FENOC
FirstEnergy Nuclear Operating Company

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

Paul A. Harden
Site Vice President

724-682-5234
Fax: 724-643-8069

November 2, 2012
L-12-350

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

SUBJECT:
Beaver Valley Power Station, Unit Nos. 1 and 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Response to Request for Additional Information Regarding National Fire Protection Association Standard 805 License Amendment Extension Request (TAC Nos. ME9015, and ME9016)

By letter dated August 29, 2012 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML12243A245), FirstEnergy Nuclear Operating Company (FENOC) submitted notification of a change in a regulatory commitment regarding the submittal of an application for license amendment to implement 10 CFR 50.48(c) at Beaver Valley Power Station, Units No. 1 and 2, (BVPS) by transitioning to National Fire Protection Association Standard (NFPA) 805. The projected date and the associated commitment for license amendment request (LAR) submittal were changed from September 30, 2012, to December 31, 2013. Consistent with the revised commitment, FENOC also requested continuation of enforcement discretion for certain fire protection issues for BVPS until an acceptable application for license amendment is submitted.

By letter dated October 18, 2012 (ML12264A407), the Nuclear Regulatory Commission staff requested additional information in order to complete its review of the August 29, 2012 letter. The FENOC response to this request is attached.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Gregory H. Halnon, Director - Fleet Regulatory Affairs, at 330-436-1369.

Sincerely,

Paul A. Harden

Attachment:
Response to NRC Request for Additional Information Dated October 18, 2012

cc: NRC Region I Administrator
NRC Resident Inspector
NRC Project Manager
Director BRP/DEP
Site BRP/DEP Representative

By letter dated August 29, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12243A245), FirstEnergy Nuclear Operating Company (FENOC) submitted notification of a change in a regulatory commitment regarding the submittal of an application for license amendment to implement 10 CFR 50.48(c) at Beaver Valley Power Station, Units No. 1 and 2, (BV1 and BV2) by transitioning to National Fire Protection Association Standard (NFPA) 805. The projected date and the associated commitment for license amendment request (LAR) submittal were changed from September 30, 2012, to December 31, 2013. Consistent with the revised commitment, FENOC also requested continuation of enforcement discretion for certain fire protection issues for BV1 and BV2 until an acceptable application for license amendment is submitted.

By letter dated October 18, 2012, the Nuclear Regulatory Commission (NRC) staff requested additional information in order to complete its review. The NRC staff questions are presented below in bold type, followed by FENOC's responses.

General/Plant Configuration and Modifications

1. **In Attachment 3 of the letter dated August 29, 2012, for each task or milestone with an incomplete or "Not Started" status, provide an explanation and justification of why that item is not complete.**

Response:

In general, the items shown as incomplete or not started on Attachment 3 of the FENOC letter dated August 29, 2012, have been delayed by the unforeseen developments related to the project, as discussed in the letter. These unforeseen developments resulted in competing transition project priorities. This is primarily due to the nature of the transition process, which requires completion of parallel activities that are co-dependant on analysis results and qualified personnel resources. For example, a delay in building the fire probabilistic risk assessment (PRA) model directly impacts completion of Fire Risk Evaluations (FREs), which in turn impacts determination of the modification scope and recovery actions required for transition. Schedule impacts are also magnified by the iterative nature of certain transition tasks. As a result of the above, schedule delays generally have a cascading impact on related transition tasks.

In Table 1, below, each incomplete item in Attachment 3 of the August 29, 2012 letter is presented with a status update. Where appropriate, additional explanation and justification are provided as to why items are not complete.

Table 1

Project Task / Milestone	BV1 Milestone Completion Date	BV2 Milestone Completion Date
Fundamental Fire Protection and Design Elements Review (B-1 Table)	October 2012	Complete June 2012
Additional Explanation and Justification: Completion of the BV1 activity was delayed by the developments discussed in the FENOC letter dated August 29, 2012, which resulted in competing transition project priorities. In addition, other unforeseen developments such as identification of NFPA code compliance issues have emerged during review of fire protection features. The number of issues identified was greater than anticipated. Additional time needed to investigate, document, and address the current licensing basis and transition impact of these and similar issues resulted in unforeseen project delays. Status Update: Review for BV1 is complete. (Review for BV2 was previously completed.)		
Fire Area Specific Elements Review (B-1 Table)	October 2012	Complete June 2012
Additional Explanation and Justification: Same as above. Status Update: Review for BV1 is complete. (Review for BV2 was previously completed.)		
Update B-1 Table to Reflect Open Item Closures	June 2013	June 2013
Additional Explanation and Justification: The term "Not Started" was used in the August 29, 2012 letter to indicate that final documentation update of the B-1 table for BV1 and BV2 has not started with regard to incorporation of final open item closures. FENOC has been generating, investigating, and resolving open items and updating the B-1 Table as an on-going project activity. Details regarding the resolution of open items are maintained with project documentation, which will be used to support final update of the B-1 Table. Completion of this activity was delayed by the developments discussed in the FENOC letter dated August 29, 2012, which resulted in competing transition project priorities. In addition, other unforeseen developments, such as identification of NFPA code compliance issues, have emerged during review of fire protection features. The number of issues identified was greater than anticipated. The additional time needed to investigate, document, and address the current licensing basis and transition impact of these and similar issues resulted in unforeseen project delays. Final update of the B-1 Table is also tied to completion of the FREs since an evaluation of fire protection defense-in-depth features is completed as part of the FRE process. FRE results may indicate the need for fire protection feature enhancements,		

Project Task / Milestone	BV1 Milestone Completion Date	BV2 Milestone Completion Date
which subsequently would be described in the B-1 Table. Status Update: Work to update the B-1 Table, for BV1 and BV2, to reflect open item closures is on-going and is progressing as expected to support the milestone dates.		
Fire Area Licensing Action Review	September 2012	November 2012
Additional Explanation and Justification: This activity is on-going with the primary focus on validation of licensing actions that will be transitioned. Completion of this activity was delayed by the developments discussed in the FENOC letter dated August 29, 2012, which resulted in competing transition project priorities. Validation of licensing actions has, in some cases, taken more time than expected for activities such as compiling, interpreting, and evaluating the basis for previous licensing actions. Status Update: Review for BV1 is complete. Review for BV2 is progressing as expected to support the milestone date.		
Development of Additional Existing Engineering Equivalency Evaluations Based on Items Identified in Engineering Reviews	May 2013	January 2013
Additional Explanation and Justification: Completion of additional existing engineering equivalency evaluations (EEEEs) is on-going as a parallel activity with other transition tasks. The scope and effort required to complete the BV1 and BV2 EEEEs has been defined and work is progressing toward completion. The BV2 effort is to be completed before the BV1 effort, since there are fewer BV2 items to address. Completion of this activity was impacted by the developments discussed in FENOC letter dated August 29, 2012, which resulted in competing transition project priorities. Status Update: Development of EEEEs for BV1 is progressing as expected to support the milestone date. Development of EEEEs for BV2 has commenced and is progressing as expected to support the milestone date. (Refer to request for additional information [RAI] item number 7 response for additional details).		
Fire Area by Fire Area Transition (B-3 Table)	June 2013	April 2013
Additional Explanation and Justification: Results of FREs are documented in the B-3 Table; therefore, the B-3 Table will not be considered complete until the FREs are complete. Completion of FREs has been delayed as noted in the discussion of "Final FRE Quantifications" below. Status Update: Project work is progressing as expected to support the milestone dates.		

Project Task / Milestone	BV1 Milestone Completion Date	BV2 Milestone Completion Date
Finalize Recovery Actions and Procedure Changes	August 2013	June 2013
Additional Explanation and Justification: Completion of this activity is based on completion of the FREs that will determine the list of recovery actions required for transition. The BV2 activity is to be completed before the BV1 activity, since the BV2 FREs are to be completed before the BV1 FREs. Completion of FREs has been delayed as noted in the discussion of "Final FRE Quantifications" below. Status Update: Work to finalize recovery actions and procedure changes for BV1 is progressing as expected to support the milestone date. Work to finalize recovery actions and procedure changes for BV2 has commenced (based on BV2 FRE work, which has started) and is progressing as expected to support the milestone date.		
Pinch Point Analysis and Suggested Procedure Changes	January 2013	January 2013
Additional Explanation and Justification: This activity has not been considered a critical schedule path; therefore, completion has been delayed by the developments discussed in FENOC letter dated August 29, 2012, which resulted in competing transition project priorities. In addition, other unforeseen developments such as identification of NFPA code compliance issues have emerged during review of fire protection features. The number of issues identified was greater than anticipated. The additional time needed to investigate, document, and address the current licensing basis and transition impact of these and similar issues resulted in unforeseen project delays. Status Update: Project work is progressing as expected to support the milestone dates.		
Finding and Observation (F&O) Resolution and PRA Workbooks Update	May 2013	May 2013
Additional Explanation: Refer to the RAI question 4 response. Status Update: Project work is progressing as expected to support the milestone dates.		
Final Open Item Review and Closure	September 2013	September 2013
Additional Explanation: Refer to the RAI question 4 response. Status Update: Project work is progressing as expected to support the milestone dates.		

Project Task / Milestone	BV1 Milestone Completion Date	BV2 Milestone Completion Date
NFPA 805 Modification Scoping	April 2013	January 2013
Additional Explanation and Justification: An initial list of modifications has been developed based on analyses completed thus far. However, this activity is not complete because completion of the FRE process is necessary to determine the risk associated with cable separation related Variances From Deterministic Requirements (VFDRs). Results of the risk analysis completed during the FRE process are needed to fully develop the scope of modifications required for transition. Status Update: Project work is progressing as expected to support the milestone dates.		
Final FRE Quantifications	March 2013	January 2013
Additional Explanation and Justification: Completion of this activity was delayed by the developments discussed in FENOC letter dated August 29, 2012, which resulted in competing transition project priorities. In addition, other unforeseen developments, such as identification of NFPA code compliance issues, have emerged during review of fire protection features. The number of issues identified was greater than anticipated. The additional time needed to investigate, document, and address the current licensing basis and transition impact of these and similar issues resulted in unforeseen project delays. Status Update: Project work is progressing as expected to support the milestone dates.		
Complete Development of Transition Report and LAR	September 2013	September 2013
Additional Explanation and Justification: The transition report and LAR cannot be completed until the supporting transition tasks are complete. Refer to the RAI question 5 response. Status Update: Project work is progressing as expected to support the milestone dates.		
Internal and External Oversight Committee Reviews	November 2013	November 2013
Additional Explanation and Justification: The internal and external oversight committee reviews cannot be completed until the supporting transition tasks are complete. Refer to the RAI question 8 response. Status Update: Project work is progressing as expected to support the milestone dates.		

Project Task / Milestone	BV1 Milestone Completion Date	BV2 Milestone Completion Date
Licensing Review and Correspondence Development and LAR Submittal	December 2013	December 2013
Additional Explanation and Justification: The licensing review, correspondence development, and LAR submittal activities cannot be completed until the supporting transition tasks are complete. Refer to the RAI question 8 response. Status Update: Project work is progressing as expected to support the milestone dates.		

2. **Attachment 2 of the letter dated August 29, 2012, contains a list of ongoing and conceptual design modifications. Within this listing, six modifications indicate that the conceptual design package is not to be completed until various dates beyond the date for which the Fire Probabilistic Risk Assessment (Fire PRA) evaluation is complete, in September 2013. The LAR must provide a detailed, proposed configuration, including a description of all proposed modifications sufficient for risk analysis purposes. According to the FENOC definition provided in Attachment 2, a conceptual design package is a documented analysis of one or more alternative solutions, with an identified preferred solution. To evaluate the feasibility of FENOC providing an acceptable LAR by December 31, 2013, the NRC staff needs assurance that the LAR, as supported by the PRA, will contain the details necessary to evaluate the request fully. Accordingly, the LAR and PRA should include the particular design features of the plant, not a set of alternatives.**

   Therefore, provide an explanation as to how the proposed schedule for ongoing and conceptual design modifications supports the submission of a complete and acceptable LAR on December 31, 2013, or modify the August 29, 2012, request accordingly.

Response:

Completion of a conceptual design package is a formal process that is part of the FENOC Engineering Change Process used to develop and implement plant modifications. The dates shown in Attachment 2 of the letter dated August 29, 2012 are intended to represent completion and issuance of the formal conceptual design package, not the date by which the subject modifications will be defined at a level of detail sufficient for risk analysis purposes. Completion of the formal conceptual design package is not required to determine and define the plant modifications at a level of detail sufficient for risk analysis purposes. Although the FENOC definition of a conceptual design package allows for documentation of alternative designs, FENOC intends to provide the particular design modification features in the LAR submittal.

Determination of the design modification features, at a level of detail sufficient for risk analysis purposes and completion of other related transition tasks, is identified in Table 1 as "NFPA 805 Modification Scoping." This activity is expected to be complete by April 2013 for BV1 and January 2013 for BV2, to support completion of necessary PRA activities and submittal of the LAR in December 2013. The LAR will include descriptions of all proposed modifications at a level of detail sufficient for risk analysis purposes. Consistent with industry precedent, FENOC will identify proposed plant modifications in Transition Report Attachment S, "Plant Modification and Items to be Completed."

3. **In accordance with SECY-12-0031, "Enforcement Alternatives for Sites That Indicate Additional Time Required to Submit Their License Amendment Requests to Transition to 10 CFR 50.48(c) National Fire Protection Association Standard 805," the NRC's evaluation of the justification provided by the licensee for the issuance of a confirmatory order that would extend enforcement discretion will consider, but not be limited by, the status of plant modifications. Attachment 2 describes an extended timeline for installing certain modifications.**

   In order to determine whether the scheduled modifications are being installed in a timely manner, the NRC staff requests that FENOC provide an explanation of how the current schedule demonstrates that modifications will be installed in a timely manner, through any enforcement discretion extension period. Alternatively, if further review of the modification schedule indicates that the timeline does not reflect timely installation of each of the necessary modifications, provide a revised modification milestone schedule.

Response:

Current Fire PRA results show that of the modifications identified in Attachment 2 of the FENOC letter dated August, 29, 2012, addition of the Westinghouse Reactor Coolant Pump (RCP) Shutdown Seals and installation of incipient fire detection systems in the process rack areas provide the greatest level of risk reduction. In light of the relative risk benefit and complex nature of these modifications, FENOC has initiated certain engineering, purchasing and installation activities related to these modifications.

Specifically, FENOC has completed installation of shutdown seals in two RCPs during the on-going BV2 refueling outage, currently scheduled for completion in November of 2012. The final BV2 RCP shutdown seal is expected to be installed during the next BV2 refueling outage, currently scheduled to start in the second quarter of 2014. FENOC also intends to commence installation of BV1 RCP shutdown seals in the next BV1 refueling outage, currently scheduled to start in the third quarter of 2013, and complete final installation in the subsequent refueling outage, currently scheduled to start in the second quarter of 2015.

Procurement and engineering related activities, such as development of a purchase specification, meetings with vendors, evaluation of hardware, and plant engineering walk downs, have commenced for the incipient fire detection modification. As indicated in the FENOC letter dated August 29, 2012, FENOC intends to have engineering work complete on or before September 30, 2013. Completion of engineering work is necessary, in part, to determine if installation (or parts of installation) can be completed on-line or will require a refueling outage due to the physical nature of modifying safety-related cabinets and components for incipient detection. The installation schedule will be determined after completion of engineering work and will be provided in the LAR submittal.

In all, these activities reflect timely implementation of modifications that provide greater levels of risk reduction. Other modifications will be implemented in accordance with the modification schedule to be provided in the LAR.

Probabilistic Risk Assessment

According to the licensee's letter dated August 29, 2012, the BVPS, Unit No. 1, Fire PRA had a full-scope peer review in April 2011. BVPS, Unit No. 2, had their review in April 2012. These are significant milestones to complete, but completion of the resolution of the Finding and Observations (F&Os) is needed prior to submitting the LAR. Based on the information provided by the licensee, the fire models have been updated and the F&Os are 80% resolved and will be considered complete in May 2013.

4. What is the justification for another 7 to 8 months to complete the last 20% of the F&Os and another 4-5 months for final closure?

Response:

The fire risk models for both BV1 and BV2 have been updated to address the technical issues raised in the F&Os, and the remaining 20 percent level of effort consists primarily of documentation updates to reflect the model changes that were made. The completion date of May 2013 does not indicate that 7-8 months of effort are required for this task; it simply reflects that the remaining documentation updates are not considered critical path activities.

This schedule also accommodates the possibility that the results of the FREs will reveal additional modifications or operator actions necessary to support a successful NFPA 805 transition. After the FREs are complete and the plant modifications, required operator actions, and fire PRA models have been finalized, the appropriate documentation will be updated. The May 2013 date represents the completion of F&O related activities.

The additional activities through September 2013 include efforts to review and address outstanding open items and to perform the requisite peer checks and internal reviews prior to considering the Fire PRA models complete to support issuance of the LAR.

5. If developing the Fire PRA is considered complete in September 2013, how can it be useful for the NFPA 805 LAR and Transition Report, which must be completed at the same time?

Response:

The schedule completion dates provided in Attachment 3 to the FENOC letter dated August 29, 2012 account for the iterative nature of and interaction between various tasks involved in the NFPA 805 transition process. The September 2013 completion date for the Fire PRA models reflects the date at which the documentation will be finished and the models will be considered final for issuance. The actual Fire PRA models will be substantially complete before that date to support the FREs but will not be considered complete at that time, because additional plant modifications or operator actions may be identified through the process of performing the FREs. Any such items will then be included in the final models, quantifications, and documentation before considering the Fire PRA models to be complete. The document updates are expected to be complete in September 2013, but the FRE results (utilizing the Fire PRA models) will be available for use in preparation of the LAR at the conclusion of the FREs in March of 2013.

6. Provide a more detailed timeline for completing the Fire PRA and the Fire Risk Evaluation effort.

Response:

The current timeline for the remaining Fire PRA and FRE effort is provided in Table 2. Additional details regarding PRA efforts are also provided in the responses to RAI questions 4 and 5.

Table 2

Month/Year	BV1 Fire PRA/FRE effort	BV2 Fire PRA/FRE effort
September 2012	No milestone.	2 compartments final review completed.
October 2012	No milestone.	8 compartments final review complete.
November 2012	Finalized required modification for Process Rack Area.	12 compartments final review complete.
December 2012	Incorporate Modification into Fire PRA Model.	11 compartments final review complete.
January 2013	5 compartments final review complete	Finalize FRE quantifications and documentation.
February 2013	6 compartments final review complete.	No milestone.
March 2013	Finalize FRE quantifications and documentation.	No milestone.

Month/Year	BV1 Fire PRA/FRE effort	BV2 Fire PRA/FRE effort
April 2013 to August 2013	Review and address outstanding open items and perform the requisite peer checks and internal reviews. (See responses to RAI questions 4 and 5.)	Review and address outstanding open items and perform the requisite peer checks and internal reviews. (See responses to RAI questions 4 and 5.)
September 2013	Final Open Item Review and Closure.	Final Open Item Review and Closure.

Classical Fire Protection

According to their letter dated August 29, 2012, the licensee indicated that they had not developed all their additional existing engineering equivalencies evaluations (EEEEs) for BVPS, Unit No. 1 and had not started to develop the additional EEEEs for BVPS, Unit No. 2.

7. Please provide more detail on how FENOC will finish this work and update the B-1 Table by June 2013.

Response:

Completion of additional BV1 and BV2 EEEEs is on-going as a parallel activity with other transition tasks. The scope and effort required to complete the EEEEs has been defined, and work is progressing toward completion. FENOC has EEEEs in various stages from early development to complete.

The effort to complete the additional EEEEs was divided into phases to facilitate work planning and completion tracking. The first phase is complete and involved review of existing EEEEs to determine if they were necessary and adequate for transition. This phase also involved completion of several EEEEs.

Phases two through five involve upgrade and revision of existing EEEEs to make them acceptable for transition and also completion of new EEEEs that are necessary for transition. The final phase is currently scheduled to be complete in May 2013. The number of additional EEEEs (existing upgrades and new EEEEs) remaining to be completed in each phase is currently expected to be 23, 5, 4, and 1 for phases two through five respectively.

The anticipated timeline for completion of remaining EEEEs and the related updating of the B-1 Table is provided in Table 3.

Table 3

Month/Year	BV1 and BV2 EEEE Effort
November 2012	Phase 2 evaluations are issued to FENOC by the vendor.
January 2013	Phase 3 evaluations are issued to FENOC by the vendor.
February 2013	Phase 2 evaluations are approved by FENOC
March 2013	Phase 4 evaluations are issued to FENOC by the vendor.
April 2013	Phase 3 evaluations are approved by FENOC Phase 5 evaluation is issued to FENOC by the vendor.
May 2013	Phase 4 & 5 evaluations are approved by FENOC.
June 2013	The B-1 Table is updated to reflect completion of EEEEs.

The completion order of specific EEEEs may change as technical investigation and plant walk downs are completed; additionally, new evaluations may become necessary as transition efforts continue. Neither of these effects is expected to be substantial enough to impact the timeline presented above.

Completion of LAR and Transition Report

8. According to the licensee's letter dated August 29, 2012, the LAR preparation will be complete in September 2013. Once the LAR is completed, what is the justification for another 3 to 4 months final review and concurrence?

Response:

Under the leadership of the Nuclear Energy Institute, the LAR format for the transition to NFPA 805 was developed by the industry and subsequently endorsed, with clarification, by the NRC. The format and the level of detail required to support the request are significantly different from those typically utilized for LARs, in that the LAR is directly integrated into a report developed to document analyses and activities for the transition to the fire protection program based on NFPA 805.

Accordingly, the initial development of the LAR is completed in parallel with the transition activities, and the reviews and approvals of the transition report will include the necessary review and approval of the LAR. The initial development of the transition report is forecast to be completed by September 30, 2013.

Due to the complexity of the transition report and the embedded LAR, this document is to be reviewed by the Engineering Assessment Board (EAB), an independent review committee for engineering products. The EAB review is discretionary, but considered

necessary to ensure the completeness and quality of the transition effort. Additionally, FENOC procedural requirements for the review and approval of LARs include reviews by the Plant Operation Review Committee and the Company Nuclear Review Board. These committee review requirements are implemented in series, since each subsequent review provides, in part, an oversight function for its predecessors. Due to the expected size and complexity of the transition report, partial reviews of the transition report are to be performed in a staggered fashion, with the entire review function forecast to be completed by November 30, 2013.

Following approval of the transition report, the review, approval and submittal of the attendant transmittal correspondence will be completed by the overall commitment date of December 31, 2013.