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United States Nuclear Regulatory Commission
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Subject: Response to Request for Additional Information Regarding License Amendment Application for Measurement Uncertainty Recapture Power Uprate (License Amendment Request No. 05-0007) (TAC No. MD5240)

Ladies and Gentlemen:

By letter dated April 12, 2007 (Serial No. 3198), the FirstEnergy Nuclear Operating Company (FENOC) submitted License Amendment Request (LAR) No. 05-0007. The proposed amendment would revise Technical Specifications for Davis-Besse Nuclear Power Station (DBNPS), Unit No. 1, to accommodate an increase in the Rated Thermal Power from 2772 megawatts thermal (MWt) to 2817 MWt. By letter dated August 31, 2007 (Log No. 6538), the NRC provided a Request for Additional Information (RAI) containing questions concerning the LAR.

Responses to the NRC staff's RAI is provided in Attachment 1. Attachment 2 identifies that there are no commitments contained in this submittal.

If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, FENOC Manager - Fleet Licensing, at (330) 761-6071.

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The statements contained in this submittal, including its associated attachments and enclosures, are true and correct to the best of my knowledge and belief. I am authorized by the FirstEnergy Nuclear Operating Company to make this submittal. I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 8, 2007

By: Mark B. Bezilla
Mark B. Bezilla, Vice President-Nuclear

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Attachments
1. Response to Request for Additional Information
2. Commitment List

cc: Regional Administrator, NRC Region III
NRC/NRR Project Manager
Executive Director, Ohio Emergency Management Agency,
State of Ohio (NRC Liaison)
NRC Senior Resident Inspector
Utility Radiological Safety Board

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-346

To complete their review, the NRC staff has requested additional information regarding the license amendment request for the measurement uncertainty recapture power uprate (License Amendment Request No. 05-0007). FENOC's response to this request is provided below.

1. Operator Actions (RIS 2002-03 Section VII.1)

a. Identify which operator actions will require additional time to perform. Provide the time periods currently required to complete these operator actions and the times that will be required subsequent to the implementation of the proposed measurement uncertainty recapture (MUR) power uprate.

b. Have any available time periods for significant operator actions been reduced for accident scenarios and events, such as anticipated transients without scram, due to the MUR power uprate? If so, describe how the new available times were validated.

DBNPS Response:

a. No additional time will be required to perform any operator actions identified in the Updated Final Safety Analysis Report Chapter 15 accident analyses as a result of the MUR power uprate.

Although not a specific operator action, the response to Question 3.c discusses additional time for the plant to cool down from 280 °F to 140 °F.

b. There will be no reduction in time periods for significant operator actions for accident scenarios and events as identified in Updated Final Safety Analysis Report Chapter 15 accident analyses, such as anticipated transients without scram, as a result of the MUR power uprate.

2. Emergency and Abnormal Operating Procedures (RIS 2002-03 Section VII.2.A)

a. Describe any changes to operator actions in the emergency operating procedures and abnormal operating procedures required as a result of the MUR power uprate and how these changes will be integrated into the operator training program.

DBNPS Response:

a. As described in the answer to the previous question, no additional time is required for any operator actions, and available time periods for significant operator actions have not been reduced. As the only changes to the operator actions would be due to changes in the times for operator actions or available time periods, no changes are anticipated to the operator actions as a result of the MUR power uprate. Since there are no changes to the emergency operating procedures or abnormal operating procedures, no operator training specific to the emergency or abnormal operating procedures is required.

3. Control Room Controls, Displays (Including the Safety Parameter Display System), and Alarms (RIS 2002-03 Section VII.2.B)

a. Identify how much margin the operators will have to maintain the increased power production heat transfer within the prescribed parameters.

b. Describe the changes that will be made to the in-core monitoring system (IMS). Describe how you have verified that the proposed software changes to the IMS will not have any adverse effects on the operators. Are there potential software changes that could introduce false indications in the control room indicators? Will the plant specific simulator require further modifications to account for the changes that will be made to the plant computer software?

c. The submittal stated that the amount of time the operators must control the cooldown of the reactor coolant system will increase due to the increase of decay heat. Identify the increase in the amount of time that the operators will need to control the cooldown.

d. Describe how the operators will be notified of self-diagnosed errors with the Caldon leading edge flowmeter in the event that the new control room alarm is either inoperable or fails to alert the operators.

DBNPS Response:

a. The MUR power uprate will allow the rated thermal power to be increased from 2772 MWt to 2817 MWt. The analytical limit that is used in the safety analyses has not been changed. The analytical limit is 3105 MWt, which corresponds to either 112% of 2772 MWt or 110.2% of 2817 MWt. Because the analytical limit was preserved for the MUR power uprate, the license amendment request proposed to revise the Technical Specification Allowable Value for the Reactor Protection System high flux setpoint from 105.1% of 2772 MWt (2913 MWt) to 104.9% of 2817 MWt (2955 MWt). However, except for a conservative round-off of the trip setpoint, the margin between the initial power and the trip setpoint in terms of power has been maintained. For current operation, the difference is 141 MWt, and for the MUR power uprate, the difference is 138 MWt.

b. No changes are required to the core monitoring system software, which includes the heat balance calculation, to support the MUR power uprate. There are power-dependent variables in the cycle-specific database that will be updated. These changes are transparent to the operators.

The feedwater flow and temperature input to the heat balance calculation allows the operator to select between the Leading Edge Flow Meter (LEFM) flow/temperature and the feedwater flow venturis/feedwater Resistance Temperature Detector (RTD), using a manual software switch. The software switch was installed and tested in accordance with site procedures, and is presently in use. The core monitoring system displays inform the operators which flow and temperature inputs are being fed to the core monitoring system heat balance calculation.

The simulator displays have been updated to match the plant installed displays. Any changes made to the plant software are also made to the simulator software.

c. A single train cooldown analysis and a normal cooldown analysis were performed to address the effects of the proposed power uprate. A single train cooldown is defined as cooling the Reactor Coolant System (RCS) from 280 °F at six hours after plant shutdown to 140 °F by employing one Decay Heat Removal (DHR) pump, one DHR cooler, and one train of component cooling. The overall single train cooldown should be achieved within 175 hours after plant shutdown, based on system design requirements. An analysis determined that the cooldown will be extended by about 7 hours from 168 hours at 2772 MWt to 175 hours at the uprated power level.

A normal cooldown is defined as cooldown assuming all equipment is available. Under current plant conditions, the normal cooldown can be achieved within approximately 24 hours following plant shutdown. Normal cooldown is defined as cooling the RCS from 280 °F at six hours after plant shutdown to 140 °F using two trains of cooling equipment (2 trains of DHR, component cooling, and service water). At the power uprate conditions, the cooldown can be achieved within 26 hours, a two hour increase.

d. An annunciator/computer point alarm serves to alert the operators when the LEFM system has self-diagnosed a condition that has resulted in an internal alert or failure. The associated alarm procedure will then direct the operator to remove the LEFM from service.

In the event that the annunciator/computer point alarm is out of service or fails to alert the operators, there are alternate methods for the operator to verify the status of the LEFM. The LEFM provides information on system and meter alarm status to the plant process computer via a network connection. The plant process computer alarm screen will provide the alarms in the event an LEFM system has self diagnosed a condition that has resulted in an internal alert or failure so that operators are alerted. Operators also perform a RPS daily heat balance check per Technical Specification requirements. This procedure allows the operators to verify that total indicated feedwater flow (using the LEFM, if selected) is within minimum and maximum expected total feedwater flow based on heat balance power.

4. Control Room Plant Reference Simulator (RIS 2002-03 Section VII.2.C)

a. Describe how the plant simulator's fidelity will be verified after the MUR power uprate-related modifications are made.

DBNPS Response:

Simulator verification and validation testing was performed in accordance with site business practice, "Simulator Configuration Control." All engineering changes associated with the MUR power uprate modification were reviewed, and Simulator Work Orders (SWO) were issued, as applicable.

The following simulator certification tests were run, utilizing the Cycle 15 core, to verify fidelity between the plant and the simulator, prior to use of the simulator for operator training:

N3 - Zero Power Physics Test
N2A - Shutdown - Full Power Steady State to 500 degrees
N2B - Shutdown - 500 degrees to Cold Shutdown
N1A - Startup - Cold Shutdown to Hot Shutdown
N1B - Startup - Hot Shutdown to Hot Standby
N1C - Startup - Hot Standby to 500 degrees
N1D - Startup - 500 degrees to safety rods out
N1E - Startup - Safety rods out to critical
N1F - 1.0 e-8 amps to Turbine Roll
N1G - Startup - Turbine Roll to Full Power Steady State
N6 - Sixty Minute Drift Test

Tuning will occur during each subsequent fuel cycle utilizing the tests listed above.

5. Confirm that the correct calculated value of the flow measurement uncertainty includes uncertainty for the actual location of transducers within the housing as identified in Cameron Customer Information Bulletin 125, Revision 0, dated April 23, 2007.

DBNPS Response:

Cameron completed a revised uncertainty analysis to address the uncertainty in actual transducer location, consistent with Customer Information Bulletin 125. The revised uncertainty analysis is documented in Cameron Engineering Report ER-202, Revision 3, "Bounding Uncertainty Analysis for Thermal Power Determination at Davis-Besse Nuclear Power Station Using the LEFM√+ System," May 2007. Accounting for the actual transducer location resulted in a net increase in overall mass flow measurement uncertainty from 0.26 to 0.29%. The 0.29% feedwater mass flow measurement uncertainty value is consistent with the value used in the secondary heat balance uncertainty calculation (Enclosure 3 of the license amendment request).

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 contact Mr. Thomas A. Lentz, FENOC Manager - Fleet Licensing, at (330) 761-6071 if there are any questions regarding this document or any associated regulatory commitments.

COMMITMENT	**DUE DATE**
None	N/A