July 3, 2007

Mr. James H. Lash
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-SEB1
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION REGARDING THE RECIRCULATION SPRAY SYSTEM PUMP START SIGNAL LICENSE AMENDMENT REQUEST (TAC NOS. MD4290 AND MD4291)

Dear Mr. Lash:

By letter dated February 9, 2007, FirstEnergy Nuclear Operating Company (FENOC, licensee) submitted an amendment for the Beaver Valley Power Station, Unit Nos. 1 and 2 Technical Specifications. The proposed changes would be consistent with a proposed change to the Recirculation Spray System pump start signal due to a modification to the containment sump screens.

The Nuclear Regulatory Commission staff is reviewing the submittal and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). The licensee indicated that a response to the RAI would be provided within 30 days of receipt.

Please contact me at (301) 415-1016, if you have any questions on this issue.

Sincerely,

/RA/

Nadiyah S. Morgan, Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure:
RAI

cc w/encl: See next page

July 3, 2007

Mr. James H. Lash
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-SEB1
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION REGARDING THE RECIRCULATION SPRAY SYSTEM PUMP START SIGNAL LICENSE AMENDMENT REQUEST (TAC NOS. MD4290 AND MD4291)

Dear Mr. Lash:

By letter dated February 9, 2007, FirstEnergy Nuclear Operating Company (FENOC, licensee) submitted an amendment for the Beaver Valley Power Station, Unit Nos. 1 and 2 Technical Specifications. The proposed changes would be consistent with a proposed change to the Recirculation Spray System pump start signal due to a modification to the containment sump screens.

The Nuclear Regulatory Commission staff is reviewing the submittal and has determined that additional information is needed to complete its review. The specific questions are found in the enclosed request for additional information (RAI). The licensee indicated that a response to the RAI would be provided within 30 days of receipt.

Please contact me at (301) 415-1016, if you have any questions on this issue.

Sincerely,

/RA/
Nadiyah S. Morgan, Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412
Enclosure:
RAI
cc w/encl: See next page
DISTRIBUTION:

PUBLIC	RidsNrrDorlDpr	NPatel	WKemper
LPLI-1 R/F	RDennig	MScott	IAhmed
RidsNrrDorlLpl1-1	RLobel	RReyes-Maldonado	MHart
NMorgan	NKaripineni	NSalgado	ABoatwright
RidsNrrLASLittle	GWilson	KMartin	RidsAcrsAcnwMailCenter
DWerkheiser, RI	RidsOGCMailCenter	RidsRgn1MailCenter	

ADAMS Accession No: ML071640121 *See dated memos

OFFICE	LPLI-1/PM	LPLI-1/LA	DSS/SCVB/BC	DE/EEE/BC	DSS/SSIB/BC	DE/EICB/BC	DIRS/IOLB/BC	LPLI-1/BC
NAME	NMorgan	SLittle	RDennig*	GWilson*	MScott*	WKemper*	NSalgado*	MKowal
DATE	7/02/07	7/02/07	06/14/2007	06/20/2007	06/26/2007	06/27/2007	06/28/2007	7/03/07

OFFICIAL RECORD COPY

Beaver Valley Power Station, Unit Nos. 1 and 2

cc:

Joseph J. Hagan
Senior Vice President of Operations
and Chief Operating Officer
FirstEnergy Nuclear Operating Company
Mail Stop A-GO-14
76 South Main Street
Akron, OH 44308

James H. Lash
Senior Vice President of Operations
and Chief Operating Officer
FirstEnergy Nuclear Operating Company
Mail Stop A-GO-14
76 South Main Street
Akron, OH 44308

Danny L. Pace
Senior Vice President, Fleet Engineering
FirstEnergy Nuclear Operating Company
Mail Stop A-GO-14
76 South Main Street
Akron, OH 44308

Jeannie M. Rinckel
Vice President, Fleet Oversight
FirstEnergy Nuclear Operating Company
Mail Stop A-GO-14
76 South Main Street
Akron, OH 44308

David W. Jenkins, Attorney
FirstEnergy Corporation
Mail Stop A-GO-18
76 South Main Street
Akron, OH 44308

Manager, Fleet Licensing
FirstEnergy Nuclear Operating Company
Mail Stop A-GO-2
76 South Main Street
Akron, OH 44333

Ohio EPA-DERR
ATTN: Zack A. Clayton
P.O. Box 1049
Columbus, OH 43266-0149

Director, Fleet Regulatory Affairs
FirstEnergy Nuclear Operating Company
Mail Stop A-GO-2
76 South Main Street
Akron, Ohio 44333

Manager, Site Regulatory Compliance
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-A
P.O. Box 4, Route 168
Shippingport, PA 15077

Richard Anderson
Vice President, Nuclear Support
FirstEnergy Nuclear Operating Company
Mail Stop A-GO-14
Akron, Ohio 44308

Commissioner James R. Lewis
West Virginia Division of Labor
749-B, Building No. 6
Capitol Complex
Charleston, WV 25305

Director, Utilities Department
Public Utilities Commission
180 East Broad Street
Columbus, OH 43266-0573

Director, Pennsylvania Emergency
Management Agency
2605 Interstate Dr.
Harrisburg, PA 17110-9364

Beaver Valley Power Station, Unit Nos. 1 and 2 (continued)

cc:

Dr. Judith Johnsrud
Environmental Coalition on Nuclear Power
Sierra Club
433 Orlando Avenue
State College, PA 16803

Director
Bureau of Radiation Protection
Pennsylvania Department of
Environmental Protection
Rachel Carson State Office Building
P.O. Box 8469
Harrisburg, PA 17105-8469

Mayor of the Borough of Shippingport
P.O. Box 3
Shippingport, PA 15077

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 298
Shippingport, PA 15077

REQUEST FOR ADDITIONAL INFORMATION

REGARDING THE RECIRCULATION SPRAY SYSTEM PUMP START SIGNAL

LICENSE AMENDMENT REQUEST

FIRSTENERGY NUCLEAR OPERATING COMPANY

FIRSTENERGY NUCLEAR GENERATION CORP.

OHIO EDISON COMPANY

THE TOLEDO EDISON COMPANY

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-334 AND 50-412

By letter dated February 9, 2007, Agency wide Documents Access and Management System (ADAMS) accession number ML070440341, FirstEnergy Nuclear Operating Company (FENOC, licensee) submitted an amendment to the Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and 2) Technical Specifications (TSs). The proposed changes would be consistent with a proposed change to the Recirculation Spray System (RSS) pump start signal due to a modification to the containment sump screens. The Nuclear Regulatory Commission (NRC) staff is reviewing the submittal and has the following questions:

Safety Issues:

1. On page 5, section "Basis for Change No. 3" of the submittal, the licensee stated, "Although the configurations of the existing trash racks and screens and the replacement sump strainer assemblies are different, they serve the same fundamental purpose...." What are the bases to conclude that the existing trash racks and screen are equivalent to the replacement strainer? How is the design function of the removed trash racks addressed in the new design?

2. On page 9 and 25 of the submittal, the licensee stated, "....the sump strainer is a combined header for both ECCS [emergency core cooling system] trains....," but the BVPS-2 Updated Final Safety Analysis Report (UFSAR), Revision 16, page 6.2-49, states, "Trains separation between the redundant RSS trains is maintained." Does the strainer replacement represent a change from two independent sumps to a shared sump? If so, justify the change.

3. The licensee stated that due to the size, complexity, and location of the new containment sump strainer, the strainer inspection will be limited to inspect the "accessible regions." How will BVPS-1 and 2 ensure that all parts of the strainers (including "inaccessible regions") show no evidence of structural distress or abnormal corrosion, and are not restricted by debris? How will BVPS-1 and 2 ensure that the strainers will not incur any undetected latent damage (e.g., from maintenance or

Enclosure

operations activities on or in the vicinity of the strainers) that could adversely impact the strainer's performance?

4. Please describe how flow tests are performed for the inside recirculation spray (IRS) pumps to satisfy TS surveillance requirements. Also, describe how debris and foreign materials are prevented from entering the sump area (downstream of the strainers or screens) during these flow tests.

Containment and Electrical:

5. On page 5, section "Basis for Change No. 2" of the submittal, the licensee stated, "With this change both units will automatically switchover ECCS suction to the containment sump on an RWST [refueling water storage tank] level Extreme Low signal." However, the system description (page 9 of 32) states that for BVPS-1, the low-head safety injection (LHSI) pumps automatically realign to take suction from the containment sump when RWST reaches its low-low level point. But for BVPS-2, the LHSI pumps automatically stop on the low-low RWST level signal and the high-head safety injection pumps are manually realigned to take suction from the discharge of one of the two RSS pumps on each train. Please explain the apparent discrepancy in the above statements and also explain how it can be verified that adequate water inventory is actually present in the sump to meet the various pump net positive suction head (NPSH) requirements.

6. On page 4, section "Basis for Change No. 1" of the submittal, the licensee stated, "With the proposed change the recirculation spray pumps will start on a coincident Containment Pressure High-High/RWST Level Low signal. The change to the pump start signal will ensure that sufficient water is available for proper pump operation and that containment conditions are such that recirculation spray pump operation is required." Please explain how the automatic logic verifies that adequate water is present in the sump to meet the recirculation spray (RS) pump minimum NPSH requirement.

7. The licensee proposes to change the upper limit on containment average air temperature from 105 °F to 108 °F. In section "Basis for Change No. 4," the licensee stated, "This change incorporates the revised containment analysis upper limit on containment average air temperature." This has resulted in a maximum containment temperature slightly above the current equipment qualification (EQ) envelope (Section 4.1.6). On page 3 of Attachment D, it is stated that the purpose of raising the limit is to allow for an increase in the containment operating band. Section 4.1.6 provides a discussion of EQ analysis. It is stated that analysis of the impact of the increased EQ profile is ongoing and will be completed prior to approval of this license amendment request, and the subsequent operation with the proposed change to the RSS pump start signal.

    i. Please clarify if the higher temperature is assumed solely for the purpose of a more bounding analysis or is it because higher temperatures have actually occurred during normal operations. If it is the latter, is the existing containment ventilation system re-evaluated to verify that it has sufficient capacity to maintain the containment at or below 108 °F.

ii. Please provide the impact of the higher temperature on the qualified lives of the equipment. Identify equipment that need to be replaced or re-qualified, if any, in accordance with 10 CFR 50.49 due to the impact of the higher containment temperature.

iii. Please provide the results of the analysis due to the increased EQ profile.

8. Sections 4.1.7 and 5.1 addressed emergency diesel generator (EDG) loading. It is stated that the inside containment RSS pumps at BVPS-1 will be started immediately following receipt of an RWST Level low signal coincident with a Containment Pressure High-High signal. The BVPS-1 outside containment RSS pumps will be started following a 15-second delay after receiving the coincident signal. The 15-second delay limits the starting load on the EDG and maintains staggered pump start timing. The maximum load on the BVPS-1 EDG will not increase as a result of this modification, but will occur at a later time due to the delay in starting the RSS pumps. It is further stated that staggered loading of the RSS pumps is not required for BVPS-2.

i. Please confirm that the revised loading sequence has been re-evaluated to verify that it meets Regulatory Guide 1.9, as it pertains to its load accepting capability of the RSS motor loads in conjunction with other Engineered Safety Features (ESF) step loads with which the system is loaded.

ii. Please explain why staggered loading of EDG is not required for BVPS-2.

iii. Please provide affected calculations in support of above statement.

iv. Please provide revised final safety analysis report (FSAR) pages for this design change.

9. Section 4.1.2 provides a discussion of NPSH analysis. It is stated that the available NPSH for outside recirculation spray (ORS) pumps increased from 11.8 feet to 14.7 feet. What is the reason for this increase in available NPSH? Please clarify if any portion of this gain in NPSH is from reapportioning the quench spray system (QSS) pump flow from equal division to the IRS and ORS pumps to one third to IRS and two thirds to ORS. If there is, in fact, a gain in NPSH, please further explain the flow model and show that the conservatism in the analysis is not compromised.

10. In section 4.1.4 “Dose Analyses,” it is stated that the dose consequences analyses for the loss-of-coolant accident are impacted by the proposed RSS modifications, and the results of the analyses show small increases in all reported doses. Please provide the impact of the above analyses on the EQ program.

Instrumentation and Controls: Table 3.3.2-1, “ESF Actuation System Instrumentation”

11. In the Containment Spray System section, the Automatic Actuation logic function for starting quench spray (QS) pumps is required to be operable in Modes 1, 2, 3, and 4, while the same instrumentation function for starting RS pumps is not required to be operable in Mode 4. Please explain the reason for this change.

12. Condition “C” is the applicable action statement for an inoperable Automatic Actuation Logic for starting QS pumps with a Completion Time of 6 hours. Please justify using Condition “F” for an inoperable Automatic Actuation Logic for starting RS pumps with a Completion Time of 48 - 60 hours.

13. The TS Bases indicates that RWST Level Extreme Low instrumentation has four transmitters (required channels). In the revised Table 3.3.2-1, under “Required Channels”, the number of trains is not clear. Please explain the reason for adding two trains next to the existing entry of four channels.

14. Provide documentation (including sample calculations) of the methodology used for establishing the limiting setpoint (or Nominal Trip Setpoint) and the limiting acceptable values for the as-found and as-left setpoints, as measured in periodic surveillance testing. If the NRC staff has previously reviewed this methodology, please provide the reference for the safety evaluation. Also, indicate the related analytical limits and other limiting design values (and the source of these values) for the instrument setpoint of the RWST Level Low.

Human Performance:

15. Will the operator align the two internal RSS pumps (one on each train) respectively to one high head safety injection pump and one LHSI pump to transfer suction from the RWST to the containment sump upon receipt of the RWST Level Low signal in BVPS-2?

16. Has an evaluation of the manual actions been performed to determine the change in the environment in which the operator is expected to perform the actions effected by the license amendment request (LAR)? Does this affect the ability of the operator to successfully complete the manual actions necessary to manually re-align the two internal RSS pumps in BVPS-2, and as well as, stop the QSS pumps for BVPS-1 and 2 when the RWST Level Low alarm is received?

17. How will the proposed LAR affect the times associated with the manual actions required for the operators to perform their tasks?

    a. What is the current available response time for operators to manually re-align the two internal RSS pumps at BVPS-2?

    b. If the operator response times were affected by the proposed LAR, indicate how the response times have changed, and as well as, how they will be validated.

    c. How will the current operator response times be affected by the proposed signal delay to the RSS pumps? What is the expected time frame in which the RSS pumps for both Units initiate upon receipt of the RWST Level Low signal?

18. Are the manual actions included in the Emergency Operating Procedures, Abnormal Operating Procedures, or normal operating procedures as a part of the BVPS-1 and 2 UFSAR? If so, how will the procedures be changed due to the proposed LAR?

19. Indicate how the operators will be informed of the change to the usage of RSS pumps with the delayed signal. Describe all changes to operator actions, control room modifications (displays, controls, alarms, etc.), and operator training methods that will be affected by this proposed change to the RSS.