

Docket Number 50-346
License Number NPF-3
Serial Number 2084
Enclosure
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APPLICATION FOR AMENDMENT

TO

FACILITY OPERATING LICENSE NUMBER NPF-3

DAVIS-BESSE NUCLEAR POWER STATION

UNIT NUMBER 1

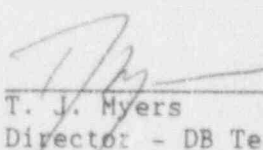
Attached are requested changes to the Davis-Besse Nuclear Power Station, Unit Number 1, Facility Operating License Number NPF-3. Also included is the Safety Assessment and Significant Hazards Consideration.

The proposed changes submitted under cover letter Serial Number 2084 concern:

Appendix A, Technical Specification (TS) 3/4.5.2, Emergency Core Cooling Systems - ECCS Subsystems - T_{avg} \geq 280° F, TS Bases 3/4.5.2 and 3/4.5.3, Emergency Core Cooling Systems - ECCS Subsystems, and TS Bases 3/4.6.2.1, Containment Systems - Depressurization and Cooling Systems - Containment Spray System

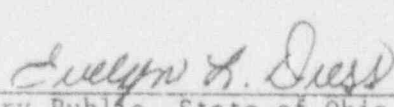
For: D. C. Shelton, Vice President,
Nuclear - Davis-Besse

By:


T. J. Myers

Director - DB Technical Services

Sworn and Subscribed before me this 9th day of November, 1992.


Notary Public, State of Ohio

EVELYN L. DRESS
NOTARY PUBLIC, STATE OF OHIO
My Commission Expires July 28, 1994

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The following information is provided to support issuance of the requested changes to the Davis-Besse Nuclear Power Station, Unit Number 1, Operating License Number NPP-3, Appendix A Technical Specifications.

- A. Time Required to Implement: This change is to be implemented within 90 days after the NRC issuance of the License Amendment.
- B. Reason for change (License Amendment Request 91-0002, R1): This application requests revision to TS 3/4.5.2, Emergency Core Cooling Systems - ECCS Subsystems - $T_{avg} \geq 280^{\circ} F$, TS Bases 3/4.5.2 and 3/4.5.3, Emergency Core Cooling Systems - ECCS Subsystems, and TS Bases 3/4.6.2.1, Containment Systems - Depressurization and Cooling Systems - Containment Spray System, to reflect the de-energization of the Borated Water Storage Tank (BWST) outlet isolation valves DH-7A and DH-7B in the open position, during operational Modes 1, 2, 3, and 4. This will allow for restructuring of the shift crew composition. The TS required minimum shift crew composition size (TS 6.2.2a) or fire brigade size (TS 6.2.2f) are not affected by this amendment request. Surveillance Requirement 4.5.2.d.2.b is proposed to be revised to reflect the testing of the valves' interlocks only during times of energization.

The proposed change for valves DH-7A and DH-7B is similar to a TS Bases change regarding valves DH-9A and DH-9E (the Containment Emergency Sump recirculation valves) accepted by the Nuclear Regulatory Commission (NRC) in its letter of October 21, 1992. This application also adds a similar Bases change to TS Bases 3/4.6.2.1 (Containment Spray System) for consistency purposes.

- C. Safety Assessment and Significant Hazards Consideration: See attached.

SAFETY ASSESSMENT AND SIGNIFICANT HAZARDS CONSIDERATION

TITLE:

Proposed Revisions to Technical Specification (TS) 3/4.5.2, Emergency Core Cooling Systems - ECCS Subsystems - $T_{avg} \geq 280^{\circ} F$, TS Bases 3/4.5.2 and 3/4.5.3, Emergency Core Cooling Systems - ECCS Subsystems, and TS Bases 3/4.6.2.1, Containment Systems - Depressurization and Cooling Systems - Containment Spray System, to Reflect De-energization of Borated Water Storage Tank Outlet Isolation Valves DH-7A And DH-7B During Modes 1, 2, 3, and 4

DESCRIPTION:

This License Amendment Request (LAR) proposes revision of Davis-Besse Nuclear Power Station (DBNPS) Operating License NPF-3, Appendix A, TS 3/4.5.2, TS Bases 3/4.5.2 and 3/4.5.3, and TS Bases 3/4.6.2.1 to allow the de-energization of the Borated Water Storage Tank (BWST) outlet isolation valves DH-7A and DH-7B, in the open position, during operational Modes 1, 2, 3, and 4. These valves would be de-energized by opening their breakers locally at their respective Motor Control Centers (MCCs) prior to entry into Mode 4 during startup. The effect of these changes will allow the restructuring of the crew composition such that one position in Toledo Edison's crew composition on each of the six shifts can be eliminated. No change is necessary to the TS required staffing of the minimum shift crew composition (TS 6.2.2a) or the fire brigade (TS 6.2.2f).

Surveillance Requirement 4.5.2.d.2.b is proposed to be revised to reflect the testing of the valves' interlocks only during times of motor operator energization.

These proposed changes for valves DH-7A and DH-7B follow a TS Bases change proposed in a letter submitted to the Nuclear Regulatory Commission (NRC) on October 4, 1990 (Toledo Edison (TE) letter Serial Number 1817), regarding valves DH-9A and DH-9B. This application also adds the Bases change proposed in that letter to TS Bases 3/4.6.2.1 for consistency purposes.

As a purely editorial correction, the heading to TS 3/4.5.2 on page 3/4.5-3 is proposed to have the 'greater than or equal to' sign added between the ' T_{avg} ' and ' $280^{\circ} F$ '.

SYSTEMS, COMPONENTS, AND ACTIVITIES AFFECTED:

Valves DH-7A and DH-7B (BWST outlet isolation valves)
Valves DH-9A and DH-9B (Containment Emergency Sump recirculation valves)

(Note: A simplified system drawing showing these two sets of valves is provided at the end of the package.)

The interlock between valves DH-7A/B and DH-9A/B

Minimum shift crew composition activities

SAFETY FUNCTIONS OF THE AFFECTED SYSTEMS, COMPONENTS AND ACTIVITIES:

During Modes 1 through 4, motor-operated 14-inch gate valves DH-7A (Train 2) and DH-7B (Train 1) allow BWST inventory to be provided to the Decay Heat Removal/Low Pressure Injection Pumps in the Low Pressure Injection mode and to the High Pressure Injection System for high pressure reactor coolant system injection. They also provide inventory for the containment spray pumps.

In the event of a loss of coolant accident (LOCA), motor-operated 14-inch gate valves DH-9A (Train 2) and DH-9B (Train 1) allow for suction from the Containment Emergency Sump once the BWST inventory is depleted and sufficient inventory (360,000 gallons minimum per accident analysis) exists in the Containment Emergency Sump to provide the required net positive suction head for the Decay Heat Removal/Low Pressure Injection Pumps and the Containment Spray Pumps. Valves DH-9A and DH-9B are normally closed and required to remain closed for safe shutdown, from a 10 CFR Part 50, Appendix R standpoint, so that BWST inventory is not diverted to the Containment Emergency Sump (and thus making it unavailable for normal shutdown) in the event of spurious opening of the valves. If these valves were to open, the Containment Emergency Sump could also fill with BWST inventory to the point where water could come into contact with the reactor vessel and thereby cause thermal shock. To prevent spurious opening of valves DH-9A and DH-9B under 10 CFR Part 50, Appendix R considerations, their motor operators are de-energized during Modes 1, 2, 3, and 4.

Valves DH-7A and DH-7B are interlocked with valves DH-9A and DH-9B, precluding the simultaneous opening of one or both sets of valves which could cause draining of the BWST to the Containment Emergency Sump. Valves DH-7A and DH-7B receive Safety Features Actuation System (SFAS) Level 2 and Level 5 signals. The SFAS Level 2 signal (indicative of high containment pressure or low reactor coolant system pressure) sends an open signal to these normally open valves (as well as a close signal to normally closed valves DH-9A and DH-9B) to ensure that the BWST is available to the High Pressure Injection Pump, Low Pressure Injection Pump and Containment Spray Pump suctions. The SFAS Level 5 signal (BWST low-low level) sends a permissive signal to valves DH-9A and DH-9B, thus permitting the shifting of pump suctions to the Containment Emergency Sump. Thus, due to the interlock, valves DH-7A and DH-7B normally close when the operator opens valves DH-9A and DH-9B.

The safety function of the shift crew composition is to ensure that the plant can be safely brought to cold shutdown (Mode 5) under all conditions.

EFFECTS ON SAFETY:

During TE's previous review of Control Room and Cable Spreading Room fire scenarios in accordance with 10 CFR Part 50, Appendix R, it was determined that a fire in either of these areas could cause spurious closing of valves DH-7A and DH-7B, thus isolating the BWST. This would prevent BWST water from being available for use in a normal plant shutdown. Valves DH-7A and DH-7B are both located in Fire Area AC.

The Davis-Besse Nuclear Power Station (DBNPS) Fire Hazard Analysis Report (FHAR), Revision 12, Section 4.6.AC, credits Train 2 (valve DH-7A) for safe shutdown in this fire area. FHAR Section 4.6.AC recognizes that a hot short, such as from a fire, could cause spurious closure of valve DH-7A and, therefore, requires the opening of breaker BF1148 locally at Motor Control Center (MCC) F11B to allow, if necessary, manually opening valve DH-7A by hand. Similarly, FHAR Sections 4.6.DD and 4.6.FF credit Train 1 (Valve DH-7B) for safe shutdown in these fire areas and recognizes that a hot short could cause spurious closure of valve DH-7B. Similar to valve DH-7A, manual operator action is required during a cable spreading room/control room fire to locally open breaker BE1157 at MCC E11A and manually open valve DH-7B, if necessary.

The proposed changes would allow the motor operators of valves DH-7A and DH-7B to be de-energized in their open positions during Modes 1, 2, 3, and 4 (although allowing the valves to be energized on a limited basis under administrative controls for surveillance testing or maintenance activities). This would ensure that a fire could no longer cause spurious closure of valves DH-7A and DH-7B, and therefore relieve the Control Room of needing to send an operator to open breakers BF1148 or BE1157 and, if necessary, open one of these valves by hand. For a Control Room fire, these two manual actions are currently assigned to an equipment operator on the TS minimum shift crew composition and constitute the majority of his safe shutdown responsibilities. If these two manual actions were eliminated, the remaining action that the equipment operator is tasked with performing could be assigned to another on-shift operator. This will not adversely affect either of the reactor operators' or the other equipment operator's timelines in that these additional actions can be performed after the presently assigned actions are complete and still be accomplished within the necessary timeframe.

Removing power from valves DH-7A and DH-7B during Modes 1, 2, 3, and 4 would be accomplished by locally opening the valve operators' breakers at their respective MCCs. This, however, then requires manual action outside the control room during a postulated Loss of Coolant Accident (LOCA) to close the valve operators' breakers at their respective MCCs. The de-energization of the motor operators for valves DH-7A and DH-7B as well as valves DH-9A and DH-9B, will eliminate the interlock function between them. As stated earlier, the function of the interlock is to prevent valves DH-7A and DH-7B from being open at the same time as valves DH-9A and DH-9B. The control room operators are prevented from shifting pump suction during a LOCA from the BWST to the Containment Emergency Sump until the BWST low-low level SFAS Level 5 signal is received. Manual operator action to close the breakers for valves DH-7A and DH-7B as well as valves DH-9A and DH-9B in order to allow the shifting of pump suction on a BWST low-low level (such as during a LOCA) can be accomplished without undue burden on the shift crew. The basis for this determination is:

- 1) The need to close valves DH-7A and DH-7B (and also open valves DH-9A and DH-9B) during a large break LOCA does not occur until the BWST low-low level SFAS Level 5 signal is received at

approximately 37 minutes post-LOCA (assuming both trains of high and low pressure injection as well as both trains of containment spray are running) due to the large volume of the BWST (482,778 gallons minimum per TS 3.1.2.9, Reactivity Control Systems, Borated Water Sources - Operating). Current plant emergency procedures for a large break LOCA specifically require the operators to close the breakers for valves DH-9A and DH-9B. This step in the procedure is reached approximately six minutes after the LOCA started (this time was confirmed by the simulator). Closure of the breakers for valves DH-7A and DH-7B would be added to this step in the emergency procedure. It takes an operator approximately three minutes to get all four breakers closed as confirmed by walkdowns conducted by Operations personnel. Once the BWST low-low level SFAS Level 5 signal is received (at approximately 37 minutes post-LOCA with both trains of high and low pressure injection as well as both trains of containment spray running), the operators will open valves DH-9A and DH-9B. This action, because the interlock was enabled once the breakers were closed, will close valves DH-7A and DH-7B, thereby realigning pump suctions from the BWST to the Containment Emergency Sump. The valves, per TS 4.5.2.d.2.b will take less than 75 seconds to reach their new positions.

- 2) The valve operators and MCC breakers are located in areas that will be radiologically accessible post-LOCA. A time-motion evaluation performed by plant radiological control personnel determined that the maximum expected dose accumulated by an operator shutting the four breakers at the MCCs would be less than 2.0 Rem. This dose is well within the 10 CFR Part 50, Appendix A, General Design Criteria 19 guideline of 5 Rem and within the 10 CFR Part 20 allowable quarterly dose of 3 Rem. This cumulative dose was estimated by conservatively assuming that the operator is exposed to the maximum dose rate for the entire duration required to close the breakers. In reality, the operator is exposed to the maximum dose rate only for a short portion of the total duration.

The breakers are located as follows (the breakers for valves DH-7B and DH-9B are on the same MCC):

DH-7A: Auxiliary Building 603' elevation, Room 405 on MCC F1B
DH-7B: Auxiliary Building 565' elevation, Room 200 on MCC F11A
DH-9A: Auxiliary Building 565' elevation, Room 201 on MCC F11C
DH-9B: Auxiliary Building 565' elevation, Room 209 on MCC E11A

- 3) Sufficient personnel are on shift to accomplish the task of closing the breakers for valves DH-7A and DH-7B as well as the breakers for valves DH-9A and DH-9B. Control room position indication for valves DH-7A and DH-7B is available at Panel C-5716 and can be accomplished by rewiring the control power transformer to the MCC source side of the valves' circuit breakers.

The proposed revision to Surveillance Requirement 4.5.2.d.2.b would require that the interlocks be tested only when the valves' motor operators are energized. This would ensure their operability during the limited times when the valves' motor operators are energized under administrative controls.

The proposed changes to TS Bases 3/4.5.2 and 3/4.5.3 and 3/4.6.2.1 would explain the reason for the de-energization of the valves' motor operators during Modes 1, 2, 3, and 4 and are associated administrative changes.

The containment spray system utilizes the BWST or Containment Emergency Sump as its source of spray volume. No changes are proposed for TS 3/4.6.2.1, Depressurization and Cooling Systems - Containment Spray System (applicable during Modes 1, 2, 3, and 4) because the proposed changes to TS 3/4.5.2 adequately address the valve operability requirements during Modes 1, 2, 3, and 4. A proposed change to TS Bases 3/4.6.2.1 also adds an explanation of the reason for the de-energization of the motor operators for valves DH-9A and DH-9B during Modes 1, 2, 3, and 4 and is an administrative change.

The existing Surveillance Requirement 4.5.2.d.2.b closure time of less than or equal to 75 seconds for valves DH-7A and DH-7B to close after the control room operator manually pushes the control switch to open valves DH-9A and DH-9B (which should also open in less than or equal to 75 seconds) is not affected by the proposed change. This time is solely a valve response time to the control room operator's manual action.

Based on the above assessment, Toledo Edison has determined that these proposed changes do not adversely impact 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. Toledo Edison 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 Number 1, in accordance with the proposed changes would:

- 1a. Not involve a significant increase in the probability of an accident previously evaluated because the removal of power to these valves does not affect the large break loss of coolant accident (LOCA) probability.

- 1b. Not involve a significant increase in the consequences of an accident previously evaluated because the changes do not alter the Updated Safety Analysis Report (USAR) LOCA evaluation and ensure that the plant can be safely shutdown for an 10 CFR Part 50, Appendix R fire. There is sufficient time available under the LOCA sequence of events to close the breakers before the operator is required to transfer pump suctions to the containment emergency sump. Procedures will require that the breakers are closed by the operators. The cumulative radiation dose received by the operator while performing these manual actions would be below the guidelines of 10 CFR Part 20 and the 10 CFR Part 50, Appendix A, General Design Criteria 19.
- 2a. Not create the possibility of a new kind of accident from any accident previously evaluated because adequate time is available under the LOCA sequence of events to the operators to restore power to the Borated Water Storage Tank (BWST) outlet valves and the containment emergency sump valves when needed. The breakers needed to restore the power to these valves are located in radiologically accessible areas post-LOCA.
- 2b. Not create the possibility of a different kind of accident from any accident previously evaluated because adequate time is available to the operators to restore power to the BWST outlet valves and the containment emergency sump valves when needed. The breakers needed to restore the power to these valves are located in radiologically accessible areas post-LOCA.
3. Not involve a significant reduction in a margin of safety because these are not significant changes to the initial conditions contributing to accident severity or consequences. There is sufficient time available to close the breakers before the operator is required to transfer pump suctions from the BWST to the Containment Emergency Sump.

CONCLUSION:

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

ATTACHMENT:

In Attachment 1 are the proposed changes to the Operating License. For informational purposes, also attached to this letter are the TS Bases change proposed for valves DH-9A and DH-9B submitted to the NRC on October 4, 1990 as well as a simplified system drawing showing valves DH-7A, DH-7B, DH-9A, and DH-9B.