

Docket Number 50-346  
License Number NPF-3  
Serial Number 2563  
Enclosure  
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 2563) concern:

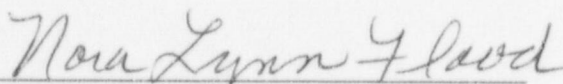
Appendix A, Technical Specifications (TS):

3/4.8.2.3	Electrical Power Systems - D. C. Distribution - Operating
TS Table 4.8-1	Battery Surveillance Requirements
Bases 3/4.8	Electrical Power Systems

I, John K. Wood, state that (1) I am Vice President - Nuclear of the Centerior Service 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:   
John K. Wood, Vice President - Nuclear

Affirmed and subscribed before me this 27th Day of October, 1998.

  
Notary Public, State of Ohio

Nora Lynn Flood, My Commission expires September 4, 2002.

Docket Number 50-346  
License Number NPF-3  
Serial Number 2563  
Enclosure  
Page 2

The following information is provided to support issuance of the requested revision to the Davis-Besse Nuclear Power Station (DBNPS), Unit Number 1, Operating License NPF-3, Appendix A, Technical Specifications (TS). The proposed changes involve the TS 3/4.8.2.3, "Electrical Power Systems - D. C. Distribution - Operating," and the associated TS Bases.

- A. Time Required to Implement: This change is to be implemented within 120 days after NRC issuance of the License Amendment.
- B. Reason for Change (License Amendment Request 97-0018): The proposed changes would revise existing TS Surveillance Requirements (SR) 4.8.2.3.2.d, 4.8.2.3.2.e, 4.8.2.3.2.f, Table 4.8-1, and the applicable TS Bases regarding discharge testing and electrolyte level monitoring of the 125 Volt D. C. station batteries. These changes are based upon the guidance provided by the "Improved Standard Technical Specifications for Babcock and Wilcox Plants," NUREG-1430, Revision 1, and IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications."
- C. Safety Assessment and Significant Hazards Consideration: See Attachment

Docket Number 50-346  
License Number NPF-3  
Serial Number 2563  
Attachment

SAFETY ASSESSMENT AND SIGNIFICANT HAZARDS CONSIDERATION  
FOR  
LICENSE AMENDMENT REQUEST 97-0018

(15 pages follow)

**SAFETY ASSESSMENT AND SIGNIFICANT HAZARDS CONSIDERATION  
FOR  
LICENSE AMENDMENT REQUEST NUMBER  
97-0018**

**TITLE:**

Proposed Modification to the Davis-Besse Nuclear Power Station Unit Number 1 (DBNPS), Facility Operating License NPF-3, Appendix A Technical Specifications (TS) to Revise TS Surveillance Requirements for the 125 Volt D. C. Station Batteries, and Make Related Changes to the Applicable TS Bases.

**DESCRIPTION:**

The proposed changes to the 125 Volt D.C. station batteries TS Surveillance Requirements include the provisions for performing: 1) "modified" performance discharge tests, 2) testing at an increased frequency when battery service life or capacity are reduced, and 3) measurement of battery electrolyte level. These changes fulfill commitments made in the Toledo Edison (TE) letter dated October 16, 1997 (TE letter Serial Number 2492), "Second Response to Request for Additional Information Regarding the License Amendment Application to Revise Technical Specifications Regarding Electrical Systems (LAR 95-0021; TAC No. M97391)." In this letter, Toledo Edison made a commitment to submit a future License Amendment Request to the NRC to incorporate certain changes based upon the guidance provided by the "Improved Standard Technical Specifications for Babcock and Wilcox Plants," (ISTS) NUREG-1430, Revision 1, and IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications." The proposed changes are discussed in detail below.

- Modify existing SR 4.8.2.3.2.d to incorporate the guidance provided by the Babcock and Wilcox ISTS to state:

At least once each REFUELING INTERVAL, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test. Once per 60 months, a modified performance discharge test may be performed in lieu of the battery service test.

- Modify existing SR 4.8.2.3.2.e to incorporate the guidance provided by the Babcock and Wilcox ISTS and IEEE 450-1995 to state:

Verify battery capacity is = 80% of the manufacturer's rating when subjected to a performance discharge test or modified performance discharge test:

1. At least once per 60 months, during shutdown, when the battery shows no signs of degradation, and has not reached 85% of service life.
  2. At least once per 12 months, during shutdown, when the battery shows signs of degradation, or has reached 85% of service life with < 100% of the manufacturer's rated capacity.
  3. At least once per 24 months, during shutdown, when the battery has reached 85% of service life with = 100% of the manufacturer's rated capacity.
- Delete existing SR 4.8.2.3.2.f since its provisions have been modified to incorporate the guidance provided by the Babcock and Wilcox ISTS and IEEE Standard (Std.) 450-1995, and included in the proposed modified SR 4.8.2.3.2.e.
  - Modify existing TS Table 4.8-1 footnote (a) to incorporate the guidance provided by IEEE Std. 450-1995 to state:
    - (a) Corrected for electrolyte temperature and level. If the level is between the high and low marks and the temperature corrected specific gravity is within the manufacturer's nominal specific gravity range, it is not necessary to correct for level.
  - Modify existing TS Table 4.8-1 footnote (c) in accordance with the proposed modification to SR 4.8.2.3.2.e, which provides for modified performance discharge testing, to state:
    - (c) Or battery charging current, following a service, performance discharge, or modified performance discharge test, is less than two amps, when on a float charge.
  - Add new TS Table 4.8-1 footnote (d) to incorporate the guidance provided by the Babcock and Wilcox ISTS and IEEE Std. 450-1995 stating:
    - (d) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.
  - Modify existing TS Bases 3/4.8 to incorporate the commitment to IEEE Std. 450-1995 into the TS Bases for station battery operability:

The Surveillance Requirements for demonstrating the OPERABILITY of the station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance, Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std. 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," except that certain tests will be performed at least once each REFUELING INTERVAL.

- Modify existing TS Bases 3/4.8 to include criteria for battery degradation that was previously included in SR 4.8.2.3.2.f:

Battery degradation is indicated when the battery capacity drops more than 10% from its capacity on the previous performance discharge or modified performance discharge test, or is below 90% of the manufacturer's rated capacity.

- Modify existing TS Bases 3/4.8 to incorporate the commitment to IEEE Std. 450-1995 into the TS Bases for battery cell electrolyte level, float voltage and specific gravity and to reflect the new provisions for modified performance discharge testing:

Table 4.8-1 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cell's float voltage and specific gravity, greater than 2.13 volts and .015 below the manufacturer's full charge specific gravity or a battery charger current of less than two amps is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than .020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than .010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery. Exceptions to the specific gravity requirements are taken to allow for the normal deviations experienced after a battery discharge and subsequent recharge associated with a service, performance discharge, or modified performance discharge test. The specific gravity deviations are recognized and discussed in IEEE Std. 450-1995.

The above changes are proposed as line-item TS improvements similar in content to the "Improved Standard Technical Specifications for Babcock and Wilcox Plants (ISTS)," NUREG-1430, Revision 1, dated April 7, 1995. The NRC's "Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors," dated July 22, 1993, recognized the benefit in allowing licensees to improve portions of their TS. This approach results in greater consistency in TS requirements and allows for the most efficient use of NRC and industry staff resources in processing TS changes.

#### **SYSTEMS, COMPONENTS, AND ACTIVITIES AFFECTED:**

This proposed license amendment affects Technical Specifications and associated Bases for the D. C. Distribution System and the 125 Volt D. C. Station Batteries. As a result, the implementing surveillance testing activities would be affected by this proposed License Amendment.

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

The Davis-Besse Nuclear Power Station (DBNPS) D.C. power system is described in the Updated Safety Analysis Report (USAR) Section 8.3.2, "DC Power System." The DBNPS D.C. equipment consists of two 250/125V D.C. motor control centers, four batteries, six battery chargers, four essential distribution panels, four 480V A.C./125V D.C. rectifiers and four nonessential distribution panels.

The four station lead-acid batteries are 125V D.C., approximately 1500 ampere-hour, on an eight hour discharge basis, and arranged to form two independent 250/125V D.C. systems. The battery electrolyte is a dilute solution of sulfuric acid and water with a nominal specific gravity of 1.215 at 77 degrees F. The batteries have one minute, 1 hour and 8 hour capacities of 1400, 750, and 187 amperes, respectively. Each battery is maintained in a fully charged condition and is normally float charged at approximately 132 volts from its associated battery charger. Battery discharge will occur either when the D.C. requirements temporarily exceed the charger capacity or during a loss of a battery charger supply. Each battery is connected to one 125V D.C. bus of one of the two D.C. motor control centers.

The batteries are sized to supply the anticipated D.C. and instrument A.C. supply for a period of one hour after the loss of the battery charger supply. This includes approximately 20% over capacity to compensate for the loss due to aging of the batteries over a 20 year period. Loads for each battery are listed in USAR Section 8.3.2.1.2, "Station Batteries."

**EFFECTS ON SAFETY:**

Technical Specification SR 4.8.2.3.2.d currently requires performance of a "battery service test" at least once each REFUELING INTERVAL during shutdown to verify that the battery capacity is adequate. SR 4.8.2.3.2.e currently states that a "performance discharge test" may be performed in lieu of the "battery service test" once per 60 month interval. The proposed change will allow the option of performing a "modified performance discharge test," rather than the current option of performing a "performance discharge test" in place of the "battery service test" once per 60 months, and will include mention of this option in SR 4.8.2.3.2.d instead of in SR 4.8.2.3.2.e.

Technical Specification SR 4.8.2.3.2.e currently requires completion of a "performance discharge test" at least once per 60 months, during shutdown, to verify the battery capacity is at least 80% of the manufacturer's rating. The proposed change will revise the current method of monitoring station battery capacity to allow the option of conducting either a "performance discharge test" or a "modified performance discharge test."

The "battery service test," performed as required by the current SR 4.8.2.3.2.d, is defined in IEEE Std. 450-1995 as a test, in the "as found" condition, of the battery's capability to satisfy the

battery duty cycle (the duty cycle consists of the load currents a battery is expected to supply for specified time periods). The performance discharge test, performed as required by the current SR 4.8.2.3.2.e and 4.8.2.3.2.f, is defined in IEEE Std. 450-1995 as a constant current or constant power capacity test, made on a battery after it has been in service, to detect any change in the capacity. The modified performance discharge test, as defined in IEEE Std. 450-1995, is a test, in the "as found" condition, of a battery's capacity and its ability to provide a high-rate, short-duration load (usually the highest rate of the duty cycle) that will confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. As such, the "modified performance discharge test" is a worst case load profile of the traditional "battery service test" and a "performance discharge test" combined. Therefore, there is no adverse effect on nuclear safety in substituting a "modified performance discharge test" for a "performance discharge test."

The TS Table 4.8-1 footnote (c) change is related to the new modified performance discharge test provisions. This change is consistent with the intent of the current footnote, and will have no adverse effect on nuclear safety.

The requirements of the current TS SR 4.8.2.3.2.f are proposed to be modified and combined with SR 4.8.2.3.2.e. TS SR 4.8.2.3.2.f will be deleted. The proposed TS SR 4.8.2.3.2.e increases the frequency of performing a performance discharge test or modified performance discharge test to an annual or biennial surveillance test under certain specified battery conditions. Additionally, in accordance with IEEE Std. 450-1995 recommended practices, measurement of battery capacity degradation is proposed to be based on the last discharge test instead of an average of the previous discharge tests as is current practice.

IEEE Std. 450-1995 states that annual performance tests of battery capacity should be made on any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% from its capacity on the previous performance test, or is below 90% of the manufacturer's rating. If the battery has reached 85% of service life with a capacity of 100% or greater of the manufacturer's rated capacity, and has no signs of degradation, performance testing at two-year intervals is acceptable.

This proposed change to SR 4.8.2.3.2.e is a line item improvement that adopts the increased battery test frequency of the Babcock and Wilcox ISTS, and IEEE Std. 450-1995. The proposed surveillance requirement change increases the frequency of battery testing to provide increased monitoring of battery capacity once degradation due to age and use is noted, thereby, increasing their reliability to perform their safety function. This increased test frequency will have no adverse effect on nuclear safety.

TS Table 4.8-1 currently requires battery electrolyte specific gravity measurement correction for temperature and level. Temperature and level correction is performed to permit trending of specific gravity to ensure adequately charged battery cells with adequate capacity. The cells'



specific gravity is based on a temperature of 77 degrees F and a specified electrolyte level. The proposed change to TS Table 4.8-1 footnote (a) will not require level correction of the electrolyte specific gravity measurement provided the electrolyte level is within the specified band and the temperature corrected specific gravity is within the specified range. This proposed change adopts the recommendations of IEEE Std. 450-1995.

The proposed addition to TS Table 4.8-1 of new footnote (d) will allow the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing. The electrolyte level limits ensure the plates suffer no physical damage, that adequate electron transfer capability is maintained and that level does not overflow causing damage to the battery, battery connections, cell covers or battery racks. This proposed change adopts the guidance of the Babcock and Wilcox ISTS and IEEE Std. 450-1995.

The proposed changes to TS Bases 3/4.8 reflect the commitment to the current industry standard for battery maintenance and testing. The proposed changes to the Bases also include the description for determining when battery degradation is indicated consistent with the Babcock and Wilcox ISTS. This description was previously included in the former TS SR 4.8.2.3.2.f. These Bases changes are administrative and will have no adverse effect on safety.

In summary, the changes being made adopt the guidance of the Babcock and Wilcox ISTS and IEEE Std. 450-1995 for discharge testing and maintenance of the 125 Volt D. C. station batteries. These changes will result in an improvement in the quality of monitoring battery life and performance. Therefore, there are no adverse effects on nuclear safety resulting from the proposed changes.

#### **SIGNIFICANT HAZARDS CONSIDERATION:**

The Nuclear Regulatory Commission has provided standards in 10 CFR Section 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 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 initiators, conditions, or assumptions are adversely affected by the proposed changes to station battery testing methodology and frequency.

- 1b. Not involve a significant increase in the consequences of an accident previously evaluated because no accident conditions or assumptions are adversely affected by the proposed changes in station battery testing methodology and frequency. The proposed changes do not alter the source term, containment isolation, or allowable radiological releases. The proposed changes are consistent with the most recent IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," and the "Improved Standard Technical Specifications for Babcock and Wilcox Plants," NUREG-1430, Revision 1.
2. Not create the possibility of a new or different kind of accident from any accident previously evaluated because no new accident initiators or assumptions are introduced by the proposed changes. The batteries are not an initiator or contributor to the initiation of an accident. No new accident scenarios, transient precursors, failure mechanisms, or limiting faults are introduced as a result of the proposed changes.
3. Not involve a significant reduction in a margin of safety because the proposed TS changes do not significantly reduce or adversely affect the capabilities of any plant structures, systems or components. These changes increase the effectiveness and frequency of the battery tests being performed. Therefore, there is not a significant reduction in a margin of safety.

**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. Furthermore, this License Amendment Request concerns a proposed change to the Technical Specifications that must be reviewed by the Nuclear Regulatory Commission. Therefore, this License Amendment Request does not constitute an unreviewed safety question.

**ATTACHMENT:**

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

**REFERENCES:**

1. DBNPS Operating License NPF-3 Appendix A Technical Specifications (through Amendment No. 226).
2. DBNPS Operating License Amendment No. 100 dated March 12, 1987 (Log No. 2232).
3. IEEE Standard 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."
4. IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications."
5. Regulatory Guide 1.129, "Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," dated February 1978.
6. DBNPS, Unit 1 Updated Safety Analysis Report Sections 8.3.2, "DC Power System," through Revision 20.
7. Letter from J. K. Wood to the NRC dated October 16, 1997, "Second Response to Request for Additional Information Regarding the License Amendment Application to Revise Technical Specifications Regarding Electrical Systems" (LAR 95-0021; TAC No. M97391) (TE Serial Letter 2492).
8. NUREG-1430, "Improved Standard Technical Specifications for Babcock and Wilcox Plants," Revision 1, dated April 7, 1995.
9. The NRC's "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors," (58 FR 39132, dated July 22, 1993).
10. DBNPS Operating License Amendment No. 219 dated February 3, 1998 (Log No. 5203).