FENOC
FirstEnergy Nuclear Operating Company

Beaver Valley Power Station
P.O. Box 4
Shippingport, PA 15077-0004

Lew W. Myers
Senior Vice President

412-393-5234
Fax: 724-643-8069

July 21, 2000
L-00-098

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Subject: Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
Response to a Request for Additional Information
Pertaining to License Amendment Request No. 155

This letter provides the Beaver Valley Power Station (BVPS) response to a NRC request for additional information concerning Unit No. 2 License Amendment Request (LAR) No. 155 submitted to the NRC by letter L-00-048 dated May 1, 2000. The subject LAR proposes changes to the containment closure requirements specified in Technical Specification 3/4.9.4 titled "Containment Building Penetrations." The subject LAR also will revise the requirements for the containment purge and exhaust radiation monitoring instrumentation contained in Technical Specification 3/4.3.3 titled "Monitoring Instrumentation – Radiation Monitoring." The requirements for the containment purge and exhaust isolation system contained in Technical Specification 3/4.9.9 titled "Containment Purge and Exhaust Isolation System" will also be revised by this LAR.

On July 11, 2000, a telephone conference call was scheduled to be conducted between the NRC and BVPS personnel concerning LAR No. 155. The NRC staff's questions were conveyed to BVPS personnel prior to the scheduled conference call. On July 11, 2000, the NRC Project Manager for BVPS informed a member of the BVPS staff that the scheduled conference call was no longer necessary since the BVPS draft responses provided earlier that day were sufficient to answer the NRC staff's questions. The NRC Project Manager requested that the BVPS draft responses be formally transmitted to the NRC. The attachment to this letter provides the BVPS formal responses to the NRC staff's questions pertaining to LAR No. 155. The attached formal responses have been slightly modified from the draft responses that were provided to the NRC staff on July 11, 2000.

If there are any questions concerning this matter, please contact Mr. Thomas S. Cosgrove, Manager, Licensing at 724-682-5203.

Sincerely,

Lew W. Myers

A001

c: Mr. D. S. Collins, Project Manager
Mr. D. M. Kern, Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator
Mr. D. A. Allard, Director BRP/DEP
Mr. L. E. Ryan (BRP/DEP)

Subject: **Beaver Valley Power Station, Unit No. 2**
BV-2 Docket No. 50-412, License No. NPF-73
Response to Request for Additional Information
Pertaining to License Amendment Request No. 155

I, Lew W. Myers, being duly sworn, state that I am Senior Vice President of FirstEnergy Nuclear Operating Company (FENOC), that I am authorized to sign and file this submittal with the Nuclear Regulatory Commission on behalf of FENOC, and that the statements made and the matters set forth herein pertaining to FENOC are true and correct to the best of my knowledge and belief.

FirstEnergy Nuclear Operating Company

Lew W. Myers
Senior Vice President - FENOC

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF BEAVER

Subscribed and sworn to me, a Notary Public, in and for the County and State above named, this 21st day of January, 2000.

Sheila M. Fattore
My Commission Expires:

Notarial Seal
Sheila M. Fattore, Notary Public
Shippingport Boro, Beaver County
My Commission Expires Sept. 30, 2002
Member, Pennsylvania Association of Notaries

Questions and Responses

1) Surveillance Requirement 4.9.4.4 requires verification that filtered supplemental leak collection and release system (SLCRS) can maintain a negative pressure of -0.125 inches water gauge (wg). It then states that this verification shall establish the maximum equivalent containment penetration opening size for each applicable plant area.

I. What determines a plant area? How are the boundaries defined?

Response: A plant area is defined by individual compartments serviced by filtered SLCRS. The plant areas will be defined as compartments that filtered SLCRS can take suction from and have intact pressure boundaries that permit filtered SLCRS to maintain the area to ≤ -0.125 inches wg. The boundaries are defined as the room walls with closed doors, ceilings, and floors.

II. How does this negative pressure determine the maximum equivalent containment penetration opening size?

Response: We use the following flow/pressure relationship (shown below) to calculate the minimum airflow required to maintain –0.125 inches wg. We then use the measured airflow minus the calculated airflow to determine our margin above design. The margin above design is then used to calculate a maximum penetration opening.

$$(P1/P2)^{1/2} = F1/F2.$$

P1 = -0.125 inches wg
P2 = measured negative pressure
F1 = Calculated minimum air flow for –0.125 inches wg
F2 = measured SLCRS exhaust from the cubicle.

Design Margin = F2 – F1

$$\text{Penetration Area Margin} = \frac{[(\text{Design Margin}) \times 144]}{(1180\ \text{CFM/ft}^2)}$$

Note: 1180 CFM/ft^2 is the calculated flowrate required to maintain –0.125 inches wg per Engineering Calculation 8700-DMC-2144 Rev 0, "Maximum Allowable CRE Penetration Area".

III. How does the maximum equivalent opening size translate into which penetrations may be open?

Response: Once the maximum equivalent opening size for a particular plant area is determined, any containment penetration in that plant area can be opened and provide a direct path from the containment atmosphere to the outside atmosphere. However, the penetration opening size may not result in exceeding the maximum equivalent opening size for that plant area.

For example, if a certain plant area has been determined to have a maximum equivalent opening size equivalent to a one (1) inch circular opening. Each containment penetration will be assumed to be an open ended pipe inside of containment. It would be acceptable to open a one half inch penetration test connection valve located in this plant area on one containment penetration and then open another half inch penetration test connection valve located in this plant area on a different containment penetration. It would not be acceptable to open a third test connection valve located in this plant area on another containment penetration since this action would result in exceeding the maximum equivalent penetration opening size equivalent to a one (1) inch circular opening for this plant area.

IV. If the maximum equivalent opening size is calculated, provide an example of such a calculation.

Response: The following is an example based on airflow balance data for the 718 Cable Vault and Rod Control Building (including the penetrations area) obtained from 2BVT-01.16.10.

P1 = -0.125 inches wg
P2 = measured negative pressure = -0.27 inches wg
F1 = Calculated minimum air flow for –0.125 inches wg = ?
F2 = measured SLCRS exhaust = 5,037.15 CFM

$$\left({}^{P1}/_{P2}\right)^{1/2} = {}^{F1}/_{F2}.$$

$$\left({}^{-0.125 \text{ inches wg}}/_{-0.27 \text{ inches wg}}\right)^{1/2} = {}^{F1}/_{5037.15 \text{ CFM}}$$

F1 = 3,427.3 CFM

Design Margin = F2 – F1
Design Margin = 5,037.15 CFM – 3,427.3 CFM
Design Margin = 1,609.9 CFM

$$\text{Penetration Area Margin} = \frac{[(\text{Design Margin}) \times 144]}{(1180\ \text{CFM/ft}^2)}$$

$$\text{Penetration Area Margin} = \frac{[(1{,}609.9\ \text{CFM}) \times 144\ \text{in}^2/\text{ft}^2]}{(1180\ \text{CFM/ft}^2)}$$

$$\text{Penetration Area Margin} = 196.4\ \text{in}^2$$

Maximum Equivalent Opening Size = Penetration Area Margin

2) I. TS 3.9.4.b.2 requires a designated individual to be "available" to close at least one personnel air lock (PAL) door. What duties will this individual have? For example, is the individual responsible for keeping an inventory of personnel remaining within the containment? Will the individual have other unrelated duties?

Response: BVPS is planning on the designated individual being the refueling SRO. This person is required by the plant's technical specifications Section 6.2.2.e to directly supervise core alterations. The refueling SRO is required to have no other concurrent responsibilities during this operation. This person will not keep track of the personnel in containment since personnel that enter into the containment are logged in by Security. Plant Security will conduct personnel accountability, as necessary, following a fuel handling accident within the containment.

II. Is 30 minutes sufficient for this individual to shut the PAL door(s) and perform all their other responsibilities?

Response: Based on the use of the refueling SRO as the designated person, thirty minutes is sufficient to shut the PAL door(s).

3) Page B-3: What is the basis for the statement that the time required for air to travel from the radiation monitor to the first containment isolation valve (CIV) is greater than the closure time of the CIVs? How do open PAL doors or penetrations affect this conclusion?

Response: The radiation monitors are in the flow path prior to the containment isolation dampers. Therefore, an airborne release would pass by the radiation monitors before the containment isolation dampers. Note that airflow from containment would still be established to $\leq$ 7,500 CFM, which would ensure that the CIV closure times would still be adequate. The open PAL doors or other containment

penetrations will not adversely affect the airflow out of containment via the purge exhaust containment penetration since it will be balanced to ≤ 7,500 CFM. However, there will be the possibility of airflow out of the airlock and any other open containment penetrations. The airflow through the airlock and other open containment penetrations will be captured by SLCRS and filtered prior to its being released to the environment. This is the basis for permitting the PAL and other containment penetrations to be open during movement of fuel within containment.

4) Insert G: Do doors used for plant area entry and egress automatically close ?

Response: The normal room entry and exit doors in plant areas serviced by SLCRS are either locked or self-closing. Note: The majority of the doors are fire protection doors.