50-338 SP
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-338SP
VIRGINIA ELECTRIC AND POWER CO.	)	50-339SP
	)	
(North Anna Power Station,	)	Proposed Amendment to
Units 1 and 2)	)	Operating License NPF-4

INTERROGATORIES TO VEPCO FROM CEF

Intervenor Citizens' Energy Forum (CEF) hereby requests that the following interrogatories be answered fully, in writing, and under oath or affirmation by any employees or persons affiliated with VEPCO who have personal knowledge thereof or are the closest to having personal knowledge thereof. The person answering each question should set forth his or her name and title, and should identify any other individual who furnishes information on which the answer to the question is based. Any documents relied upon in supplying the answer should be fully identified, and the place or places (other than the offices of VEPCO) where such documents are known to be available for inspection should be listed. In lieu thereof, a copy of each document and study may be attached to the answer.

Further, for each contention herein named, identify the person or persons (if any) whom VEPCO intends to have testify on the subject matter of that issue. State the professional qualifications of any such person, and also provide a summary of his or her proposed testimony. Also identify fully any books or other documents to be relied upon in presenting testimony on that contention.

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Contention 1: Thermal Effects

1-1 Describe in detail, and provide sketches to illustrate, the spent fuel pool cooling system; specifically,

a. its relation to the component cooling system

b. its relation to the service water cooling system

c. its relation to the pumphouse.

1-2 On page 54 of the Summary of Proposed Modifications to the Spent Fuel Storage Pool Associated with Increasing Storage Capacity for North Anna Power Station Unit Nos. 1 & 2 (hereafter referred to as Application) is stated "the existing cooling system has sufficient disign margin to remove the additional heat load when uranium fuel is stored in the pool." What is the basis for this statement? What tests have been conducted (e.g. in other operating plants) to assure that this is the case?

1-3 What is the volume of water that will be kept in the spent fuel pool at all times, both in level and in volume? At what rate and force (psi) does the cooling water flow into the spent fuel pool? At what temperature is the cooling water upon entrance to the pool, in the pool, and at exit from the pool?

1-4 What heat is generated per fuel assembly at the time of initial storage in the pool? What total heat is generated at the time of refuelling (150 spent fuel assemblies)? Define stable temperature conditions as they apply to spent fuel assemblies. How long does it take spent fuel assemblies to reach stable temperature after reactor shutdown?

1-5 Describe the effect, if any, of the spent fuel pool building ventilation system on maintaining an acceptable temperature in the spent fuel pool. In the event of an accident, would the ventilation system be relied upon to maintain acceptable spent fuel pool temperatures? If so, how?

1-6 Provide an analysis of the flow of water in the pool with

filled and partially-filled high-density racks. Show anticipated water temperatures throughout the pool, identifying areas of highest and lowest temperatures under normal and emergency conditions, assuming 1/3 core in the pool 150 hours after reactor shutdown.

1-7 (a) Provide detailed information on the makeup and cooling water systems specifically mentioned on page 54 of the Application, including a description of the relationship to one another of the four systems mentioned. (b) How would diversion of water from these systems affect other components of the plant? (c) Are any of these systems also relied upon as backup systems to other plant components? (d) What type of changes in "valve lineup" or other "temporary measures, such as the use of temporary pumps or hoses" would be required in order to make use of these makeup and cooling water sources? How would such changes be accomplished? Would these changes be manual, or automatic? In the event of a release of excessive radioactivity in the spent fuel pool area, would it be possible to make these changes? (e) What are the "number of installed station systems" cited on page 55 of the Application that could provide makeup and cooling water if needed, and how would their diversion to the spent fuel pool affect other plant components?

Contention 2: Radioactive Emissions

2-1 What systems currently exist to notify Louisa County officials and residents, as well as persons in surrounding counties, in the event of an unusual release of radioactivity from the spent fuel pool? If no such systems exist, are plans underway for their development?

2-2 Answer for each of the following: Lake Anna, groundwater, air and land surrounding the North Anna Power Station. (a) How often are these monitored for radiation levels,

to what distance from the plant are they monitored, and by whom are they monitored? (b) Are the results of such monitoring reported to the public? If so, how? If not, why not? (c) What is the normal background radiation level for each? What is the current average dosage above background for each?

2-3 What would the effect be on the pool and racks, and on the k_{eff} in the pool, if seismic conditions were to cause two or more racks to slide closer together than the planned 14" center-to-center spacing? How far, and in what directions, are the racks designed to slide under seismic conditions?

2-4 In the sentence "Mechanical restriction will be provided to prevent an unprotected fuel assembly from being brought closer than 5" to the side of any rack assembly in the side water channel.", found on page 45 of the Application, what is meant by the terms "mechanical restriction" and "side water channel"?

2-5 In the Application, an accident is assumed in which a fuel assembly is dropped so it is "parallel to and at the same level as the stored fuel in rack assemblies". Has an accident been postulated to involve the dropping of a spent fuel assembly so that it is not parallel, but rather perpendicular to, the spent fuel assemblies in the racks? If so, provide details and results. If not, explain why not.

2-6 When were the two new embedments added to the spent fuel pool? Provide copies of documents to and from the Nuclear Regulatory Commission requesting and approving, respectively, the addition of the new embedments.

2-7 Has the potential exposure of the populace within a 10-mile radius (or other such radius) of the North Anna Power Station in the event of an accident in the spent fuel pool that releases radiation, been analyzed? If so, provide the results of any such analysis. If not, explain why not.

2-8 In a letter from Sam C. Brown, Jr. to Harold Denton, dated September 7, 1978 and responding to requests for additional

information regarding expansion of spent fuel capacity for North Anna Units 1 & 2, is the statement:

> If the spent fuel racks become contaminated, they will be removed from the spent fuel pool by the overhead crane and taken to the decontamination building where they are decontaminated to the lowest possible level. The racks are then moved to a tent in a suitable location, cut up, packaged in wooden boxes, and shipped off-site for burial.

(a) What is the "lowest possible level" of contamination, in terms of measured radiation? (b) Where is a "suitable location"? (c) What special provisions are taken in constructing the tent and wooden boxes mentioned, to insure that they will contain any residual contamination? (d) What exposure to the public is anticipated from such activity? How is this expected exposure arrived at? (e) If such activity is necessary, where will the cut-up racks be shipped for burial?

2-9 Section 7-4 of the Application states "the escape of gaseous or volatile fission products from even defective fuel is expected to be negligible". Define the word negligible in this case. What is the procedure by which negligible amounts of radioactivity are quantified.

Contention 5: Corrosion

5-1 Provide detailed drawings of the proposed new spent fuel pool racks, clearly noting all dimensions (including weight). Include all partitions from side to side, support structures, projections, and points of attachment to the pool or liner.

5-2 Given the additional amount of corrosion and fission products to be found in the spent fuel pool in light of the proposed modification, what will the effect be on worker exposures incurred in maintaining the fuel pool purification system (e.g. changing of filters) over the lifetime of the pool?

5-3 What will be the effects of the heat load increase in the spent fuel pool on the rate of corrosion of the zirconium alloy cladding of the spent fuel assemblies? What will be the effect on the corrosion rate of the stainless steel racks? Provide references to studies which support your answers.

5-4 (a) What possible contaminants may be released in the spent fuel pool by defective spent fuel assemblies? (b) What number of defective rods may be stored in the pool without overloading the capacity of the pool filtration system to maintain water purity? (c) What will be the effect of defective rods stored in the pool on the rate of corrosion of the zircalloy cladding of the spent fuel assemblies to be stored in the pool?

5-5 Much of the information in VEPCO's Application draws upon operating experience at the Surry Power Station. Provide the answers to the Nuclear Spent Fuel Questionnaire, dated November, 1977, to Congressman John Moss' Subcommittee on Oversight investigation concerning the Surry spent fuel pool.

5-6 What is VEPCO's defective rack detection mechanism?

5-7 If installed, how will any defective racks be corrected and/or removed from the spent fuel pool?

5-8 Were the proposed high-density type 304 austenitic stainless steel racks fabricated by Brooks and Perkins?

5-9 What was the basis for VEPCO's determination not to use boron panels or borated water in the spent fuel pool. What are the advantages, both economically and otherwise, for not using either or both? What are the disadvantages?

Respectfully submitted,

Irwin B. Kroot

Irwin B. Kroot, for CEP

Dated this 1st day of June,
1979, in Bethesda, Maryland

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that the foregoing Interrogatories to VEPCO from CEF has been mailed this 1st day of June, 1979, by deposit in the U.S. mail, first class, to the following:

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