APPLICATION FOR AMENDMENT

TO

FACILITY OPERATING LICENSE NUMBER NPF-3

FOR

DAVIS-BESSE NUCLEAR POWER STATION

UNIT NUMBER 1

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

The proposed changes submitted under cover letter Serial Number 1886 concern:

Appendix A, Technical Specifications Section 3/4.7.1.3, Plant Systems, Condensate Storage Tank

Appendix A, Technical Specifications Bases Section 3/4.7.1.3, Plant Systems, Condensate Storage Facilities

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

By: _____
T. J. Myers, Director - Technical Services

Sworn and subscribed before me this 15th day of February, 1991.

_____
Notary Public, State of Ohio

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

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 NPF-3, Appendix A, Technical Specification (TS) 3/4.7.1.3, Condensate Storage Tank, and TS Bases 3/4.7.1.3, Condensate Storage Facilities.

A. Time Required to Implement: This change is to be implemented within 45 days after Nuclear Regulatory Commission issuance of the License Amendment.

B. Reason for Change (Facility Change Request Number 86-0018):

This change will delete the reference to the Deaerator Storage Tanks (DSTs) as condensate storage facilities for the Auxiliary Feedwater System and make editorial corrections in nomenclature. The reason for this deletion of the DSTs from the TS is that alignment of the DSTs to the Auxiliary Feedwater Pumps' suction is not allowed because the high-temperature water can damage the AFPs' bearings, and the AFPs' discharge lines would be considered high energy lines. The editorial changes in nomenclature would serve to clarify and correctly denote that the only condensate storage facilities are the condensate storage tanks.

C. Safety Evaluation: See attached Safety Evaluation (Attachment 1).

D. Significant Hazards Consideration: See attached Significant Hazards Consideration (Attachment 2).

E. Markup of TS Pages: See attached marked-up TS pages (Attachment 3).

SAFETY EVALUATION

1.0 DESCRIPTION

1.1 Purpose

The purpose of this safety evaluation is to review the proposed change to Appendix A, Technical Specifications (TS), of the Davis-Besse Nuclear Power Station (DBNPS), Unit 1 Operating License, as presented in Facility Change Request (FCR) 86-0018. The change to TS Limiting Condition for Operation (LCO) 3.7.1.3, Condensate Storage Tank, deletes the reference to the Deaerator Storage Tanks (DSTs) as condensate storage facilities for the Auxiliary Feedwater System (AFWS). The reason for this change is that the alignment of the DSTs to the Auxiliary Feedwater Pumps (AFPs) is not allowed, because the high-temperature water from the DSTs can damage the AFPs' bearings, and the AFP discharge would be considered a high energy line if suction were taken from the DST.

Additionally, since the deletion of DSTs from TS 3.7.1.3 leaves the Condensate Storage Tanks (CSTs) as the only condensate storage facilities, and for the sake of consistency and simplicity, all instances of "condensate storage facilities" in TS LCO 3.7.1.3, TS Surveillance Requirement 4.7.1.3.1, and TS Basis 3/4.7.1.3 are being replaced with "condensate storage tanks". Also, the singular "tank" is being changed in all these TS sections to the plural "tanks".

TS 3.7.1.3 requires that the condensate storage facilities be operable with a minimum contained volume of 250,000 gallons. This requirement is satisfied by the two CSTs, which hold 250,000 gallons each. The existing procedure that satisfies the surveillance requirement of TS 3.7.1.3 does not take credit for condensate stored in the DSTs.

1.2 Discussion

The original design of the Davis-Besse Auxiliary Feedwater System was such that the two AFPs and the Start Up Feedwater Pump (SUFP) shared a common 10" supply header, which received condensate from either the DSTs or the CSTs. The SUFP was operated during plant startups and shutdowns, with suction from the DSTs and discharge to the Main Feedwater System (MFWS). During power operation, the SUFP was secured, and the CSTs aligned to be the source of water supply to the AFWS. At that time, the DSTs were considered the first backup to the CSTs; they were therefore included within the scope of TS 3.7.1.3.

The AFPs normally receive bearing cooling supply from their own discharge line. The maximum allowable bearing metal temperature is 210°F; hence, hot condensate from the DSTs, at a temperature of 213°F to 300°F, is not an adequate source of pump bearing cooling water.

The condensate from the CSTs instead typically ranges from 40°F to 80°F. In order to allow the AFPs to pump condensate received from the DSTs, their bearing cooling water source would have to be switched over to the Service Water System (SWS). Doing this requires the manual local actuation of several bearing water supply line valves. Additionally, AFP suction from the DSTs would classify AFP discharge as a high energy line, which would create high energy line break concerns.

In 1984, it was determined that these existed hazards associated with high and moderate energy line breaks in the SUFP supply and discharge lines that run within the AFP rooms. These concerns were resolved by installing the Motor Driven Feedwater Pump (MDFP) and its associated piping. The MDFP performs the previous functions of the SUFP at plant startups and cooldowns, and is also capable of providing feedwater to the steam generators in the event of the loss of the steam turbine driven AFPs. The header that brought condensate from the DSTs to the AFPs and SUFP was then diverted to the MDFP through this and other plant modifications, the possibility of supplying DST water to the AFPs has been eliminated. This improves the overall reliability of the AFWs because, as discussed above, the hot condensate from the DSTs can disable the AFPs if the supply for pump bearing cooling is not switched over to the SWS.

2.0 SYSTEMS AND COMPONENTS AFFECTED

Auxiliary Feedwater System/Auxiliary Feedwater Pumps.

Condensate Storage System/Condensate Storage Tanks.

Main Feedwater System/Deaerator Storage Tanks.

3.0 DOCUMENTS AFFECTED

DBNPS, Unit 1 Operating License, Appendix A: TSs.

DBNPS Updated Safety Analysis Report (USAR).

4.0 SAFETY FUNCTION OF SYSTEMS AND COMPONENTS AFFECTED

The emergency function of the AFWS is to provide emergency feedwater to the Once-Through Steam Generators (OTSGs) for the removal of reactor decay heat, in the absence of main feedwater, or following the loss-of-offsite power. The AFWS can also be used to promote natural circulation of the Reactor Coolant System (RCS) if all four Reactor Coolant Pumps (RCPs) are lost, i.e., forced circulation of the RCS is not available. The AFPs provide the motive power for the coolant that is used as emergency feedwater.

The function of the Condensate Storage System is to store condensate and deliver it to the AFWS. The condensate storage tanks contain sufficient water to maintain the RCS at hot standby conditions for 13 hours with steam discharge to atmosphere to cool down the RCS to less than 280°F under normal conditions (loss-of-offsite power). Two condensate storage tanks are provided with each tank containing a capacity of 250,000 gallons.

5.0 EFFECTS ON SAFETY

The DBNPS USAR, Section 9.2.6, Condensate Storage Facilities, does not refer to the DSTs as either a primary or backup source of condensate for the AFWS. The primary supply is from the non-seismic CSTs, with a seismic Class I backup from the SWS. The switchover is automatic, on a low AFP suction pressure signal.

The DSTs are also non-seismic. USAR Section 9.2.6.2 mentions that they typically contain an additional 106,000 gallons of condensate. No USAR accident analysis uses this additional inventory, because adequate supply is assumed from the CSTs, or from the SWS following a seismic event.

The two CSTs are capable of containing a combined total of 500,000 gallons of condensate. The tanks are interconnected via normally open valves (See USAR Figure 10.4-11), hence both tanks have the same level. The surveillance requirement specified in TS 4.7.1.3.1 is satisfied as part of ST 5099.01, which checks that the CSTs contain a combined water volume of at least 250,000 gallons. Accordingly, the DST inventory is not needed, and it is not taken into account in the surveillance.

In conclusion, deleting the DSTs from TS 3.7.1.3 will not adversely impact the safety of the plant; rather, it will insure that no credit can be taken for the DST inventory, which should not and cannot be supplied to the AFWS. The condensate in the DSTs is too hot to act as cooling water for the AFPs, which might damage the pumps, and would force the AFP discharge to be considered a high energy line.

6.0 UNREVIEWED SAFETY QUESTION EVALUATION

The proposed change to DBNPS TS LCO 3.7.1.3:

1. Does not increase the probability of an accident previously evaluated in the USAR, because this change has no effect on any plant system, equipment or procedure.
   [10 CFR50.59(a)(2)(i)]

2. Does not increase the consequences of an accident previously evaluated in the USAR because condensate from the DSTs is not used to mitigate any accident analyzed in the USAR that requires actuation of the AFWS. The change insures that the full 250,000 gallon inventory taken credit for by the USAR is available from the CSTs. [10 CFR 50.59(a)(2)(i)]

3. Does not increase the probability of a malfunction of equipment important to safety previously evaluated in the USAR, because this change does not involve any modifications of plant systems, equipment or procedures. This change insures that no use will be made of DST water, which can actually cause a malfunction of the AFPs. [10 CFR 50.59(a)(2)(i)]

4. Does not increase the consequences of a malfunction of equipment important to safety previously evaluated in the USAR because no USAR accident analysis uses condensate from the DSTs. The appropriate condensate inventory is provided by the CSTs. [10 CFR50.59(a)(2)(i)]

5. Does not create the possibility of an accident of a different type than any evaluated previously in the USAR because it has no effect on any plant system, equipment or procedure. [10 CFR 50.59(a)(2)(ii)]

6. Does not create the possibility of a malfunction of equipment of a different type than any evaluated previously in the USAR because the change insures that full use can be made of the primary qualified source of condensate for the AFWS, i.e., the CST inventory. [10 CFR 50.59(a)(2)(ii)]

7. Does not reduce any margin of safety as defined in the basis for any TS because the full required condensate inventory of 250,000 gallons will be available from the CSTs. [10 CFR 50.59(a)(2)(iii)]

In conclusion, no unreviewed safety question exists.

SIGNIFICANT HAZARDS CONSIDERATION

DESCRIPTION

PURPOSE

The purpose of this significant hazards consideration is to review proposed changes to Appendix A, Technical Specification (TS) 3/4.7.1.3 of the Davis-Besse Nuclear Power Station (DBNPS), Unit 1 Operating License. The change to TS Limiting Condition for Operation (LCO) 3.7.1.3, Condensate Storage Tank, deletes the reference to the Deaerator Storage Tanks (DSTs) as condensate storage facilities for the Auxiliary Feedwater System (AFWS). The reason for this change is that the alignment of the DSTs to the Auxiliary Feedwater Pumps (AFPs) is not allowed, because the high-temperature water from the DSTs can damage the AFPs' bearings, and the AFPs' discharge piping would be considered high energy lines.

Additionally, since the deletion of DSTs from TS 3.7.1.3 leaves the Condensate Storage Tanks (CSTs) as the only condensate storage facilities, and for consistency and simplicity, all instances of "condensate storage facilities" in TS LCO 3.7.1.3, TS Surveillance Requirement (SR) 4.7.1.3.1, and TS Basis 3/4.7.1.3 are proposed to be replaced with "condensate storage tanks". Also, the singular "tank" is being changed in all these TS sections to the plural "tanks".

TS 3.7.1.3 requires that the condensate storage facilities be operable with a minimum contained volume of 250,000 gallons. This requirement is satisfied by the two CSTs, which hold 250,000 gallons each. The existing procedure that satisfies SR 4.7.1.3 does not take credit for condensate stored in the DSTs.

Discussion

The original design of the DBNPS AFWS was such that the two AFPs and the Start Up Feedwater Pump (SUFP) shared a common 10" supply header which received condensate from either the DSTs or the CSTs. The SUFP was operated during plant startup and shutdown, with pump suction from the DSTs and pump discharge to the Main Feedwater System (MFWS). During power operation, the SUFP was secured and the CSTs were aligned as the source of water supply to the AFWS. At that time, the DSTs were considered the first backup to the CSTs; they were, therefore included within the scope of TS 3.7.1.3.

The AFPs normally receive bearing cooling supply from their own discharge line. The maximum allowable bearing metal temperature is 210°F; hence, hot condensate from the DSTs, at a temperature of 213°F to 300°F, is not an acceptable source of pump bearing cooling water. (The condensate from the CSTs instead typically ranges from 40°F to 80°F). In order to allow the AFPs to pump condensate received from the DSTs, the AFP bearing cooling

water source would have to be transferred to the Service Water System (SWS). This would require local manual actuation of several bearing water supply line valves. Additionally, AFPs' suction from the DSTs would classify AFPs' discharges as high energy lines and would create high energy line break concerns.

In 1984, it was determined that there existed hazards associated with high and moderate energy line breaks in the SUFP supply and discharge lines that run within the AFP rooms. These concerns were resolved by installing the Motor Driven Feedwater Pump (MDFP) and its associated piping during the June 1985 extended outage. The MDFP performs the previous functions of the SUFP during plant startup and cooldown, and is also capable of providing feedwater to the steam generators in the event of the loss of the steam turbine driven AFPs. The piping header that supplied condensate from the DSTs to the AFPs and SUFP was rerouted to the MDFPs' suction during its installation. Through this and other plant modifications, the possibility of supplying DST water to the AFPs has been eliminated. This improves the overall reliability of the AFWS because, as discussed above, the hot condensate from the DSTs can disable the AFPs if the supply for the pump bearing cooling is not transferred to the SWS.

In conclusion, the DSTs, based on design and as-built configuration considerations, cannot provide condensate to the AFWS and should, therefore, be removed from TS 3.7.1.3.

SYSTEMS AND COMPONENTS AFFECTED

AFWS/AFPs.

Condensate Storage System/CSTs.

MFWS/DSTs.

DOCUMENTS AFFECTED

Davis-Besse Nuclear Power Station Unit 1 Operating License, Appendix A, Technical Specifications.

Davis-Besse Nuclear Power Station Updated Safety Analysis Report.

SAFETY FUNCTION OF SYSTEMS AND COMPONENTS AFFECTED

The safety function of the AFWS is to provide emergency feedwater to the Once-Through Steam Generators (OTSGs) for the removal of reactor decay heat in the absence of main feedwater or following the loss-of-offsite power. The AFWS can also be used to promote natural circulation of the Reactor Coolant System (RCS) if the Reactor Coolant Pumps (RCPs) are lost, i.e., forced circulation of the RCS is not available. The AFPs provide the motive power for the coolant that is used as emergency feedwater.

The function of the Condensate Storage System is to store condensate for a suction water supply to the AFWS. The condensate storage tanks contain sufficient water to maintain the RCS at hot standby conditions for 13 hours with steam discharge to atmosphere and to cool down the RCS to less than 280°F under normal conditions (no loss-of-offsite power). Two condensate storage tanks are provided, with each tank containing a capacity of 250,000 gallons.

EFFECTS ON SAFETY

The DBNPS USAR, Section 9.2.6, Condensate Storage Facilities, does not refer to the DSTs as either a primary or backup source of condensate for the AFWS. The primary supply is from the non-seismic CSTs, with a seismic Class I backup from the SWS. The switchover is automatic on a low AFP suction pressure signal.

The DSTs are also non-seismic. Updated Safety Analysis Report (USAR) Section 9.2.6.2 mentions that they typically contain an additional 106,000 gallons of condensate. No USAR accident analysis has taken credit for this additional inventory because adequate supply is available from the CSTs, or from the SWS following a seismic event.

The two CSTs have a combined capacity of 500,000 gallons of condensate. The tanks are routinely inter-connected via normally open valves; hence, both tanks contain the same volume. The surveillance requirement, specified in TSR 4.7.1.3.1, requires that the CSTs contain a combined water volume of at least 250,000 gallons. Accordingly, the DST inventory is not needed, and it is not taken into account in satisfying the surveillance requirement.

In conclusion, deleting the DSTs from TS 3.7.1.3 will not adversely impact the safety of the plant; rather, it will ensure that no credit can be taken for the DST inventory, which should not and cannot be supplied to the AFWS. The condensate from the DSTs would have too high of a temperature to be the cooling water source for the AFPs as it may damage the pumps. In addition, using the DSTs as the AFPs' suction source would require that the AFPs' discharges be considered high energy lines which is an unanalyzed condition.

SIGNIFICANT HAZARDS CONSIDERATION

The Nuclear Regulatory Commission (NRC) 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 to an Operating License for a facility involves no significant hazards if operation of the facility in accordance with the proposed change 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 change and determined that a significant hazards consideration does not exist because operation of the DBNPS, Unit Number 1, in accordance with these changes would:

1a. Not involve a significant increase in the probability of an accident previously evaluated because no accident conditions and assumptions are affected. Revising TS 3.7.1.3 to delete the DST as a source of condensate does not increase the probability of an accident since there are no changes to any plant system, equipment or procedure. The accident analysis assumes a volume of water equal to 250,000 gallons be available for AFWS operation. This volume is available from CSTs, and has always been available from this source. Therefore, the volume of the DST is not needed nor has it been credited in USAR analyses. The changes to Surveillance Requirement (SR) 4.7.1.3.1 and Bases Section 3/4.7.1.3 are editorial only.

1b. Not involve a significant increase in the consequences of an accident previously evaluated because no accident conditions and assumptions are affected. Revising TS 3.7.1.3 to delete the DST as a source of condensate does not affect the consequences of an accident since the accident analysis assumes a volume of water equal to 250,000 gallons be available for AFWS operation. This volume is available from the CSTs, and has always been available from this source. Therefore, the volume of the DST is not needed nor has it been credited in USAR analyses. The changes to SR 4.7.1.3.1 and Bases Section 3/4.7.1.3 are editorial only.

2a. Not create the possibility of a new kind of accident from any accident previously evaluated because no accident conditions and assumptions are affected. Revising TS 3.7.1.3 to delete the DST as a source of condensate does not create the possibility of a new kind of accident since there are no changes to any plant system, equipment or procedure. The accident analysis assumes only that a volume of water equal to 250,000 gallons be available for AFWS operation. This volume is available from the CSTs, and has always been available from this source. Therefore, the volume of the DST is not needed nor has it been credited in USAR analyses, and deletion of this potential source from the TS does not create any new type of accident. The changes to SR 4.7.1.3.1 and Bases Section 3/4.7.1.3 are editorial only.

2b. Not create the possibility of a different kind of accident from any accident previously evaluated because no accident conditions and assumptions are affected. Revising TS 3.7.1.3 to delete the DST as a source of condensate does not create the possibility of a different kind of accident since there are no changes to any plant system, equipment or procedure. The accident analysis assumes only that a volume of water equal to 250,000 gallons be available for AFWS operation. This volume is available from the CSTs, and has always been available from this source. Therefore, the volume of the DST is not needed nor has it been credited in USAR analyses, and deletion of this potential source from the TS does not create any new type or accident. The changes to SR 4.7.1.3.1 and Bases Section 3/4.7.1.3 are editorial only.

3. Not involve a significant reduction in a margin of safety because the condensate volume requirements to meet analysis assumptions are not changed. Revising TS 3.7.1.3 to delete the Deaerator Storage Tank as a source of condensate only provides for a change in the cited source of condensate; however, it should be noted that the deaerator storage tank has never been considered in meeting the TS 3.7.1.3 volume requirements. The margin of safety has not been reduced because at least 250,000 gallons of condensate remain required by the TS. The changes to SR 4.7.1.3.1 and Bases Section 3/4.7.1.3 are editorial only and do not reduce the margin of safety.

CONCLUSION

On the basis of the above, Toledo Edison has determined that the License Amendment Request does not involve a significant hazard consideration.