



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 1, 2009

Mr. Peter P. Sena III
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 NO. 2 – SUPPLEMENTAL
INFORMATION NEEDED FOR ACCEPTANCE OF REQUESTED LICENSING
ACTION RE: SPENT FUEL POOL RERACK (TAC NO. ME1079)

Dear Mr. Sena:

By letter dated April 9, 2009, FirstEnergy Nuclear Operating Company submitted a license amendment for Beaver Valley Power Station, Unit No. 2 (BVPS-2). The proposed amendment would modify Technical Specifications (TSs) to support the installation of high density fuel storage racks in the BVPS-2 spent fuel pool. The purpose of this letter is to provide the results of the Nuclear Regulatory Commission (NRC) staff's acceptance review of this amendment request. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Consistent with Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), an amendment to the license (including the TSs) must fully describe the changes requested, and following as far as applicable, the form prescribed for original applications. Section 50.34 of 10 CFR addresses the content of technical information required. This section stipulates that the submittal address the design and operating characteristics, unusual or novel design features, and principal safety considerations.

In order to make the application complete, the NRC staff requests that the licensee supplement the application to address the information requested in the enclosure within 15 calendar days of the date of this letter. This will enable the NRC staff to begin its detailed technical review. If the information responsive to the NRC staff's request is not received within the above time frame, the application will not be accepted for review pursuant to 10 CFR 2.101, and the NRC will cease its review activities associated with the application. If the application is subsequently accepted for review, you will be advised of any further information needed to support the NRC staff's detailed technical review by separate correspondence.

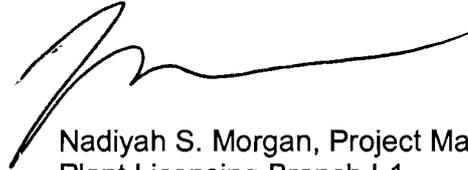
The information requested and associated time frame in this letter was discussed with Tom Lentz of your staff on May 29, 2009.

P. Sena

- 2

If you have any questions, please contact me at (301) 415-1016.

Sincerely,

A handwritten signature in black ink, appearing to be 'Nadiyah S. Morgan', written in a cursive style.

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

Docket No. 50-412

Enclosure:
As stated

cc w/encl: Distribution via Listserv

SUPPLEMENTAL INFORMATION NEEDED FOR THE
SPENT FUEL POOL RERACK AMENDMENT REQUEST
FIRSTENERGY NUCLEAR OPERATING COMPANY
FIRSTENERGY NUCLEAR GENERATION CORP.
OHIO EDISON COMPANY
THE TOLEDO EDISON COMPANY
BEAVER VALLEY POWER STATION, UNIT NO. 2
DOCKET NO. 50-412

1. CASMO-4 is used in this application to determine reactivity differences for temperature variation, manufacturing tolerances, depletion uncertainty and to calculate the isotopic inventory of the spent fuel for use in MCNP4a. However, there is no code validation for CASMO-4 as required by staff guidance in the NRC Memorandum from L. Kopp to T. Collins, "Guidance on the Regulatory Requirements for Criticality Analysis of Fuel Storage at Light-Water Reactor Power Plants," August 19, 1998. Provide a code validation of CASMO-4 consistent with the staff guidance (Kopp letter).
2. Section 4.7.5 of HI-2084175 states that the depletion uncertainty is intended to encompass the following calculational uncertainties: lack of critical experiment data of spent fuel storage rack geometries containing both actinides and fission products, uncertainty in actual versus calculated isotopics, and changes in fuel geometry (clad creep, pellet densification, etc.) during irradiation. However, this appears inconsistent with the magnitude of the isotopic uncertainty in Appendix 6E of Holtec Report HI-951251. Provide clarification on the magnitude of these effects, such that the Nuclear Regulatory Commission (NRC) staff may evaluate whether or not 5% of the reactivity decrement associated with the burnup of interest is sufficient to encompass these effects.
3. Please provide the following information for Section 5.0 of Enclosure A of the application:
 - i. Specific and detailed information, beyond a superficial description, regarding the theory and methodology underlying the program DYNARACK.
 - ii. Verification of this program by benchmarking with known analytical or experimental results.
 - iii. Sufficient numerical detail regarding the evaluation of the rack geometrical properties, such as the calculation of the various mass and spring properties.
 - iv. Numerical results for the whole rack analysis.

Enclosure

- v. In Table 5.4.1, DYNARACK is listed as having been used in ANO 2 spent fuel pool rerack. The final safety evaluation dated September 28, 2007 (ADAMS Accession No. ML072620412) has no reference to this computer program. Provide justification.
4. Please provide the following information for Section 5.5.2 of Enclosure A of the application:
 - i. Information regarding the Holtec program GENEQ and reference and reference whether or not this program was reviewed and accepted by the NRC staff.
 - ii. The time histories that form the basis for the development of the artificial time histories.
 - iii. The basis for specifying 5% damping for the spectra.
 - iv. A comparison of the artificial response spectra and the target response spectra.
 5. For Section 5.5.3 of Enclosure A of the application demonstrate that the rack modules meet the provisions of NF-3322.2(d) for width ratios.
 6. Please provide the following information for Section 5.6 of Enclosure A of the application:
 - i. The licensee stated that rack-to-rack impact occurs at several locations in the spent fuel pool and that the safety factor against buckling collapse of the storage cells has been determined to be greater than 1.5. Provide calculations to support this assertion and details regarding the buckling criterion.
 - ii. Detailed information regarding the methodology for supporting the assertion that the cumulative usage factor is 0.615.
 7. Provide sufficient numerical information to support the stated factors of safety in Sections 5.7 through 5.9 of Enclosure A of the application.
 8. Please provide the following information for Section 5.6 of Enclosure A of the application:
 - i. This section contains a verbal description for assessing damage to mechanical accidents. Provide an analytical description and present the basis of the factors entering the given equations for incident impact velocity and how they are evaluated.
 - ii. The basis for the plastic deformation criterion of 19.75 inches from the top.
 - iii. Numerical analyses to support the results stated in Section 7.5, "Results."
 9. The rack in motion is either the old spent fuel storage racks while they are connected to the temporary crane or the new spent fuel storage racks while they are connected to the temporary crane. The licensing report states that the racks will be moved along "safe load paths," but the report provides no detail regarding what constitutes a safe load path while removing or installing the racks. Also, the report specifies neither how the temporary crane was assessed to retain its integrity during and following credible seismic events or how the crane will be tested to ensure it is erected per design. These elements are necessary to

demonstrate the crane would not be subject to collapse while transporting a rack. Inadequate safe load paths or inadequate crane fabrication and design could allow a rack in motion (or a portion of the crane) to impact another rack containing stored fuel.

Provide an evaluation of interaction between a rack in motion and a rack containing stored fuel nor the basis for excluding this type of event from consideration.

P. Sena

- 2 -

If you have any questions, please contact me at (301) 415-1016.

Sincerely,

/RA/

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

Docket No. 50-412

Enclosure:
As stated

cc w/encl: Distribution via Listserv

DISTRIBUTION:

PUBLIC
Branch Reading File
RidsAcrsAcnw_MailCTR Resource
RidsNrrDorl Resource
RidsNrrDorlDpr Resource
RidsNrrDorlLpli-1 Resource
RidsNrrLASLittle Resource
RidsNrrPMNMorgan Resource
RidsOgcRp Resource
RidsRgn1MailCenter Resource

RidsNrrDssSrxb Resource
KWood
RidsNrrDeEmcb Resource
MHartzman
RidsNrrDssSbpb Resource
SJones
MHamm
EWong
GLapinsky

ADAMS Accession No. ML091520107

*See the dated emails

OFFICE	DORL/LPLI-1/PM	DORL/LPLI-1/LA	DSS/SRXB/BC	DE/EMCB/BC	DE/SBPB/BC	DORL/LPLI-1/BC (A)
NAME	NMorgan	SLittle	GCranston	MKhanna	GCasto	DPickett
DATE	6/1/09	6/1/09	5/21/2009*	5/22/2009*	5/22/2009*	6/1/09

OFFICIAL RECORD COPY