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10CFR50.55a

Docket Number 50-346

License Number NPF-3

Serial Number 2818

December 6, 2002

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555-0001

Subject: Revision to 10 CFR 50.55a Request RP-3 and Submittal of 10 CFR 50.55a Request RP-5 for the Davis-Besse Nuclear Power Station Third Ten-Year Interval Inservice Testing Program (TAC No. M3909)

Ladies and Gentlemen:

FirstEnergy Nuclear Operating Company (FENOC) letter Serial Number 2751, dated January 11, 2002, submitted the Davis-Besse Nuclear Power Station Unit No. 1 (DBNPS) Third Ten-Year Interval Inservice Testing Program. The submittal included 10 CFR 50.55a requests for use of alternatives to or relief from the requirements of the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code), 1995 Edition with 1996 Addenda.

This letter provides a revision to the 10 CFR 50.55a request RP-3 (Attachment 1) as discussed with members of the Nuclear Regulatory Commission (NRC) staff by telephone conference call on September 11, 2002. Request RP-3, which applies to the Emergency Diesel Generator Fuel Oil Transfer Pumps, has been revised in its entirety to include a Comprehensive Pump Test. The revision to Request RP-3 is attached for NRC review and approval.

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This letter also submits an additional 10 CFR 50.55a Request RP-5 with regards to the testing frequency of the High Pressure Injection Pumps.

The FirstEnergy Nuclear Operating Company requests the NRC approve the 10 CFR 50.55a requests associated with the Third Ten Year-Interval Inservice Testing Program by January 24, 2003.

Should you have any questions or require additional information, please contact Mr. Patrick J. McCloskey, Manager-Regulatory Affairs, at (419) 321-8450.

Very truly yours,



DRW/TAT/

Attachments

cc: J.E. Dyer, Regional Administrator, Region III  
J.B. Hopkins, NRC/NRR Senior Project Manager  
C.S. Thomas, DB-1 Senior Resident Inspector  
Utility Radiological Safety Board

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**Davis-Besse Nuclear Power Station Unit 1  
Third Ten Year Interval Inservice Testing Program**

Pump Relief Request

RP-3

**System:** Diesel Fuel Oil Transfer

**Pumps:** P195-1 & P195-2, Emergency Diesel Generator (EDG)  
Fuel Oil Transfer Pumps (Centrifugal), Class 3, Group A

**Safety Function:** Transfer diesel fuel oil from the EDG Fuel Oil Storage  
Tanks to the EDG Day Tanks.

**Code Requirement:** ISTB 5.1 - An inservice test shall be run on each pump as  
specified in Table ISTB 5.1-1 (Inservice Test Frequency:  
Quarterly for Group A Test, Biennially for Comprehensive  
Test.)

ISTB 5.2.1(b) and ISTB 5.2.3(b) - For centrifugal and  
vertical line shaft pumps, the resistance of the system shall  
be varied until the flow rate equals the reference point. The  
differential pressure shall then be determined and compared  
to the reference value.

ISTB 5.2.1(c) and ISTB 5.2.3(c) - Where system resistance  
cannot be varied, flow rate and pressure shall be  
determined and compared to their respective reference  
values.

ISTB 5.2.1(d) and 5.2.3(d) - Vibration (displacement or  
velocity) shall be determined and compared to the reference  
value.

ISTB 5.2.1(e) and 5.2.3(e) - All deviations from the reference values shall be compared with the ranges of Tables ISTB 5.2.1-1 and ISTB 5.2.1-2 and corrective action taken as specified in paragraph ISTB 6.2. Vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB 5.2.1-1.

Table ISTB 5.1-1 - Inservice Test Frequency ( Quarterly)

Table ISTB 5.2.1-1 - Group A and Comprehensive Tests  
Vibration Acceptance Criteria.

Table ISTB 5.2.1-2 - Group A Test Hydraulic Acceptance  
Criteria

Table ISTB 5.2.3-1 - Comprehensive Test Hydraulic  
Acceptance Criteria

**Basis for Relief:**

In accordance with 10 CFR 50.55a(f)(5)(iii), relief is requested from the above requirements (differential pressure, flow rate, vibration, and test frequency) on the basis that compliance with the Code requirements is impractical and that the proposed alternatives will provide reasonable assurance the components are operationally ready.

10 CFR 50.55a(f)(2) requires that Class 1 and 2 components be designed and be provided with access to enable testing if the Construction Permit was issued between January 1, 1971 and July 1, 1974. The DBNPS Construction Permit was issued on March 24, 1971. However, the EDG Fuel Oil Transfer System is Class 3, and therefore, was not required to be designed to permit performance of Code inservice testing. The EDG Fuel Oil Transfer Pumps are canned rotor pumps, submerged inside the underground EDG Fuel Oil Storage Tank, and not accessible for vibration measurements. There are no

installed flow instrumentation, pressure instrumentation, valve test connections, or recirculation lines.

The EDG Fuel Oil Storage Tanks configuration consists of a safety-related 40,000 gallon seven-day capacity underground storage tank for each EDG. Each of the seven-day underground storage tanks has an internally mounted submerged EDG Fuel Oil Transfer Pump normally supplying the corresponding 6000 gallon 20-hour gross capacity day tank. In addition, the supply lines from the EDG Day Tanks can be cross-connected to each which permits either EDG to be supplied with fuel oil from either tank in an emergency. Each EDG Day Tank also has the capability of emergency fill from the non-safety-related 100,000 gallon diesel fuel oil storage tank using a flexible hose. Because of the large capacity of the day tanks, and the three diverse methods of replenishing the day tanks during EDG operation (100,000 gallon tank, 40,000 gallon tanks, and safety-related fill connection), the DBNPS EDG Fuel Oil Transfer Pumps are of lower safety significance than in a fuel oil transfer system with relatively small day tanks.

The EDG Fuel Oil Transfer Pumps are low flow pumps, rated at 10 gpm. They automatically start on a low EDG Day Tank level of approximately seven feet (approximately 5050 gallons), then automatically shut off at approximately seven and one-half feet; this corresponds to approximately 250 gallons pumped. This safety feature maintains a minimum level as required per Technical Specification 3.8.1.1.

The EDG Day Tanks are elevated to provide gravity to flow to the suction of the diesel fuel oil pumps for the EDG engines. The EDG fuel use design is approximately 4.5 gpm; therefore each day tank can last approximately 22 hours. Periodic verification of the fuel level in the EDG Day Tank is sufficient to allow offsite fuel oil delivery directly into the Day Tanks.

The EDG Fuel Oil Transfer Pumps do not have installed instrumentation to measure either flow or discharge pressure. Discharge pressure cannot be varied since there are no isolation valves.

The only possible flow measurement is by measuring EDG Day Tank volume change over time. Error in measuring this volume is dependent on fuel oil temperature and a limited change in level indication because the EDG Day Tank has a large upper circular section. Flow rate is dependent upon EDG Fuel Oil Storage Tank level and fuel oil viscosity, which varies with environmental temperature conditions. There are no recirculation pathways nor designed drainage pathways.

It is impractical to take vibration measurements on these pumps. The pumps and motors are located inside the EDG fuel oil storage tank, are not accessible during operation, and are submersed in the fuel oil being pumped.

To date no corrective maintenance has been required for these pumps. The pumps have successfully started and delivered fuel oil upon demand. The latest flow test indicates pump design flow rates are being met.

It is estimated that modification of the fuel oil transfer system to accommodate Code flow, differential pressure and vibration measurements would cost approximately \$500,000. This modification would involve replacement of the existing pumps and their relocation external to the tanks, installation of flow test loops and installation of flow and pressure instrumentation. DBNPS considers an expenditure of this magnitude unwarranted considering the reduced safety significance of the DBNPS fuel oil transfer system as compared to typical designs.

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To perform the Code testing would require extensive plant modifications. The performance of the Code testing requirements without a major modification to plant structure is impractical.

**Alternate Testing:**

Since the EDG Fuel Oil Transfer Pumps are inaccessible, no vibration monitoring (ISTB 5.2.1(e) and 5.2.3(e)) will be performed.

Pump flow functional testing is performed each month as required per Technical Specification 4.8.1.1.2. The twenty-two hours supply is sufficient to allow off-site fuel oil delivery service directly to the EDG Day Tanks, if necessary. Periodic operation of the EDGs for testing purposes require automatic operation of the EDG Fuel Oil Transfer Pumps in order to maintain the required level in the EDG Day Tanks.

Pump flow rate tests are performed each cycle. A predetermined oil level above the transfer pump is set prior to testing. The flow rate is obtained by measuring the change in EDG Day Tank level over time. An EDG Day Tank level change of approximately 150 gallons or more is timed to determine flow rate.

Flow rate is calculated from the known increase in EDG Day Tank level. Pump suction pressure is preset by fuel oil level adjustment. Pump discharge is consistent since there are no throttle valves. Based upon these conditions, pump flow rates should be repeatable and capable of predicting pump degradation.

As stated above, the EDG Fuel Oil Transfer Pumps are rated at 10 gpm. A low required action range of less than 6 gpm will be used in lieu of Table ISTB 5.2.1-2 and Table 5.2.3-1. This range will ensure the EDG Fuel Oil Transfer Pumps do not degrade below required design system flow requirements. Pump flow rates will be trended for

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degradation. In lieu of alert levels being specified, required actions will be performed if pump flow rate is determined to be outside the acceptable range.

Periodically, the EDG Fuel Oil Storage Tanks are drained, cleaned, and filled with fresh oil. The EDG Day Tanks are also drained, cleaned and inspected. At these times, a long term pump duration test is possible. The transfer pump will be required to consecutively pump 1000 gallons of fuel from the Emergency Diesel Generator Fuel Oil Storage Tank to the EDG Day Tank. Flow rate will be measured and evaluated for degradation.

These proposed alternative tests will provide reasonable assurance that the EDG Fuel Oil Transfer Pumps are operationally ready.

**Note:**

A similar ASME Code Section XI request was previously approved by the NRC for the Second Ten Year Interval Inservice Test Program (NRC letter dated April 23, 1993, TAC No. M84151, Section 3.0)

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**Davis-Besse Nuclear Power Station Unit 1  
Third Ten Year Interval Inservice Testing Program**

Pump Relief Request

RP-5

**System:** High Pressure Injection

**Pumps:** P58-1 & P58-2, High Pressure Injection (HPI) Pumps (Centrifugal), Class 2, Group A

**Safety Function:** Inject water into the Reactor Coolant System to mitigate the consequences of a Loss of Coolant Accident.

**Code Requirement:** ISTB 5.1 - An inservice test shall be run on each pump as specified in Table ISTB 5.1-1 (Inservice Test Frequency: Quarterly for Group A Test, Biennially for Comprehensive Test).

**Basis for Relief:** In accordance with 10 CFR 50.55a(f)(5)(iii), relief is requested from ISTB 5.1 on the basis that compliance with the Code requirements is impractical and that the proposed alternative testing will provide reasonable assurance the components are operationally ready.

The HPI System is equipped with a flow test line that is not designed to withstand a flow rate within 20% of the HPI Pump design flow rate, as required to fulfill the comprehensive testing requirements of ISTB 4.3(e)(1). In order to achieve the necessary flow rate, the HPI Pumps are lined up to discharge into the Reactor Coolant System with the Reactor Head removed and with water in the Refueling Canal. These plant conditions are established only during an outage in which a refueling occurs, and are not typically established during a maintenance outage.

Table ISTB 5.1-1 requires the comprehensive pump test to be performed biennially. Since the plant is on a 24-month

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fuel cycle, compliance with this requirement is normally achievable. However, if the plant experiences maintenance shutdowns, the added time between refueling outages could jeopardize compliance with this testing requirement.

Removal of the Reactor Head solely to perform the comprehensive pump test is impractical since it would substantially increase the scope and duration of a maintenance shutdown and result in associated radiation exposure.

**Alternate Testing:**

The HPI Pumps comprehensive test will be performed each refueling outage. The HPI Pumps classification will be changed from Group B to Group A in order to include Table 5.2.1-1 vibration acceptance criteria during the quarterly pump test.

This proposed alternative testing provides reasonable assurance that the High Pressure Injection Pumps are operationally ready.

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**COMMITMENT LIST**

The following list identifies those actions committed to by the Davis-Besse Nuclear Power Station (DBNPS) in this document. Any other actions discussed in the submittal represent intended or planned actions by the DBNPS. They are described only for information and are not regulatory commitments. Please notify the Manager - Regulatory Affairs (419-321-8450) at the DBNPS of any questions regarding this document or associated regulatory commitments.

**COMMITMENTS**

None

**DUE DATE**

None