

Docket Number 50-346
License Number NPF-3
Serial Number 2583
Enclosure 1
Page 1

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. Also included is the Safety Assessment and Significant Hazards Consideration.

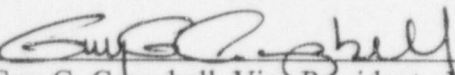
The proposed changes (submitted under cover letter Serial Number 2583) concern:

Appendix A, Technical Specifications:


3/4.3.2.1 Safety Features Actuation System Instrumentation

Bases 3/4.3.1 Reactor Protection System and Safety System Instrumentation
and 3/4.3.2

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, Vice President - Nuclear

Affirmed and subscribed before me this 26th day of July, 1999.


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

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The following information is provided to support issuance of the requested changes to the Davis-Besse Nuclear Power Station (DBNPS), Unit Number 1 Operating License Number NPF-3, Appendix A, Technical Specification (TS) 3/4.3.2.1, Safety Features Actuation System Instrumentation, and TS Bases 3/4.3.1 and 3/4.3.2, Reactor Protection System and Safety System Instrumentation:

A. Time Required to Implement: The License Amendment associated with this license amendment application is to be implemented within 120 days after NRC issuance.

B. Reason for Change (License Amendment Request Number 97-0012):

The proposed changes to TS 3/4.3.2.1 would revise Table 3.3-4, Safety Features Actuation System Instrumentation Trip Setpoints, to remove from TS 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 also modify the "Allowable Values" entry for these same Functional Units, consistent with updated calculations and current setpoint methodology.

The proposed changes to TS Bases 3/4.3.1 and 3/4.3.2 are associated with the above changes.

C. Safety Assessment and Significant Hazards Consideration: See Attachment.

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Attachment

**SAFETY ASSESSMENT AND SIGNIFICANT HAZARDS CONSIDERATION
FOR
LICENSE AMENDMENT REQUEST NUMBER 97-0012**

(24 pages follow)

**SAFETY ASSESSMENT AND SIGNIFICANT HAZARDS CONSIDERATION
FOR
LICENSE AMENDMENT REQUEST NUMBER 97-0012**

TITLE:

Proposed Modification to the Davis-Besse Nuclear Power Station Unit Number 1 (DBNPS), Facility Operating License NPF-3, Appendix A - Technical Specifications, to Revise Technical Specification (TS) 3/4.3.2.1, Safety Features Actuation System Instrumentation, and the Associated Bases.

DESCRIPTION:

The proposed TS changes to TS 3/4.3.2.1, Safety Features Actuation System Instrumentation, would revise TS Table 3.3-4, Safety Features Actuation System Instrumentation Trip Setpoints, to remove from TS 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%)". Consistent with updated calculations and current setpoint methodology, the proposed changes would also revise the "Allowable Values" entry for these same Functional Units. The proposed changes to Bases 3/4.3.1 and 3/4.3.2 are associated with the above changes. These changes are described in further detail below.

In addition, the proposed changes would modify the Table 3.3-4 footnotes applicable to the Sequence Logic Channel 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. As described in further detail below, the proposed changes would resolve this inconsistency by applying footnote "##" (Channel Functional Test only) to the Allowable Values for the Sequence Logic Channels.

The following specific changes are proposed:

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, "Improved Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors," Revision 1, only the Allowable Value would be specified for each of these Functional Units. Nominal trip setpoints are specified in the setpoint analysis, and are included in the DBNPS Relay Setting Manual, a DBNPS-controlled document, for reference. These 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).

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 " ≥ 3710 volts for $8.0 +0.7 -1.2$ sec".

In addition to the above changes, Footnote "#" is proposed to be removed from the Allowable Value for Functional Unit Sequence Logic Channel "b", and footnote "##" is proposed to be added to both the Allowable Value for Functional Unit Sequence Logic Channels "a" and "b". 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.

Limiting Condition for Operation (LCO) 3.3.2.1

Consistent with the above changes, LCO 3.3.2.1 is proposed to be revised to include SFAS Table 3.3-4 Sequence Logic Channels "a" and "b" in the listing of Functional Units for which only the Allowable Value is specified in the TS.

Bases 3/4.3.1 and 3/4.3.2, Reactor Protection System and Safety System Instrumentation

Consistent with the above changes, the Bases is proposed to be revised to include SFAS Table 3.3-4 Sequence Logic Channels "a" and "b" in the discussion of instrumentation for which only the Allowable Value is specified in the TS.

The proposed changes are shown on the attached marked-up Operating License pages.

SYSTEMS, COMPONENTS, AND ACTIVITIES AFFECTED:

The Safety Features Actuation System (SFAS) instrumentation trip setpoint value used to determine the operability of the "Essential Bus Feeder Breaker Trip (90%)" channel is affected.

FUNCTIONS OF THE AFFECTED SYSTEMS, COMPONENTS, AND ACTIVITIES:

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 when 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 off-site 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 90% undervoltage relays automatically disconnect the off-site power 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 59% undervoltage relays to actuate. The 59% undervoltage relays automatically 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 allowed by the relay time delay setpoint.

EFFECTS ON SAFETY:Table 3.3-4, Safety Features Actuation System Instrumentation Trip Setpoints

The 90% undervoltage relays were included in the original DBNPS Technical Specifications issued with the Operating License, dated April 22, 1977. The need for 90% undervoltage 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 these relays, as specified in the original TS, was ≥ 3744 volts for 10 ± 1.5 seconds. The original Allowable Value was ≥ 3558 volts for 10 ± 1.5 seconds.

Amendment Number 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 90% undervoltage relays to 7 ± 1.5 seconds. The accompanying NRC Safety Evaluation Report (SER) 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 Number 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 90% undervoltage relays to their current value, ≤ 7.8 seconds. The accompanying NRC SER 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 $\pm 10\%$ (of setpoint) with an additional $\pm 5\%$ (of setpoint) for drift. Therefore, the maximum error including drift would be $\pm 15\%$ of setpoint. Therefore, the setpoint should be ≤ 7.8 seconds...

The current Allowable Value for voltage, in TS since 1977, would permit operation with 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. This Allowable Value does not balance the concern of operating with degraded voltage against the concern of inadvertent actuation. The proposed Allowable Value makes an appropriate compromise between the following design inputs:

- The observed, certified, or specified performance characteristics of DBNPS safety-related equipment.
- The voltages available at the terminals of MOVs, as calculated in accordance with GL 89-10.
- The lowest expected 345,000 Volt DBNPS switchyard voltage.
- The requirement specified in 10 CFR 50 Appendix A, Criterion 17 – Electric Power Systems, to minimize the probability of losing electrical power.

Attached is a summary of the setpoint analysis for the 90% undervoltage relays, supporting the proposed Allowable Value, including the time delay. This summary also includes the trip setpoint analysis for the 90% undervoltage relays for information only.

The accident previously evaluated in Section 15.2.9, "Loss of All AC Power to the Station Auxiliaries (Station Blackout)," of the DBNPS USAR is not affected by these proposed changes because its bounding conditions are not affected. The existing TS action statements will continue to maintain the USAR requirement to start and load one Emergency Diesel Generator (EDG) to meet minimum ESF requirements, should all AC power be lost. Therefore, there will be no adverse effect on nuclear safety.

The proposed removal from TS of Trip Setpoint values for the 90% and 59% undervoltage relays is consistent with NUREG-1430, "Improved Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors," Revision 1. Nominal trip setpoints are specified in the setpoint analysis, and are included in the DBNPS Relay Setting Manual, a DBNPS-controlled document, for reference. 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 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 Table 4.3-2 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 testing requirements for these channels, and will have no adverse effect on nuclear safety.

Limiting Condition for Operation (LCO) 3.3.2.1

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

Bases 3/4.3.1 and 3/4.3.2, Reactor Protection System and Safety System Instrumentation

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

SIGNIFICANT HAZARDS CONSIDERATION:

The Nuclear Regulatory Commission has provided standards in 10 CFR 50.92(c) for determining whether a significant hazard exists due to a proposed amendment to an Operating License for a facility. A proposed amendment involves no significant hazards consideration if operation of the facility in accordance with the proposed changes would: (1) Not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) Not create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) Not involve a significant reduction in a margin of safety. The Davis-Besse Nuclear Power Station (DBNPS) has reviewed the proposed changes and determined that a significant hazards consideration does not exist because operation of the Davis-Besse Nuclear Power Station, Unit No. 1, in accordance with these changes would:

- 1a. Not involve a significant increase in the probability of an accident previously evaluated because the proposed changes do not change any accident initiator, initiating condition, or assumption.

The proposed changes would revise Technical Specification (TS) Table 3.3-4, Safety Features Actuation System Instrumentation Trip Setpoints, to 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 also modify the "Allowable Values" entry for Functional Unit Sequence Logic Channel "a", consistent with updated calculations and current setpoint methodology. The proposed changes would also clarify an inconsistency between Table 3.3-4 and Table 4.3-2, Safety Features Actuation System Instrumentation Surveillance Requirements. The proposed changes to Limiting Condition for Operation (LCO) 3.3.2.1 and Bases 3/4.3.1 and 3/4.3.2 are associated with these changes.

The accident previously evaluated in Section 15.2.9, "Loss of All AC Power to the Station Auxiliaries (Station Blackout)," of the DBNPS Updated Safety

Analysis Report (USAR) is not affected by the proposed changes because its bounding conditions are not affected. The existing TS action statements will continue to maintain the USAR requirement to start and load one Emergency Diesel Generator (EDG) to meet minimum ESF requirements, should all AC power be lost. Furthermore, the proposed changes are based on the existing performance characteristics of plant equipment; therefore, the proposed changes will not involve a significant change to the plant design or operation.

- 1b. Not involve a significant increase in the consequences of an accident previously evaluated because the proposed changes do not invalidate assumptions used in evaluating the radiological consequences of an accident, do not alter the source term or containment isolation, and do not provide a new radiation release path or alter radiological consequences.
2. Not create the possibility of a new or different kind of accident from any accident previously evaluated because the proposed changes do not introduce a new or different accident initiator or introduce a new or different equipment failure mode or mechanism.
3. Not involve a significant reduction in a margin of safety because the proposed changes do not significantly reduce the ability of the plant to respond to a loss of AC power to the essential 4160 Volt buses in a timely manner. The revised Allowable Value for the Sequence Logic Channel "Essential Bus Feeder Breaker Trip (90%)" takes into account the need not only to be able to actuate Engineered Safety Features equipment coincident with a degraded grid condition, but to provide voltage at the required value to properly operate the equipment.

CONCLUSION:

On the basis of the above, the Davis-Besse Nuclear Power Station has determined that the License Amendment Request does not involve a significant hazards consideration. As this License Amendment Request concerns a proposed change to the Technical Specifications that must be reviewed by the Nuclear Regulatory Commission, this License Amendment Request does not constitute an unreviewed safety question.

ATTACHMENTS:

Attached are the proposed marked-up changes to the Operating License.

Also attached is a summary of the 90% undervoltage relay setpoint analysis.

REFERENCES:

1. DBNPS Operating License NPF-3, Appendix A Technical Specifications through Amendment 232.
2. DBNPS Updated Safety Analysis Report through Revision 21.
3. NUREG-1430, "Improved Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors," Revision 1.
4. DBNPS Calculations:

C-EE-004.01-049, "4.16 kV Bus Degraded Voltage (90% Undervoltage) Relay Setpoint," Revision 6.

C-EE-006.01-026, "Voltage Drop for GL 89-10 Valve Operators," Revision 14.
5. NRC-letter dated October 1, 1976, "Equipment Failures During a Degraded Grid Voltage Condition at Millstone, Unit 2" (TE Log Number 120).
6. NRC-License Amendment No. 7 to Facility Operating License No. NPF-3, November 29, 1977 (TE Log Number 304).
7. NRC-License Amendment No. 58 to Facility Operating License No. NPF-3, May 5, 1983 (TE Log Number 1279).
8. NRC Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," June 28, 1989.
9. NRC Regulatory Guide (RG) 1.105, "Instrument Setpoints for Safety Related Systems," Revision 2, February 1986.
10. Instrument Society of America Standards:

ISA-RP67.04, Part II, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation," September 1994.

ISA-S67.04, "Setpoints for Nuclear Safety Related Instrumentation," September 1994.