA-67.04-01-2000 and ISA-RP67.04.02-2000 are equivalent to the corresponding NRC-endorsed sections of ISA-S67.04-1994. The calculations are consistent with Method 2 in ISA-RP67.04-2000 Section 7.3. Using this method, uncertainties that are random, normally distributed, and independent are combined by the square-root-sum-of-squares (SRSS) method. Uncertainties that are not random, not normally distributed, or are dependent are combined algebraically. The purpose of the Allowable Value is to identify a value that, if exceeded, may mean that the instrument has not performed within the assumptions of the setpoint calculation. Using "Method 2", the Trip Setpoint and the Allowable Value are both developed by applying instrument uncertainties to the Analytical Limit. The difference between the Trip Setpoint and the Allowable Value reflects instrument uncertainties expected during normal operation, including drift and calibration. It does not include variations of the process variable. This is consistent with ISA-S67.04-1994 Section 4, Establishment of Setpoints. ISA-S67.04 Part I - 1994 has been endorsed by the Nuclear Regulatory Commission (NRC) through Regulatory Guide (RG) 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation," subject to four listed exceptions and clarifications. The four listed exceptions and clarifications, taken verbatim from RG 1.105, and the DBNPS-specific response to each are as follows:

RG 1.105 Regulatory Position C.1

Section 4 of ISA-S67.04-1994 specifies the methods, but not the criteria, for combining uncertainties in determining a trip setpoint and its allowable values. The 95/95 tolerance limit is an acceptable criterion for uncertainties. That is, there is a 95% probability that the constructed limits contain 95% of the population of interest for the surveillance interval selected.

DBNPS Response to Regulatory Position C.1

The 95/95 tolerance limit methodology was applied to obtain confidence in the equipment uncertainties for the Degraded Voltage Relays. Historical calibration data was sampled for this license amendment application to establish an acceptable confidence in uncertainty values for the instrument strings.

Vendor data for power supply and temperature uncertainty does not appear to meet the 95/95 criteria. However, other factors give additional confidence in the uncertainty data used. The temperature uncertainty is based on a range of 0 to 55 degrees C, which exceeds the design basis conditions for the switchgear rooms. Vendor data indicates that power supply variation is an extremely small contributor to total uncertainty, such that inaccuracy in this component would not significantly affect the calculation result.

Another factor of note is that in order to provide additional margin and to account for field setting tolerances, a setpoint tolerance is established. Margin is gained because the field device is rarely calibrated with the setpoint at the maximum allowed field setting. Any difference between the maximum allowed field setting and the actual field setting results in increased margin from the analytical limit.

In summary, the intended end result of establishing a tolerance limit criterion for uncertainties (such as 95/95) to ensure an accurate instrumentation response, is met at the DBNPS by means of the calculation methods, instrument string calibration, and setpoint verification.

RG 1.105 Regulatory Position C.2

Sections 7 and 8 of Part 1 of ISA-S67.04-1994 reference several industry codes and standards. If a referenced standard has been incorporated separately into the NRC's regulations, licensees and applicants must comply with that standard as set forth in the regulation. If the referenced standard has been endorsed in a regulatory guide, the standard constitutes a method acceptable to the NRC staff of meeting a regulatory requirement as described in the regulatory guide. If a referenced standard has been neither incorporated into the NRC's regulations nor endorsed in a regulatory guide, licensees and applicants may consider and use the information in the referenced standard if appropriately justified, consistent with current regulatory practice.

DBNPS Response to Regulatory Position C.2

Of the standards listed in Section 7 of Part 1 of ISA-S67.04-1994, Standard ANSI/ISA-S51.1, "Process Instrumentation Terminology," is not known to be incorporated separately into the NRC's regulations nor endorsed in a regulatory guide. However, since this standard addresses only terminology, and has negligible impact on the technical content of the submittal and its associated calculation, its use does not require further justification. None of the other standards listed in Section 7 and none of the standards listed in Section 8 of Part 1 of ISA S67.04-1994 are used as part of the basis for this license amendment request.

RG 1.105 Regulatory Position C.3

Section 4.3 of ISA-S67.04-1994 states that the limiting safety system setting (LSSS) may be maintained in technical specifications or appropriate plant procedures. However, 10 CFR 50.36 states that the technical specifications will include items in the categories of safety limits, Limiting Safety System Settings (LSSS), and limiting control settings. Thus, the LSSS may not be maintained in plant procedures. Rather, the LSSS must be specified as a technical specification-defined limit in order to satisfy the requirements of 10 CFR 50.36. The LSSS should be developed in accordance with the setpoint methodology set forth in the standard, with the LSSS listed in the technical specifications.

DBNPS Response to Regulatory Position C.3

In accordance with Section 4.3 of Part 1 of ISA S67.04-1994, the purpose of a LSSS is to assure that protective action is initiated before the process conditions reach the analytical limit. In addition, the LSSS may be the allowable value, the trip setpoint, or both. The limiting safety system settings are developed in accordance with the setpoint methodology and maintained in the DBNPS Technical Specifications as allowable values. (Note: This license amendment application directly affects the Limiting Condition for Operation portion of the Technical Specifications and not the LSSS portion of the Technical Specifications.)

RG 1.105 Regulatory Position C.4

ISA-S67.04-1994 provides a discussion on the purpose and application of an allowable value. The allowable value is the limiting value that the trip setpoint can have when tested periodically, beyond which the instrument channel is considered inoperable and corrective action must be taken in accordance with the technical specifications. The allowable value relationship to the setpoint methodology and testing requirements in the technical specifications must be documented.

DBNPS Response to Regulatory Position C.4

The allowable value relationship to the setpoint methodology and testing requirements in the technical specifications is documented in the setpoint calculation. The setpoint calculation is maintained as part of plant records.

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

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, and 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 261.

2. DBNPS Updated Safety Analysis Report through Revision 23.

3. System Description SD-003A, Revision 3, 4160 Volt Auxiliary.

4. Calculation C-EE-004.01-049, Revision 15, 4.16 KV Bus C1/D1 Degraded Voltage, Loss of Voltage, and 27X-6 Relay Setpoints.

5. Standard, Instrument Society of America ISA-S67.04, Part I, Setpoints for Nuclear Safety-Related Instrumentation, September 1994.

6. Recommended Practice, Instrument Society of America ISA-RP67.04, Part II, Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation, September 1994.

7. Standard, Instrument Society of America ANSI/ISA-67.04.01-2000, Setpoints for Nuclear Safety-Related Instrumentation.

8. Recommended Practice, Instrument Society of America ISA-RP67.04.02-2000, Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation.

9. Regulatory Guide 1.105, Setpoints for Safety-Related Instrumentation, Revision 3, December 1999.

8.0 ATTACHMENTS

1. Proposed Mark-Up of Technical Specification Pages

2. Proposed Retyped Technical Specification Pages

3. Technical Specification Bases Pages

LAR 03-0014
Attachment 1

PROPOSED MARK-UP
OF
TECHNICAL SPECIFICATION PAGES

(10 pages follow)

TABLE 1.2

FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 6 months. *
A	At least once per 12 months. *
E	At least once per 18 months. *
R	At least once per 24 months. *
S/U	Prior to each reactor startup.
N/A	Not applicable.

*In these Technical Specifications, 6 months is defined to be 184 days, 12 months is defined to be 366 days, 18 months is defined to be 550 days, and 24 months is defined to be 730 days.

INSTRUMENTATION

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with ~~the values shown in the Trip Setpoint column of Table 3.3-4, with the exception of: Instrument Strings Functional Units b, c, d, e, and f and Interlock Channels Functional Unit a, which shall be set consistent with~~ the Allowable Value column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4.

b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. This RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation.

4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME* of each SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3.

---

* The response times (except for manual initiation) include diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure.

TABLE 3.3-3

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
1. INSTRUMENT STRINGS					
a. DELETED	DELETED	DELETED	DELETED	DELETED	DELETED
b. Containment Pressure - High	4	2	3	1, 2, 3	10#
c. Containment Pressure - High-High	4	2	3	1, 2, 3	10#
d. RCS Pressure - Low	4	2	3	1, 2, 3*	10#
e. RCS Pressure - Low-Low	4	2	3	1, 2, 3**	10#
f. BWST Level - Low-Low	4	2	3	1, 2, 3	10#
2. OUTPUT LOGIC					
a. Incident Level #1: Containment Isolation	2	1	2	1, 2, 3, 4	11
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	2	1	2	1, 2, 3, 4	11
c. Incident Level #3: Low Pressure Injection	2	1	2	1, 2, 3, 4	11
d. Incident Level #4: Containment Spray	2	1	2	1, 2, 3, 4	11
e. Incident Level #5: Containment Sump Recirculation Permissive	2	1	2	1, 2, 3, 4	11

TABLE 3.3-3 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
3. MANUAL ACTUATION					
a. SFAS (except Containment Spray and Emergency Sump Recirculation)	2	2	2	1,2,3,4	12
b. Containment Spray	2	2	2	1,2,3,4	12
4. SEQUENCE LOGIC CHANNELS					
a. Sequencer	4	2/BUS	2/BUS	1,2,3,4	15#
b. Essential Bus Feeder Breaker Trip ~~(90%)~~ Degraded Voltage Relay (DVR)	4*****	2/BUS	2/BUS	1,2,3,4	15#
c. Diesel Generator Start, Load Sshed on Essential Bus ~~Bus (59%)~~Loss of Voltage Relay (LVR)	4	2/BUS	2/BUS	1,2,3,4	15#
5. INTERLOCK CHANNELS					
a. Decay Heat Isolation Valve	1	1	1	1,2,3	13#
b. Pressurizer Heaters	2	2	2	3******	14

TABLE 3.3-3 (Continued)

TABLE NOTATION

* Trip function may be bypassed in this MODE with RCS pressure below 1800 psig. Bypass shall be automatically removed when RCS pressure exceeds 1800 psig.

** Trip function may be bypassed in this MODE with RCS pressure below 660 psig. Bypass shall be automatically removed when RCS pressure exceeds 660 psig.

*** DELETED

**** DELETED

***** All functional units may be bypassed for up to one minute when starting each Reactor Coolant Pump or Circulating Water Pump.

****** When either Decay Heat Isolation Valve is open.

\# The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 10 - With the number of OPERABLE functional units one less than the Total Number of Units, STARTUP and/or POWER OPERATION may proceed provided, within one hour (except as noted below), the inoperable functional unit is placed in the tripped condition. When one functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided at least two other corresponding functional units are OPERABLE.

ACTION 11 - With any component in the Output Logic inoperable, trip the associated components within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS

ACTION 12 - With the number of OPERABLE Units one less than the Total Number of Units, restore the inoperable functional unit to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - a. With less than the Minimum Units OPERABLE and indicated reactor coolant pressure $\geq$ 328 psig, both Decay Heat Isolation Valves (DH11 and DH12) shall be verified closed.

b. With Less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig.

ACTION 14 - With less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig, operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig, or the inoperable functional unit shall be placed in the tripped state.

ACTION 15 - a. With the number of OPERABLE units one less than the Minimum Units Operable per Bus, place the inoperable unit in the tripped condition within one hour. For functional unit 4.a the sequencer shall be placed in the tripped condition by physical removal of the sequencer module. The inoperable functional unit may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

b. With the number of OPERABLE units two less than the Minimum Units Operable per Bus, declare inoperable the Emergency Diesel Generator associated with the functional units not meeting the required minimum units OPERABLE and take the ACTION required of Specification 3.8.1.1.

TABLE 3.3-4

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION ~~TRIP SETPOINTS~~ALLOWABLE VALUES

FUNCTIONAL UNIT	~~TRIP SETPOINT~~	ALLOWABLE VALUES##
INSTRUMENT STRINGS		
a. DELETED	~~DELETED~~	DELETED
b. Containment Pressure – High	~~DELETED~~	≤ 19.38 psia##
c. Containment Pressure - High-High	~~DELETED~~	≤ 41.65 psia##
d. RCS Pressure – Low	~~N.A.~~	≥ 1576.2 psig##
e. RCS Pressure - Low-Low	~~N.A.~~	≥ 441.42 psig##
f. BWST Level	~~N.A.~~	≥ 101.6 and ≤ 115.4 in. H_2O##
SEQUENCE LOGIC CHANNELS		
a. Essential Bus Feeder Breaker Trip ~~(90%)~~ Degraded Voltage Relay (DVR)	~~≥ 3744 volts for~~ ~~≤ 7.8 sec~~	≥ ~~3558~~3712 volts (dropout) and ≤ 3771 volts (pickup) with a time delay of ~~≤ 7.8 sec~~ ≥ 6.4 and ≤ 7.9 sec
b. Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR) ~~(59%)~~	~~≥ 2071 and ≤ 2450 volts~~ ~~for 0.5 ± 0.1 sec~~	≥ 2071 volts (dropout) and ≤ ~~2450~~ 2492 volts (pickup) with a time delay of ~~volts for~~≥ 0.42 and ≤ 0.58 sec ~~0.5 ± 0.1 sec#~~
INTERLOCK CHANNELS		
a. Decay Heat Isolation Valve and Pressurizer Heater	~~N.A.~~	< 328 psig##*

DELETE

[#] ~~Allowable Value for CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION~~
* Referenced to the RCS Pressure instrumentation tap.
[##] Allowable Values for CHANNEL FUNCTIONAL TEST

TABLE 3.3-5

SAFETY FEATURES SYSTEM RESPONSE TIMES

DELETED

INFORMATION ONLY

TABLE 4.3-2

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. INSTRUMENT STRINGS				
a. DELETED	DELETED	DELETED	DELETED	DELETED
b. Containment Pressure - High	S	E	M(2)	1, 2, 3
c. Containment Pressure - High-High	S	E	M(2)	1, 2, 3
d. RCS Pressure - Low	S	R	M	1, 2, 3
e. RCS Pressure - Low-Low	S	R	M	1, 2, 3
f. BWST Level - Low-Low	S	E	M	1, 2, 3
2. OUTPUT LOGIC				
a. Incident Level #1: Containment Isolation	S	E	M	1, 2, 3, 4
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	S	E	M	1, 2, 3, 4
c. Incident Level #3: Low Pressure Injection	S	E	M	1, 2, 3, 4
d. Incident Level #4: Containment Spray	S	E	M	1, 2, 3, 4
e. Incident Level #5: Containment Sump Recirculation Permissive	S	E	M	1, 2, 3, 4
3. MANUAL ACTUATION				
a. SFAS (Except Containment Spray and Emergency Sump Recirculation)	NA	NA	M(1)	1, 2, 3, 4
b. Containment Spray	NA	NA	M(1)	1, 2, 3
~~4. SEQUENCE LOGIC CHANNELS~~	~~S~~	~~NA~~	~~M~~	~~1, 2, 3, 4~~

TABLE 4.3-2 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. SEQUENCE LOGIC CHANNELS				
a. Sequencer	S	NA	M	1, 2, 3, 4
b. Essential Bus Feeder Breaker Trip, Degraded Voltage Relay (DVR)	S	A	M	1, 2, 3, 4
c. Diesel Generator Start, Load Shed on Essential Bus, Loss of Voltage Relay (LVR)	S	A	M	1, 2, 3, 4
5. INTERLOCK CHANNELS				
a. Decay Heat Isolation Valve	S	R	**	1, 2, 3
b. Pressurizer Heater	S	R	**	3 ##

** ~~See Specification 4.5.2.d.1~~

TABLE NOTATION

(1) Manual actuation switches shall be tested at least once per REFUELING INTERVAL. All other circuitry associated with manual safeguards actuation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days.

(2) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either vacuum or pressure to the appropriate side of the transmitter.

** See Specification 4.5.2.d.1

DELETED

When either Decay Heat Isolation Valve is open.

LAR 03-0014
Attachment 2

PROPOSED RETYPED
TECHNICAL SPECIFICATION PAGES

(6 pages follow)

TABLE 1.2

FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 6 months. *
A	At least once per 12 months. *
E	At least once per 18 months. *
R	At least once per 24 months. *
S/U	Prior to each reactor startup.
N/A	Not applicable.

*In these Technical Specifications, 6 months is defined to be 184 days, 12 months is defined to be 366 days, 18 months is defined to be 550 days, and 24 months is defined to be 730 days.

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the Allowable Value column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4.

b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. This RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation.

4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME* of each SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3.

---

* The response times (except for manual initiation) include diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure.

TABLE 3.3-3 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
3. MANUAL ACTUATION					
a. SFAS (except Containment Spray and Emergency Sump Recirculation)	2	2	2	1,2,3,4	12
b. Containment Spray	2	2	2	1,2,3,4	12
4. SEQUENCE LOGIC CHANNELS					
a. Sequencer	4	2/BUS	2/BUS	1,2,3,4	15#
b. Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR)	4*****	2/BUS	2/BUS	1,2,3,4	15#
c. Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR)	4	2/BUS	2/BUS	1,2,3,4	15#
5. INTERLOCK CHANNELS					
a. Decay Heat Isolation Valve	1	1	1	1,2,3	13#
b. Pressurizer Heaters	2	2	2	3******	14

TABLE 3.3-4

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION ALLOWABLE VALUES

FUNCTIONAL UNIT	ALLOWABLE VALUES##
INSTRUMENT STRINGS	
a. DELETED	DELETED
b. Containment Pressure – High	≤ 19.38 psia
c. Containment Pressure - High-High	≤ 41.65 psia
d. RCS Pressure – Low	≥ 1576.2 psig
e. RCS Pressure - Low-Low	≥ 441.42 psig
f. BWST Level	≥ 101.6 and ≤ 115.4 in. H_2O
SEQUENCE LOGIC CHANNELS	
a. Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR)	≥ 3712 volts (dropout) and ≤ 3771 volts (pickup) with a time delay of ≥ 6.4 and ≤ 7.9 sec
b. Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR)	≥ 2071 volts (dropout) and ≤ 2492 volts (pickup) with a time delay of ≥ 0.42 and ≤ 0.58 sec
INTERLOCK CHANNELS	
a. Decay Heat Isolation Valve and Pressurizer Heater	< 328 psig *

* Referenced to the RCS Pressure instrumentation tap.

Allowable Values for CHANNEL FUNCTIONAL TEST

TABLE 4.3-2

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. INSTRUMENT STRINGS				
a. DELETED	DELETED	DELETED	DELETED	DELETED
b. Containment Pressure - High	S	E	M(2)	1, 2, 3
c. Containment Pressure - High-High	S	E	M(2)	1, 2, 3
d. RCS Pressure - Low	S	R	M	1, 2, 3
e. RCS Pressure - Low-Low	S	R	M	1, 2, 3
f. BWST Level - Low-Low	S	E	M	1, 2, 3
2. OUTPUT LOGIC				
a. Incident Level #1: Containment Isolation	S	E	M	1, 2, 3, 4
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	S	E	M	1, 2, 3, 4
c. Incident Level #3: Low Pressure Injection	S	E	M	1, 2, 3, 4
d. Incident Level #4: Containment Spray	S	E	M	1, 2, 3, 4
e. Incident Level #5: Containment Sump Recirculation Permissive	S	E	M	1, 2, 3, 4
3. MANUAL ACTUATION				
a. SFAS (Except Containment Spray and Emergency Sump Recirculation)	NA	NA	M(1)	1, 2, 3, 4
b. Containment Spray	NA	NA	M(1)	1, 2, 3

TABLE 4.3-2 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. SEQUENCE LOGIC CHANNELS				
a. Sequencer	S	NA	M	1, 2, 3, 4
b. Essential Bus Feeder Breaker Trip, Degraded Voltage Relay (DVR)	S	A	M	1, 2, 3, 4
c. Diesel Generator Start, Load Shed on Essential Bus, Loss of Voltage Relay (LVR)	S	A	M	1, 2, 3, 4
5. INTERLOCK CHANNELS				
a. Decay Heat Isolation Valve	S	R	**	1, 2, 3
b. Pressurizer Heater	S	R	**	3 ##

TABLE NOTATION

(1) Manual actuation switches shall be tested at least once per REFUELING INTERVAL. All other circuitry associated with manual safeguards actuation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days.

(2) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either vacuum or pressure to the appropriate side of the transmitter.

** See Specification 4.5.2.d.1

DELETED

When either Decay Heat Isolation Valve is open.

LAR 03-0014
Attachment 3

TECHNICAL SPECIFICATION BASES PAGES

(3 pages follow)

Note: The Bases pages are provided for information only.

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.

SFAS Table 3.3-3, ACTION 10, allows entry into this ACTION statement to be delayed for up to 8 hours when a functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, provided at least two other corresponding functional units remain OPERABLE. The term "corresponding functional units" refers to the functional units (Total No. of Units column in Table 3.3-3) for the same trip setpoint in the other SFAS channels. For example, the corresponding functional units for a Containment Pressure - High unit are the other three Containment Pressure - High units. This 8-hour allowance provides a reasonable time to perform the required surveillance testing without having to enter the ACTION statement and implement the required ACTIONS.

SFRCS Table 3.3-11, ACTION 16, allows entry into this ACTION statement to be delayed for up to 8 hours when a channel is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, provided the remaining actuation channel remains OPERABLE. This 8-hour allowance provides a reasonable time to perform the required surveillance testing without having to enter the ACTION statement and implement the required ACTIONS.

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.
>
> 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.

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

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 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.

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

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 3009
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
List DVR and LVR Trip Setpoints in the USAR	Upon implementation of the proposed license amendment.