

Docket Number 50-346
License Number NPF-3
Serial Number 2139
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 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 2139) concern:

Appendix A, Technical Specification Section 3/4.6.4.3, Containment Hydrogen Dilution System

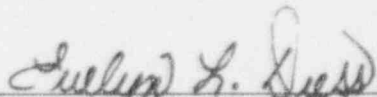
Appendix A, Technical Specification Bases 3/4.6.4, Combustible Gas Control

By:



L. F. Storz
Vice President - Nuclear

Sworn and Subscribed before me this 30th day of August, 1993.



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 NPF-3, Appendix A, Technical Specification (TS) 3/4.6.4.3, Containment Hydrogen Dilution System, and its associated 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 92-0009):

The addition of the Action statement to the Technical Specifications to allow both containment hydrogen dilution systems to be inoperable for up to 72 hours will avoid a potential unwarranted entry into TS 3.0.3 and subsequent plant shutdown.

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

SAFETY ASSESSMENT AND SIGNIFICANT HAZARDS CONSIDERATION

TITLE:

Addition of an Action Statement to Technical Specification (TS) 3/4.6.4.3, Containment Hydrogen Dilution System, Addressing Two Inoperable Containment Hydrogen Dilution Systems; and Related Change to Bases 3/4.6.4, Combustible Gas Control, Adding a Discussion of the Hydrogen Recombination System.

DESCRIPTION:

The purpose of the proposed changes is to modify the Davis-Besse Nuclear Power Station (DBNPS) Operating License NPF-3, Appendix A TS 3/4.6.4.3 (Containment Hydrogen Dilution (CHD) System) and its associated Bases.

The proposed change to TS 3/4.6.4.3 will add an additional Action statement which will state: "With both containment hydrogen dilution systems inoperable, restore at least one dilution system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours." This will provide a reasonable time period to restore at least one containment hydrogen dilution system to operable status, and therefore, avoid putting the plant through an unwarranted shutdown.

A proposed change to TS Bases 3/4.6.4 clarifies that the Containment Hydrogen Purge System Filter Unit functions in conjunction with the CHD System.

An additional proposed change to TS Bases 3/4.6.4 will add a paragraph which will state: "As a backup to the CHD System and the Containment Hydrogen Purge System, the capability to install an external hydrogen recombination system has been provided." This will provide a description of the alternative means of controlling hydrogen concentration.

SYSTEMS, COMPONENTS, AND ACTIVITIES AFFECTED:

Combustible Gas Control System (Including Hydrogen Recombination System)

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

The Combustible Gas Control System is described in the DBNPS Updated Safety Analysis Report (USAR) Subsection 6.2.5, Combustible Gas Control in Containment Vessel. The Combustible Gas Control System is designed to control the concentration of hydrogen which may be released within the Containment Vessel atmosphere following a Loss of Coolant Accident (LOCA). The system is composed of the Containment Hydrogen Dilution (containment atmosphere dilution) System and the Hydrogen Purge System.

The Containment Hydrogen Dilution System is designed to add air to the Containment Vessel to effectively maintain hydrogen concentrations within acceptable limits.

The Hydrogen Purge System is designed to release air from the Containment Vessel atmosphere through High Efficiency Particulate Air (HEPA) filters and charcoal filters to the station vent. The Hydrogen Purge System operates in conjunction with the Containment Hydrogen Dilution System. The Hydrogen Purge System is addressed by TS 3/4.6.4.4 which provides for a 30-day allowed outage time.

Post-accident hydrogen mixing is adequately accomplished by natural convective currents along with the turbulence created by the combined action of the containment spray and the containment air cooler fans.

As a backup to the Containment Hydrogen Dilution System and the Hydrogen Purge System, the capability to install an external hydrogen recombination system has been provided at DBNPS in accordance with 10 CFR 50.44, Section(c)(3)(ii).

Following a LOCA, hydrogen gas may accumulate within the Containment Vessel from various sources. If a sufficient amount of hydrogen is generated, it may react with oxygen present in the Containment Vessel atmosphere at rates rapid enough to lead to high temperatures and significant overpressurization of the Containment Vessel. As stated in AEC Safety Guide Number 7, the lower flammability limit for hydrogen in air saturated with water vapor at room temperature and atmospheric pressure is assumed to be four percent by volume.

The Combustible Gas Control System components are designed to be operated as necessary to maintain the maximum hydrogen concentration in the Containment Vessel at or below three percent by volume following a LOCA. The limit of three percent by volume was chosen to reflect a reasonable margin to alleviate problems such as nonhomogeneous mixing, etc. Using the conservative assumptions of AEC Safety Guide Number 7, and without any action, the containment hydrogen concentration limit of three percent by volume is reached at approximately 17 days after the LOCA.

The Containment Hydrogen Dilution (CHD) System consists of two full capacity, redundant, rotary, positive displacement type blowers to supply air to the containment. The CHD system controls the hydrogen concentration by the addition of air to the Containment Vessel, resulting in a pressurization of the containment and suppression of the hydrogen volume fraction. The shutoff head of the CHD system is less than the containment design pressure, which protects against over-pressurization of containment.

The Hydrogen Recombination System functions as a means of reducing any hydrogen concentration in the Containment Building. The air containing hydrogen is pumped from containment through the recombiner. The air is heated electrically within the recombiner until recombination occurs between the hydrogen and oxygen to form water vapor. The hydrogen free effluent is then returned to containment. The installed system

includes piping, manual remote operated valves, and electrical hookups for the self-contained Hydrogen Recombiner that would be brought on-site if the need should arise.

EFFECTS ON SAFETY:

The proposed change to TS 3/4.6.4.3 adding an additional Action statement allowing both containment hydrogen dilution systems to be inoperable for up to 72 hours, is acceptable because, as noted above, the lower flammability limit is assumed to be four percent by volume (hydrogen). This concentration would not be reached until approximately 28 days following a postulated LOCA. This provides ample time to either restore at least one containment hydrogen dilution system to functionality (depending on the location and nature of the cause for inoperability), or to install the external hydrogen recombination system, in the highly unlikely event that a LOCA occurs during the 72-hour allowable outage time allotted by the proposed new Action statement. Therefore, it is concluded that this proposed change has no adverse effect on plant safety.

The proposed changes to TS Bases 3/4.6.4 provide additional clarifying information, and have no adverse effect on plant 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 to an Operating License for a facility 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 change 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 these changes would:

1a. Not involve a significant increase in the probability of an accident previously evaluated because no Updated Safety Analysis Report (USAR) accident initiators are affected by the proposed changes. The proposed change to TS 3/4.6.4.3 adding an additional Action statement allowing both containment hydrogen dilution systems to be inoperable for up to 72 hours has no bearing on the probability of an accident previously evaluated. The proposed changes to TS Bases 3/4.6.4 provide additional clarifying information regarding the containment Hydrogen Purge System Filter Unit and the Hydrogen Recombiner System, and have no adverse effect on the probability of experiencing an accident previously evaluated.

1b. Not involve a significant increase in the consequences of an accident previously evaluated because the proposed changes do not invalidate accident conditions or assumptions used in evaluating the radiological consequences of any accident. The proposed change to TS 3/4.6.4.3 adding an additional Action statement allowing both containment hydrogen dilution systems to be inoperable for up to 72 hours does not alter the source term, containment isolation, or allowable releases, and therefore will not increase the radiological consequences of a previously evaluated accident. The proposed changes to TS Bases 3/4.6.4 provide additional clarifying information regarding the Containment Hydrogen Purge System Filter Unit and the Hydrogen Recombiner System, and have no adverse 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 types of failures or accident initiators are introduced by the proposed changes.

2b. Not create the possibility of a different kind of accident from any accident previously evaluated because no different accident initiators or failure mechanisms are introduced by the proposed changes.

3. Not involve a significant reduction in the margin of safety. The proposed change to TS 3/4.6.4.3 adding an additional Action statement allowing both containment hydrogen dilution systems to be inoperable for up to 72 hours will not have an adverse effect on the margin of safety because the lower flammability limit of four percent by volume hydrogen would not be reached until approximately 28 days following a postulated Loss of Coolant Accident (LOCA). This provides ample time to either restore at least one containment hydrogen dilution system to functionality (depending on the location and cause for inoperability), or to install the external hydrogen recombination system, in the highly unlikely event that a LOCA occurs during the 72-hour allowable outage time. All accident analyses will remain valid. The proposed changes to TS Bases 3/4.6.4 provides additional clarifying information and have no adverse impact on 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 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.