May 15, 2008

Mr. Peter P. Sena III
Site Vice President
FirstEnergy Nuclear Operating Company
Mail Stop A-BV-SEB-1
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE BEAVER VALLEY POWER STATION, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. MD6593 AND MD6594)

Dear Mr. Sena:

By letter dated August 27, 2007, FirstEnergy Nuclear Operating Company submitted an application pursuant to 10 CFR Part 54, to renew the operating licenses for Beaver Valley Power Station, Units 1 and 2, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Mr. Cliff Custer of your staff, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-2989 or e-mail Kent.Howard@nrc.gov.

Sincerely,

\RA

Kent L. Howard, Sr., Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure:
As stated

cc w/encl: See next page

May 15, 2008

Mr. Peter P. Sena III
Site Vice President
FirstEnergy Nuclear Operating Company
Mail Stop A-BV-SEB-1
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE BEAVER VALLEY POWER STATION, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. MD6593 AND MD6594)

Dear Mr. Sena:

By letter dated August 27, 2007, FirstEnergy Nuclear Operating Company submitted an application pursuant to 10 CFR Part 54, to renew the operating licenses for Beaver Valley Power Station, Units 1 and 2, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Mr. Cliff Custer of your staff, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-2989 or e-mail Kent.Howard@nrc.gov.

Sincerely,

\RA

Kent L. Howard, Sr., Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure:
As stated
cc w/encl: See next page
DISTRIBUTION: See next page
ADAMS Accession No.: ML081120539

OFFICE	LA:DLR	PM:RPB2:DLR	BC:RER2:DLR	BC:RPB2:DLR
NAME	IKing	KHoward	RAuluck	RFranovich BPham for
DATE	5/9/08	5/12/08	5/14/08	5/15/08

OFFICIAL RECORD COPY

Letter to P. Sena from K. Howard, dated, May 15, 2008

DISTRIBUTION:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE BEAVER VALLEY POWER STATION, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. MD6593 AND MD6594)

HARD COPY:
DLR RF

E-MAIL:
PUBLIC
SSmith (srs3)
SDuraiswamy
RidsNrrDlr
RidsNrrDlrRlra
RidsNrrDlrRlrb
RidsNrrDlrRlrc
RidsNrrDlrReba
RidsNrrDlrRebb
RidsNrrDciCvib
RidsNrrDciCpnb
RidsNrrDraAfpb
RidsNrrDeEmcb
RidsNrrDeEeeb
RidsNrrDssSbwb
RidsNrrDssSbpb
RidsNrrDssScvb
RidsOgcMailCenter

KHoward
ESayoc
NMorgan
MModes, RI
PCataldo, RI
DWerkheiser, RI

Beaver Valley Power Station, Units 1 and 2

cc:

Joseph J. Hagan
President and Chief Nuclear Officer
FirstEnergy Nuclear Operating Company
Mail Stop A-GO-19
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 Nuclear Operating Company
Mail Stop A-GO-15
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 44308

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, OH 44308

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

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 Drive
Harrisburg, PA 17110-9364

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

cc:

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

Cliff Custer
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
P.O. Box 4, Route 168
Shippingport, PA 15077

Mike Banko
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
P.O. Box 4, Route 168
Shippingport, PA 15077

Julie Firestone
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
P.O. Box 4, Route 168
Shippingport, PA 15077

BEAVER VALLEY POWER STATION, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
REQUEST FOR ADDITIONAL INFORMATION (RAI)
SECTIONS B.2.10, B.2.14, B.2.21, B.2.26 AND 3.6

Section B.2.10

RAI B.2.10-1

Beaver Valley Power Station (Beaver Valley) aging management program (AMP) B.2.10, "Electrical Cable Connections Not Subject to 10 CFR 50.49 Environment Qualification Requirements One-Time Inspection," proposes a visual inspection as an alternative to thermography or contact resistance. Generic aging lessons learned (GALL) AMP XI.E6 recommends thermography, or contact resistance testing for detecting loss of preload or bolt loosening. Provide a technical justification of how visual inspection alone, if used, will be sufficient to detect loss of preload or loosening of bolted connections.

Section B.2.14

RAI B.2.14-1

Beaver Valley AMP B.2.14, "Environmental Qualification (EQ) of Electrical Components," states that the EQ program is an existing program that is consistent with NUREG-1801, Section X.E1. GALL AMP X.E1, under program description, contains the reanalysis attributes. The important attributes of reanalysis are the analytical methods, the data collection and reduction methods, the underlying assumptions, the acceptance criteria, and corrective actions. The Beaver Valley AMP B.2.14 and final safety analysis report (FSAR) supplement do not include these attributes and the time when it will complete the reanalysis. Provide this information in the program description and FSAR supplement.

B.2.14-2

The applicant stated in its basis documents that the Detection of Aging Affects and Monitoring and Trending program sub-element is consistent with GALL AMP X.E1, Environmental Qualification of Electric Components, and referred an EQ procedure. The staff reviewed this procedure and could not identify sections that specifically address monitoring or inspection of certain environments to ensure that components are within the bounds of its qualification basis, or as a means to modify the qualified life. Explain how Beaver Valley monitors or inspects certain environments to ensure that components are within the bounds of its qualification basis, or as a means to modify the qualified life. Revise the procedure as appropriate to address this element.

Section B.2.21

RAI B.2.21-1

Beaver Valley license renewal application (LRA) states that AMP B.2.21 is consistent with the GALL AMP X1.E3. The GALL program defines significant moisture and significant voltage under the program scope element. It also clarifies that continuous wetting and continuous

energization is not significant for submarine cables. Beaver Valley AMP B.2.21 did not define significant voltage and significant moisture which are the basis for cables to be in-scope. Define these terms or provide a technical justification of why the definition is not required.

RAI B.2.21-2

GALL AMP XI.E3, under program description, identified NUREG/CR-5643, IEEE Std. P1205, SAND96-0344, EPRI TR-109619, and EPRI TR-103834-P1-2 as the technical information and guidance considered in GALL XI.E3. In the LRA, the applicant states that Beaver Valley AMP B.2.21 is consistent with GALL AMP XI.E3 and yet it did not identify these documents as the basis for its AMP. Identify specific documents used as technical information and guidance considered in AMP B.2.21 or provide a justification as to why technical information and guidance provided in the above documents are not necessary to be considered in AMP B.2.21.

RAI B.2.21-3

In LRA Section B.2.21, the applicant stated that it currently has a manhole inspection program which identifies and evaluates water collection in the manholes. The applicant also stated that this prevention program has been effective in monitoring and evaluating the exposure of water to cable and cable supports located in manholes. The staff conducted an audit at the sites and reviewed plant operating experience reports and noted that in Corrective Report (CR) 04-03545; the applicant discovered that the Manhole 1EMH-19A Duct 944 had 34 inches of water in it during performance of manhole inspection for water induced damage in 2004. In reviewing the CR, the staff noted that certain manholes had chronic flooding problems. These manholes, numbered 1EMH-8A, 8B, and 15, are located below grade near the intake structure and repeatedly had water levels of 10 to 15 feet. Manholes 1EMH - 8A & 8B contain safety related cables from both Units 1 and 2.

a. Provide technical justification as to how the proposed water inspection of the manholes once every two years will be adequate to keep the cables from experiencing significant moisture during the current period and extended operation.

b. How is the inspection frequency adjusted based on operating experience?

c. What corrective actions do you take to address cable submerge conditions in certain manholes?

Section B.2.26

RAI B.2.26-1

LRA Appendix B, Section B.2.26, “Metal Enclosed Bus (Unit 2 Only),” states that the metal enclosed bus AMP is only applicable to the Unit 2, 480 volts alternating current metal enclosed bus feeders to emergency substation (2-8 and 2-9). The LRA also states that there is no in-scope metal enclosed bus at Unit 1. Beaver Valley updated FSAR Section 8.4, states that it complies with 10 CFR 50 Appendix A General Design Criterion 17.

a. Describe two independent offsite circuits and their associated components starting from the switchyard circuit breaker(s) to the plant Class 1E onsite distribution systems for both units.

b. Identify which portions of metal enclosed buses (iso-phase and non-segregated) for both units are parts of these circuits. Explain why these metal enclosed buses are not included in the scope of Metal Enclosed Bus Program.

Section 3.6

RAI 3.6-1

LRA Table 3.6.1, under Item Number 3.6.1-01, "Electrical equipment subject to 10 CFR 50.49 environmental qualification (EQ) requirements," Discussion Column, states that this item is not applicable. Table VI B in NUREG-1801, Rev. 1, recommends further evaluation because it is a time-limited aging analysis. Provide justification of why this item is not applicable to GALL Item VI.B-1.

RAI 3.6-2

LRA Table 3.6.1, under Item Number 3.6.1-10, "Metal enclosed bus – Enclosure assemblies," states that an aging management review (AMR) is not required for enclosure gaskets because they are consumables. Consumables are considered short-lived or periodically replaced. NUREG 1801, Volume 2, Item VI.A-12 identifies elastomers as a commodity type that requires an AMP. Provide an AMP for enclosure gaskets or provide a technical justification of why these components are excluded from an AMP.

RAI 3.6-3

LRA Section 3.6.2.2.2 states that Beaver Valley is located west of a fossil generator plant. The fossil generator plant is a modern plant that does not emit soot. It also states that although abnormal weather conditions may affect insulators, these are event-driven effects, not age-related.

a. Explain why surface contamination of high voltage insulators due to soot emitted from fossil plants is not an aging effect requiring management at Beaver Valley.

b. Describe weather events that affect insulators. Explain why these events are not aging effects for high-voltage insulators.

RAI 3.6-4

LRA Section 3.6.2.2.3 states that the Beaver Valley overhead transmission conductors subject to an AMR were bounded by Ontario Hydro test population. The Beaver Valley overhead transmission conductors have an ultimate strength margin greater than the Ontario Hydro test cables after 80 years of service. The installation configuration at Beaver Valley is representative of the tested samples, so the conclusions in the Ontario Hydro Study are valid

for Beaver Valley. Provide the test conducted at Ontario Hydroelectric and explain in detail how Beaver Valley's transmission conductors are bounded by the tests conducted at Ontario Hydroelectric and will have adequate margin for 60 years.

RAI 3.6-5

LRA Section 3.6.2.2.3 states that Beaver Valley design incorporates the use of Belleville washers on bolted electrical connections of dissimilar metals to compensate for temperature changes to maintain the proper torque and prevent loosening. Electric Power Research Institute document TR-104213, "Bolted Joint Maintenance & Application Guide," identifies a special problem with Belleville washers. It states that hydrogen embrittlement is a recurring problem with Belleville washers and other springs. When springs are electroplated, the plating process forces hydrogen into the metal grain boundaries. If the hydrogen is not removed, the spring may spontaneously fail at any time while in service. Describe the types of finish the Belleville washers currently have at Beaver Valley and current activities used to confirm the effectiveness of switchyard bolted connections.

RAI 3.6-6

The LRA does not discuss Unit 1, metal enclosed bus and Unit 2, switchyard bus and connections as a commodity type requiring an AMR. Explain why Unit 1, metal enclosed bus and Unit 2, switchyard bus and connections do not require an AMR.

RAI 3.6-7

Tie wraps may be taken credit for in seismic analysis and in plant design specifications primary for separation to preclude ampacity degrading. Operating experience has identified issues with tie wraps. Tie wraps were brittle, degraded, or missing and tie wraps failures affected safety functions of other system/components. The Beaver Valley LRA does not discuss tie wraps as a commodity type requiring AMRs. Please respond to the following:

a. Are tie wraps taken credit for seismic analysis in the current licensing basis?

b. Address the effects of tie wraps for 10 CFR 54.4 (a)(2) over 10 CFR 54.4 (a)(1), non safety components whose failure could affect safety-functions.

c. Provide a quantitative analysis of the effects of cables spacing not being maintained as original design specifications (due to tie wraps failure). The analysis should provide the worst case scenario with ampacity reduction and maximum amperes required for motors to start and run during a design basis accident.