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, Appendix A. Also included is the Safety Assessment and Significant Hazards Consideration.

The proposed changes submitted under cover letter Serial Number 2023 concern:

TS 3/4.4.6.2, Reactor Coolant System - Operational Leakage
TS Bases 3/4.4.6.2, Reactor Coolant System Leakage - Operational Leakage

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

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

Sworn and Subscribed before me this 1st day of May, 1992.

_____
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 Davis-Besse Nuclear Power Station, Unit Number 1 Operating License Number NPF-3, Appendix A, TS 3/4.4.6.2, Reactor Coolant System - Operational Leakage and its Bases.

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 Number 90-0052): This revision proposes changes to TS 3/4.4.6.2 which involve clarifying the application of TS 4.0.4 exceptions, specifying allowed usage of the containment atmosphere gaseous radioactivity monitoring system as an alternate method of determining the presence of Reactor Coolant System leakage (consistent with existing TS 3/4.4.6.1, Reactor Coolant System Leakage - Leakage Detection Systems), and clarifying other existing wording. The proposed revisions to TS Bases 3/4.4.6.2 clarify that leakage from the Reactor Coolant System Pressure Isolation Valves is "identified leakage" under TS 3/4.4.6.2 and is considered a portion of the allowed limit.

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

SAFETY ASSESSMENT AND SIGNIFICANT HAZARDS CONSIDERATION
FOR LICENSE AMENDMENT REQUEST 90-0052

TITLE:

Revision of Technical Specification (TS) 3/4.4.6.2, Reactor Coolant System - Operational Leakage, and TS Bases 3/4.4.6.2, Reactor Coolant System Leakage - Operational Leakage

DESCRIPTION:

The purpose of the proposed License Amendment is to make the following changes to Davis-Besse Nuclear Power Station (DBNPS) Operating License NPF-3, Appendix A, TS 3/4.4.6.2, Reactor Coolant System - Operational Leakage and TS Bases 3/4.4.6.2, Reactor Coolant System Leakage - Operational Leakage (see attached markups):

1. TS 3.4.6.2, Action d: remove "and 4.0.4" and revise TS 4.4.6.2.2 to clarify that the exception being taken to TS 4.0.4 applies to TS 4.4.6.2.2 (see item 4 below). Also make "Sections" singular.

2. TS 4.4.6.2.1.a: add "gaseous or" between "atmosphere" and "particulate" to allow the use of the gaseous radioactivity monitoring system as an alternate method of detecting leakage. Delete "monitor" as the purpose of the surveillance is to monitor the radioactivity in containment, not the monitor itself.

3. TS 4.4.6.2.1.b: replace "inventory" with "level" and replace "discharge" with "flow indication" to more clearly describe how the containment sump is monitored.

4. TS 4.4.6.2.2: add step "d" which states "The provisions of Specification 4.0.4 are not applicable for entry into MODES 3 and 4."

5. TS 4.4.6.2.3: Reword both sentences for clarity, without changing the meaning.

6. Bases TS 3/4.4.6.2: In the third paragraph, change "Part 100" to "10 CFR Part 100" for clarity. Also add a paragraph discussing the purpose of the Surveillance Requirements for the Reactor Coolant System (RCS) Pressure Isolation Valves.

SYSTEMS, COMPONENTS, AND ACTIVITIES AFFECTED:

Reactor Coolant System
Reactor Coolant Leakage Detection Systems

SAFETY FUNCTIONS OF THE AFFECTED SYSTEMS, COMPONENTS, AND ACTIVITIES:

The RCS consists of the reactor vessel, two vertical once-through steam generators, four shaft-sealed reactor coolant pumps, an electrically heated pressurizer, and interconnecting piping. The system, located entirely within the containment vessel, is arranged in two heat transport loops, each with two reactor coolant pumps and one steam

generator. Reactor coolant is transported through piping connecting the reactor vessel to the steam generators and flows downward through the steam generator tubes transferring heat to the steam and water on the shell side of the steam generator. In each loop the reactor coolant is returned to the reactor through two lines, each containing a reactor coolant pump. The only coolant intentionally removed from the RCS is the continuous bleed off from the reactor coolant pump seals and the letdown from the RCS to the make-up and purification system. The letdown flow rate is set at the desired rate by the operator positioning the letdown control valve and/or opening the stop valve for the letdown orifice. The reactor coolant pump seal continuous bleed off is established by the design of the reactor coolant pump seals. To maintain a constant pressurizer water level, total make-up to the RCS must equal reactor coolant pump seal continuous bleedoff and letdown. Total make-up consists of the seal injection water to the reactor coolant pump seals and reactor coolant make-up to the RCS through the RCS make-up control valve.

The RCS leakage detection system is described in Section 5.2.4, Reactor Coolant Pressure Boundary (RCPB) Leakage Detection System, of the Updated Safety Analysis Report (USAR) and includes the containment atmosphere particulate radioactivity monitoring system, the containment gaseous radioactivity monitoring system, and the containment sump level and flow monitoring system. The containment atmosphere particulate and gaseous radioactivity monitoring systems incorporate monitors which are seismic, redundant, and supplied with essential power. Both the particulate and gaseous radioactivity monitoring systems are capable of monitoring the containment atmosphere under normal and accident conditions. The normal range monitors (RE4597AA and RE4597BA) are comprised of separate channels which monitor particulate radioactivity (RE4597AAA and RE4597BAA) and noble gas radioactivity (RE4597AAC and RE4597BAC). Each particulate channel has a range of approximately $1x10^{-10}$ to $1x10^{-2}$ µci/cc and consists of a beta scintillation detector which is inserted into a lead shield to read the activity deposited on a paper filter. Each noble gas channel has a range of $1x10^{-7}$ to $3x10^{-1}$ µci/cc and consists of a beta scintillation detector capable of detecting gross gaseous radioactivity. Accident range monitors are comprised of separate channels which monitor particulate radioactivity (RE4597ABA and RE4597BBA) and noble gas radioactivity (RE4597ABB, RE4597ABC, RE4597BBB and RE4597BBC). Each particulate channel consists of three separate filter chambers, each capable of detecting over a range of 0 to 240,000 cpm. The Geiger-Muller tube associated with the particulate channels isolates the first filter chamber and opens the second filter chamber at 20 mr/hr, isolates the second filter chamber and opens the third filter chamber at 200 mr/hr, and isolates the third filter chamber at 2000 mr/hr. Indication of filter chamber isolation is provided so that plant personnel can remove the filter for counting and analysis. The two noble gas channels have a combined range of $5x10^{-2}$ to $1x10^{5}$ µci/cc and use Geiger-Muller tubes as their detectors.

Reactor Coolant System leakage to the containment vessel atmosphere is in the form of liquid and vapor. The liquid drains to the containment vessel normal sump. The vapor is condensed in the containment air coolers and also reaches the containment vessel normal sump via a drain line from the coolers. Technical Specification 3/4.4.6.2 provides the limits for RCS leakage. The RCS is tested for leakage by surveillance tests which monitor the containment atmosphere gaseous and particulate radioactivity, monitor the containment sump level, measure and record the controlled leakage from the reactor coolant pump seals, and perform the RCS water inventory balance. The water inventory balance determines the amount of RCS leakage and provides guidance for the type, location and classification of the system leak. The containment vessel normal sump level alarms on the plant computer, and the annunciator and level indicator are located in the control room.

Changes in the RCS leakage rate in the containment vessel can also cause changes in the control room indication of the containment vessel atmosphere gas activity. The response time of the RCS pressure boundary leakage detection system is dependent on the size of the leak, the age of the core, and the percentage of failed fuel. The containment atmosphere particulate monitor is the most sensitive instrument of those available for detection of reactor coolant leakage into the containment with the gaseous radioactivity monitor providing a useful backup function in the event significant RCS gaseous activity exists from fuel cladding defects. Regarding the sensitivity of detecting leaks, the containment atmosphere particulate and gaseous radioactivity monitoring systems were both designed to detect an increase in RCS pressure boundary leakage of one gpm in less than one hour. By letter (TE Serial Number 1849) dated November 6, 1990, TE submitted to the NRC a comparison of the DBNPS RCS leak detection systems to Regulatory Guide (RG) 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems". RG 1.45 provides guidance that the sensitivity and response time of a leakage detection system should be adequate to detect a leakage rate of one gpm in less than one hour. In this letter, TE noted that the containment atmosphere particulate and gaseous radioactivity monitors do not directly correlate to the RCS leak rate because of the uncertainties associated with containment background levels and reactor coolant activity levels. Either of these monitors, along with the other components of the leakage detection system, provides a quick indication in the control room of increased RCS leakage which will lead to an increased surveillance and accurate determination of leak rate using the RCS inventory balance method which has an accuracy of better than 1 gpm. It was also noted in TE's November 6, 1990 letter that the construction permit for the DBNPS Unit 1 was issued prior to the issuance of RG 1.45. Nevertheless, in Section 5.2.4 of Supplement 1 to the Safety Evaluation Report Related to the Operation of the DBNPS Unit 1, NUREG-0136, dated April 1977, the NRC Staff found the installed leakage system to be acceptable and generally in accordance with the recommendations of RG 1.45.

EFFECTS ON SAFETY:

Technical Specification 3.0.4 (copy attached) states that entry into an operational mode or other specified applicability condition shall not be made unless the conditions of the Limiting Condition for Operation (LCO) are met without reliance on provisions contained in the Action statements. The intent of this provision is to ensure that plant operation is not initiated with required equipment or systems inoperable or with other specified limits being exceeded. Exceptions to this provision have been provided for a limited number of specifications when entry into an applicable condition with potentially inoperable equipment would not adversely affect plant safety.

Technical Specification 4.0.4 (copy attached) states that entry into an operational mode or other specified applicability condition shall not be made unless the Surveillance Requirements (SRs) associated with the LCO have been performed within the stated surveillance interval or as otherwise specified. The intent of this provision is to ensure that surveillance activities have been satisfactorily demonstrated on a current basis as required to meet the operability of the LCO. Exceptions to this provision may be provided when entry into an applicable condition with potentially inoperable equipment would not adversely affect plant safety, or when entry into an applicable condition is necessary in order to be able to perform the SRs.

As currently written, TS 3/4.4.6.2 is applicable in Modes 1, 2, 3, and 4 and only excludes the provisions of TS 3.0.4 and TS 4.0.4 for the purpose of testing the RCS pressure isolation valves in Modes 3 and 4. Surveillance Requirement 4.4.6.2.2 requires that each RCS pressure isolation valve specified in Table 3.4-2, Reactor Coolant System Pressure Isolation Valves, be demonstrated operable prior to entry into Mode 2. The exception to TS 4.0.4 for SR 4.4.6.2.2 is currently written in Action statement "d" of TS 3.4.6.2 and the proposed change administratively relocates the exception to TS 4.0.4 to the text of SR 4.4.6.2.2. This is appropriate because TS 4.0.4 is applicable to SRs and not to Action statements.

As currently written, SR 4.4.6.2.1a requires monitoring of the containment atmosphere particulate radioactivity monitor. The proposed change adds containment atmosphere gaseous radioactivity monitoring as an alternative means to containment atmosphere particulate monitoring in identifying RCS leakages. This is consistent with its inclusion in TS 3/4.4.6.1 (copy attached) as part of the leakage detection system during Modes 1, 2, 3 and 4, and the Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors, NUREG-0103, Revision 4 (B&W STS). As described in TS Bases 3/4.4.6.2, an RCS leakage detection threshold of 1.0 gpm is sufficiently low to ensure early detection of additional leakage. Regulatory Guide 1.45, provides guidance that the sensitivity and response time of a leakage detection system should be adequate to detect a leakage rate of 1.0 gpm in less than one hour. The containment atmosphere particulate and gaseous radioactivity monitors do not directly correlate to the RCS leak rate because of the uncertainties associated with containment background levels and reactor coolant activity levels. Either of these monitors,

along with the other components of the leakage detection system, provides a quick indication in the control room of increased RCS leakage which will lead to an increased surveillance and accurate determination of leak rate using the RCS inventory balance method which has an accuracy of better than one gpm. Thus, the use of either of these monitors, as a part of the RCS leakage detection system employed at the DBNPS, meets the intent of the recommendations in RG 1.45. The proposed change also revises the wording of SR 4.4.6.2.1a to clarify that the containment atmosphere particulate radioactivity is to be monitored and not the monitor itself.

As currently written, SR 4.4.6.2.1b requires monitoring the containment sump "inventory" and "discharge". This proposed revision clarifies the wording of SR 4.4.6.2.1b to require monitoring the containment sump "level" and "flow indication". The containment sump inventory is monitored by changes in the containment sump level indication in the control room. Likewise, the containment sump discharge is monitored by indication of the flow monitoring system indications in the control room. This administratively revises the SR wording to be more consistent with the actual actions that are performed by control room personnel.

Surveillance Requirement 4.4.6.2.3 has been proposed to be reworded to more clearly state the requirements. This change is editorial in nature and will not adversely affect the requirement.

An editorial change has been proposed to TS Bases 3/4.4.6.2 to clarify that "Part 100 limits" is "10 CFR Part 100 limits." A proposed change to the TS Bases adds a paragraph which discusses the purpose of the SRs for the RCS pressure isolation valves and the characterization of the measured leakage as "identified leakage". The wording of this proposed Bases change is consistent with the wording in the B&W STS. These proposed changes to the TS Bases do not adversely affect any requirements.

Based on the above assessment, it is concluded that these proposed changes will have no adverse effect on safety.

SIGNIFICANT HAZARDS CONSIDERATION:

The NRC has provided standards in 10CFR50.92(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 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 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 or assumptions are affected. These proposed changes to TS 3/4.4.6.2 and TS Bases 3/4.4.6.2 do not alter the manner in which equipment is operated or maintained and, therefore, have no effect on the probability of an accident.

1b. Not involve a significant increase in the consequences of an accident previously evaluated because no equipment accident conditions or assumptions are affected which could lead to a change in consequences. These proposed changes to TS 3/4.4.6.2 and TS Bases 3/4.4.6.2 do not alter the source term, containment isolation or allowable releases and therefore have no effect on the consequences of an accident previously evaluated.

2a. Not create the possibility of a new kind of accident from any accident previously evaluated because no new accident conditions, failure mechanisms, or assumptions are introduced by these proposed changes. On matters related to nuclear safety, all accidents remain bounded by previous analysis and no new malfunctions are involved.

2b. Not create the possibility of a different kind of accident from any accident previously evaluated because no different accident conditions, failure mechanisms or assumptions are introduced by these proposed changes. Plant operation continues to be limited to those conditions assumed in the safety analysis. Therefore, these proposed changes do not create the possibility of a different kind of accident from any accident previously evaluated.

3. Not involve a significant reduction in a margin of safety because the operational leakage limits are not changed and the proposed changes do not significantly reduce or adversely affect the capabilities of any plant systems.

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 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.

ATTACHMENT:

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