

# Duquesne Light Company

Beaver Valley Power Station  
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SUSHIL C. JAIN  
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June 11, 1997

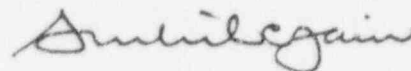
U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

**Subject: Beaver Valley Power Station, Unit No. 1  
BV-1 Docket No. 50-334, License No. DPR-66  
Request for Exemption from 10 CFR 70.24  
Response to RAI dated May 19, 1997 (TAC No. M97469)**

Attached is a response to the seven criteria contained in a request for additional information dated May 19, 1997. This action is in response to our request for exemption from 10 CFR 70.24 Criticality Monitor Requirements, dated December 18, 1996. An affidavit is also being provided per verbal request of the ORPM.

Any questions concerning this topic may be directed to Mr. J. Arias, Director, Safety & Licensing, at 412-393-5203.

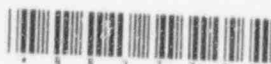
Sincerely,



Sushil C. Jain

c: Mr. D. M. Kern, Sr. Resident Inspector  
Mr. H. J. Miller, NRC Region I Administrator  
Mr. D. S. Brinkman, Sr. Project Manager

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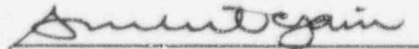


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COMMONWEALTH OF PENNSYLVANIA )  
COUNTY OF BEAVER ) SS:  
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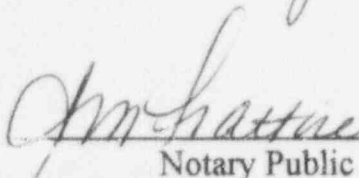
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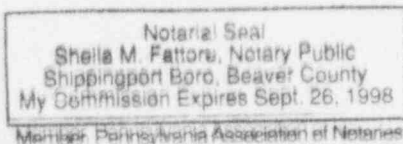
Before me, the undersigned notary public, in and for the County and Commonwealth aforesaid, this day personally appeared Sushil C. Jain, to me known, who being duly sworn according to law, deposes and says that he is Division Vice President, Nuclear Services of the Nuclear Power Division, Duquesne Light Company, he is duly authorized to execute and file the foregoing submittal on behalf of said Company, and the statements set forth in the submittal are true and correct to the best of his knowledge, information and belief.

  
Sushil C. Jain

Subscribed and sworn to before me

on this 11th day of June, 1997

  
Notary Public



ATTACHMENT 1  
Response to RAI dated May 19, 1997 (TAC No. M97469)

Criterion 1    Only 1 pressurized water reactor fuel assembly is allowed out of a shipping cask or rack at one time.

Response       Prior to submerging new fuel assemblies in the spent fuel pool, BVPS-1 new fuel handling practices ensure that no more than one new fuel assembly may be handled concurrently. Those which are not being handled are resident in either their shipping containers or new fuel storage racks. DLC's request for exemption dated December 18, 1996, described handling of SNM by stating, "New fuel is received in the new-fuel storage space. The assemblies are removed one at a time by crane from the shipping container, inspected, and transferred to the new fuel storage area where they are stored. New fuel is delivered to the reactor by placing a fuel assembly into the new fuel elevator and lowering it into the spent fuel pool. Beyond this point, handling is performed beneath water shielding. Fuel movement into the new and spent fuel storage racks is administratively controlled so that assemblies are not inserted in other than the prescribed locations within the racks. In all cases, fuel movements are procedurally controlled and designed to preclude conditions involving criticality concerns."

Criterion 2    With the fresh fuel storage racks filled with fuel of the maximum permissible U-235 enrichment and flooded with pure water, the maximum k-effective shall not exceed 0.95, at a 95% probability, 95% confidence level.

Response       DLC's request for exemption dated December 18, 1996, states that new fuel storage racks are designed to maintain fuel in a subcritical condition given the unlikely presence of water at optimum moderation conditions. It further makes reference to UFSAR 9.12.1.1 which provides detail indicating that k-effective is maintained less than 0.95.

Subsequently, on February 27, 1997, DLC requested a technical specification change to increase the new fuel storage racks enrichment limit. The NRC reviewed provisions for meeting Criterion 2 under TAC M98048 and on May 28, 1997, granted Amendment Number 204 and published an SER accepting these provisions. Technical Specification 5.3.1.2.b requires the new fuel storage racks to be designed and maintained with k-effective less than or equal to 0.95, allowing for uncertainties, if flooded with unborated water.

**Criterion 3** With the fresh fuel storage racks filled with fuel of the maximum permissible U-235 enrichment and flooded with moderator at the (low) density corresponding to optimum moderation, the maximum k-effective shall not exceed 0.98, at a 95% probability, 95% confidence level.

**Response** DLC's request for exemption dated December 18, 1996, states that new fuel storage racks are designed to maintain fuel in a subcritical condition given the unlikely presence of water at optimum moderation conditions. It further makes reference to UFSAR 9.12.1.1 which provides detail indicating that k-effective is maintained less than 0.95.

Subsequently, on February 27, 1997, DLC requested a technical specification change to increase the new fuel storage racks enrichment limit. The NRC reviewed provisions for meeting Criterion 3 under TAC M98048 and on May 28, 1997, granted Amendment Number 204 and published an SER accepting these provisions. Technical Specification 5.3.1.2.c requires the new fuel storage racks to be designed and maintained with k-effective less than or equal to 0.98, allowing for uncertainties, if moderated by aqueous foam.

**Criterion 4** With the spent fuel storage racks filled with fuel of the maximum permissible U-235 enrichment and flooded with pure water, the maximum k-effective shall not exceed 0.95, at a 95% probability, 95% confidence level.

**Response** DLC's request for exemption dated December 18, 1996, states that spent fuel is stored to maintain k-effective less than or equal to 0.95 even if unborated water is used to fill the pool. It further makes reference to UFSAR 9.12.1.1 which provides detail concerning spent fuel storage. Technical Specification 5.3.1.1.b requires the spent fuel storage racks to be designed and maintained with k-effective less than or equal to 0.95, allowing for uncertainties, if flooded with unborated water.

**Criterion 5** The quantity of other forms of special nuclear material, such as sources, detectors, etc., that are stored on site is small enough to preclude achieving a critical mass.

**Response** Currently, less than 17 grams of U-235 and less than  $10^{-6}$  grams of Pu-239 are contained onsite in forms other than fuel. Approximately 16 grams of

U-235 is distributed among four excore detectors, the remainder is distributed among approximately 28 incore detectors, and the plutonium is distributed among approximately 16 source standards. Formation of a critical mass is precluded by the small quantities and physical characteristics of these items.

Criterion 6 Radiation Monitors as required by General Design Criterion 63, are provided in fuel storage and handling areas to detect excessive radiation levels and to initiate appropriate safety actions.

Response Beaver Valley Unit 1 was designed and constructed on the basis of the proposed General Design Criteria which were published in the Federal Register on July 11, 1967. Design and construction were initiated and proceeded to a significant extent based upon the criteria proposed in 1967. Since February 20, 1971, when the Commission published the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50, DLC attempted to comply with newer criteria to the extent practical, recognizing previous design commitments. The NRC SER dated October 11, 1974 concluded in general that the intent of the newer General Design Criteria was satisfied.

Gamma radiation levels in the fuel storage areas are continuously monitored. These monitors provide an audible alarm at the initiating detector. If an area radiation monitor alarms, procedures require that any operation that may be causing high radiation levels must be safely stopped and the area must be evacuated without endangering personnel.

Additionally, Technical Specification 3.3.3.1, Table 3.3-6, item 1.a, requires a specific radiation monitor to be available in the fuel building and must be operable whenever fuel is in the building. Therefore, the intent of GDC 63 is satisfied with respect to radiation monitoring in the fuel building.

Criterion 7 The maximum nominal U-235 enrichment is limited to 5 weight percent.

Response On February 27, 1997, DLC requested a technical specification change to increase the new fuel storage racks enrichment limit. On May 28, 1997, the NRC granted amendment number 204. The amendment, to be implemented within 60 days from issuance, provides for a maximum nominal enrichment of 5 weight percent (Technical Specification 5.3.1.2).