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August 22, 2003  
L-03-127

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

**Subject: Beaver Valley Power Station, Unit No. 1 and No. 2  
BV-1 Docket No. 50-334, License No. DPR-66  
BV-2 Docket No. 50-412, License No. NPF-73  
August 5, 2003 Containment Conversion Meeting Related to  
License Amendment Requests Nos. 300 and 172**

This letter documents the discussions held during an August 5, 2003 meeting between FirstEnergy Nuclear Operating Company (FENOC) and the NRC staff to discuss FENOC's plans concerning the Beaver Valley Power Station (BVPS) Containment Conversion License Amendment Request (LAR). A list of the meeting attendees is attached. During the meeting, FENOC discussed the background of the containment conversion LAR and related projects at BVPS, the plans to modify the MAAP code, potential impacts on the containment design pressure, planned submittals on the modified MAAP code, plans to re-submit the containment conversion LAR and impacts on other related LARs. The NRC staff provided feedback on the items discussed and the meeting was very productive.

FENOC submitted the BVPS Containment Conversion LAR (Nos. 300 and 172) to the NRC on June 5, 2002. The LAR was based on the use of WCAP-15844 "Topical Report on the MAAP5 PWR Large Dry Containment Model" which was submitted by Westinghouse for NRC review on March 31, 2002. During the review of WCAP-15844, the NRC staff identified concerns with the methodology by which MAAP5 credited the effects of forced convection and water entrainment in containment following a design basis accident (DBA). Westinghouse has since withdrawn WCAP-15844.

The Containment Conversion LAR is a fundamental component of FENOC's plans to invest in BVPS to improve its future long term viability as a safe and reliable electrical generation facility. Other key components of this plan, including BVPS Unit 1 Steam Generator Replacement and the Power Uprate projects, build upon the engineering analyses performed for the containment conversion project. In addition, the containment

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conversion would also permit plant personnel to enter the containment building during plant operation without the need to don Bio-packs as is the current practice at BVPS. Thus, the implementation of containment conversion would provide improvements from an industrial safety perspective to plant personnel and also improve the ability to access the containment building to inspect or perform maintenance during plant operation which would also enhance nuclear safety.

In order to resolve the NRC staff concerns on the MAAP code, FENOC intends to modify the code as follows:

- remove the modeling and credits taken for forced convection and water entrainment
- incorporate the use of the Tagami/Uchida heat transfer correlations in a manner consistent with the containment analysis methods which have been approved by the NRC
- incorporate the treatment of loss of coolant accident (LOCA) blowdown generated aerosols in a manner which is technically justified and consistent with other GOTHIC code applications which have been NRC approved.

The modified MAAP code will use the Tagami/Uchida heat transfer correlations, as appropriate, in conjunction with a single node containment model for calculating the peak containment pressures, environmental qualification and containment liner temperatures following a DBA. The modified MAAP code will use natural convection heat transfer biased in the conservative direction with a multiple node containment model for calculating containment sump water level and net positive suction head for the large break LOCA case and for the small break LOCA case. The modified MAAP code will also treat LOCA blowdown generated aerosols in a manner consistent with previously NRC approved GOTHIC applications that have also used Tagami/Uchida heat transfer correlations. Specifically, FENOC plans to use an assumption of aerosols within the range of 5% to 100% with a droplet diameter of  $\leq 100$  microns. In addition, the most limiting case of the various scenario runs using the modified MAAP code will be benchmarked against the GOTHIC code using the BVPS specific input decks. The benefits of using the modified MAAP approach are:

- improved accounting of water holdup for NPSH, water inventory and debris transport calculations
- supports a timely submittal of information for NRC review
- provides a common code platform for use by plant personnel for use in probabilistic risk assessment and containment analysis applications.

With the (current) removal of the credits for forced convection and water entrainment from the modified MAAP code, FENOC is evaluating changes to analysis inputs in order to maintain the peak containment pressure within the current BVPS design of 45 psig. Areas currently being evaluated are the initial containment pressure condition, the mass and energy releases for a Main Steam Line Break (MSLB) and the inventory of heat sinks within the containment building. Preliminary evaluations also indicate that increasing the containment design pressure by re-analyzing the containment structure is feasible; however, this option would only be pursued after extensive consideration by FENOC.

The completion of the above activities will result in significant changes to the information submitted with the containment conversion LAR; therefore, FENOC will submit a letter under separate cover withdrawing the containment conversion portion of LAR Nos. 300 and 172. The alternate source term/control room habitability portion of the LAR is expected to be issued as license amendments in the near future in order to support implementation during the upcoming BVPS Unit 2 refueling outage. In order to provide information on the results of the analyses performed using the modified MAAP code to the NRC in a timely manner, FENOC plans to provide the following information in the form of a pre-application submittal in the Fall of 2003:

- description of the modified MAAP methodology
- benchmarks of modified MAAP to International Standard Problems (ISPs) and other approved applications
- revised input parameters including revised mass and energy releases for MSLB
- results of limiting containment analysis cases

FENOC plans on submitting a revised containment conversion LAR to the NRC for review in the first half of 2004. This LAR will include a revised licensing report, which will include the necessary information for the NRC staff to review the application of the modified MAAP code. A topical report on the modified MAAP code will not be submitted.

On March 11, 2003, FENOC submitted LAR Nos. 303 and 174 which requested approval of the use of Best Estimate LOCA (BELOCA) methodology for BVPS. This LAR was based on the revised containment conditions requested by the containment conversion LAR and stated that approval of the BELOCA LAR was contingent upon approval of the containment conversion LAR. Since FENOC plans to partially withdraw the containment conversion LAR as discussed above, FENOC will also submit a letter under separate cover to withdraw the BELOCA LAR. FENOC plans to re-submit the BELOCA LAR following the submittal of the revised containment conversion LAR. FENOC also plans to submit a Power Uprate LAR for both BVPS units in the first quarter of 2004. NRC

review and approval of the revised containment conversion LAR, the BELOCA LAR and the Power Uprate LAR will be requested to support implementation during the planned refueling outages in the Spring of 2006 for Unit 1 and the Fall of 2006 for Unit 2. FENOC plans to submit these LARs in a time frame to allow sufficient time for NRC review of these LARs.

During the meeting the NRC staff provided feedback on the items discussed. FENOC's understanding of the major comments provided on FENOC's plans to modify the MAAP code are as follows:

- The Tagami/Uchida heat transfer correlations have been historically used in containment analyses and would be acceptable to use. However, the NRC staff concerns on the MAAP5 natural convection heat transfer model were largely resolved and the staff would be willing to review the use of this heat transfer correlation.
- The approach to credit LOCA blowdown generated aerosols appears consistent with approved GOTHIC applications. The NRC staff requested that information be provided for review on the use of aerosols.
- In addition to information on aerosols, information was requested on how the modified MAAP code will be benchmarked to the International Standard Problems (ISPs) and how the mass and energy releases for MLSB are being revised.
- NRC review of the revised containment conversion LAR using the modified MAAP code would be considered a standard review which typically consists of confirmatory calculations, review of data (curve shape and trends) for consistency with approved methods, and more detailed review of areas in the model which are key to the results.
- The revised containment conversion LAR using the modified MAAP code would not need to be reviewed by the ACRS since it will use conventional containment analyses methods.
- Given the interrelationships between the containment conversion, BELOCA and Power Uprate LARs, the timely submittal of the revised containment conversion LAR and response to follow-up questions from the NRC staff is key to the ability of the NRC to support FENOC's desire to implement these projects during the plant refueling outages in 2006.

FENOC plans to provide the requested information on aerosols, modified MAAP benchmarks to ISPs and revisions to MSLB mass and energy releases in a follow-up meeting with the NRC staff. FENOC plans to improve the schedule for submitting the revised containment conversion LAR as much as possible. FENOC requests the NRC to respond to this letter within 15 days of receipt if the information provided above concerning FENOC's understanding of the NRC feedback is not correct.

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There are no regulatory commitments contained in this submittal. If there are any questions concerning this matter, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Performance Improvement at 724-682-5284.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 22, 2003.

Sincerely,



L. William Pearce

- c: Mr. T. G. Colburn, NRR Senior Project Manager
- Mr. D. M. Kern, NRC Sr. Resident Inspector
- Mr. H. J. Miller, NRC Region I Administrator
- Mr. D. A. Allard, Director BRP/DEP
- Mr. L. E. Ryan (BRP/DEP)

**Attachment**

**List of Meeting Attendees**  
**August 5, 2003 Containment Conversion Meeting**

<b><u>Name</u></b>	<b><u>Organization</u></b>
T. G. Colburn	NRC
R. L. Denning	NRC
R. M. Lobel	NRC
A. Notafrancesco	NRC
E. D. Throm	NRC
T. S. Cosgrove	FENOC
R. D. Mende	FENOC
M. F. Testa	FENOC
M. A. Manoleras	FENOC
K. E. Frederick	FENOC
B. F. Sepelak	FENOC