UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

INTERROGATORIES TO THE NRC STAFF FROM THE POTOMAC ALLIANCE

Pursuant to 10 CFR §2.740b, the Potomac Alliance requests that the following interrogatories be answered fully, in writing, and under oath or affirmation by any employees or members of the NRC Staff 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.

Each question is instructed to be answered in five parts, as follows:

Answer to Question _____:

A) Provide the direct answer to the question.

B) Identify all documents and studies relied upon by the Staff now or in the past, which serve as the basis for the answer. Any such document shall be identified with reference to its title, the date it was prepared, its author(s), any identifying serial numbers or filing numbers, the particular

the parts thereof which are relied upon, and the places, other than the offices of the NRC where it is known to be available for inspection. In lieu thereof, a copy of each document and study may be attached to the answer.

C) Identify all documents and studies, and the particular parts thereof, known to exist but not relied upon, which pertain to the subject matter of the question. In lieu thereof, a copy of each document and study may be attached to the answer.

D) Explain whether VEPCO, the NRC staff, or any other individual is engaged in or intends to engage in further research which may affect the answer. Identify such research or work.

E) Identify the expert(s), if any, whom the Staff intends to have testify on the subject matter of the question. State the qualifications of each expert.

QUESTIONS:

1 (a). Have you considered and analyzed the possibility of expanding the physical area of the existing spent fuel pool (SFP) as an alternative to the proposed modification?

(b). If so, describe such analysis and any documents referring to this alternative.

2 (a). Have you considered and analyzed the possibility of constructing a separate spent fuel storage pool on-site as an alternative to the proposed modification?

(b). If so, describe such analysis and any documents referring to this alternative.

3 (a). Have you considered and analyzed the possibility of using the SFP at Units 3 and 4 for storage of spent fuel from Units 1 and 2?

(b). If so, describe such analysis and any documents referring to this alternative.

4 (a). Assuming that the proposed operating license amendment is not granted, when, according to your projections, will:

(1) the first defueling of Unit 1 occur;

(2) Unit 2 begin commercial operations;

(3) the SFP be filled to capacity, less a reserve for one full core discharge;

(4) the SFP be filled completely?

(b). Describe fully the basis for the above projections, including any assumption made regarding the number of months between refuelings, the number of fuel assemblies discharge per refueling, and whether the cask loading area will be used for fuel storage.

5 (a). To your knowledge, is any private corporation or consulting group presently preparing a study on the logistics or other aspects of storing and handling spent fuel?

(b). Identify all preliminary drafts, working papers, and analyses which have been developed pursuant to such studies, and describe the substance of each document so identified.

6. In. §2.4 of the Safety Evaluation Report (SER) prepared in connection with the proposed modification it is stated that the original design of the SFP and fuel building was accepted on the basis that there was a "low probability" that a tornado generated missile would damage sufficient fuel assemblies to cause offsite doses in excess of 10 CFR Part 100.

(a) What is the probability of such an occurrence (assuming the proposed modification is not permitted)?

(b) In the Staff's opinion, is this probability likely to increase if the proposed modification is permitted?

(c) If the answer to (b) is in the negative, explain the basis for your answer.

(d) If the answer to (b) is in the affirmative, explain the basis for your answer and estimate the increased probability of such an occurrence.

7. In §2.4 of the SER it is stated that the "design criterion for the tornado missile protections for the facility was such tornado-generated missiles would not cause damage to more than one spent fuel assembly within the spent fuel pool."

(a) Explain this statement.

(b) What is the probability that a tornado missile may damage more than one assembly in the SFP (assuming the proposed modification is not permitted)?

7. (c) Is the probability of such an occurrence likely to increase if the proposed modification is permitted?

(d) If the answer to (c) is in the negative, explain the basis for your answer.

(e) If the answer to (c) is in the affirmative, explain the basis for your answer and estimate the increased probability of such an occurrence.

8. Describe the damage that would have to be sustained by the fuel in the SFP in order to exceed the limits established in 10 CFR Part 100.

9. In an NRC document entitled Draft Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel (March 1978) (NUREG-0404) it is stated in §4.2.3.2 that a tornado missile entering a SFP could impact a 45 foot row of assemblies.

(a) Justify the discrepancy between this estimate and your estimate that a tornado missile entering the North Anna SFP would not impact more than one assembly.

(b) What would be the radiological consequences if a 45 foot row of assemblies were damaged by a tornado or turbine missile at the North Anna SFP?

8. Describe the most destructive (1) tornado and (2) turbine missiles which could conceivably be expected to enter the SFP.

9. (a) What is the probability that such missiles would be expected to enter the SFP over the life of the plant?

(b) What would be the radiological consequences of such missiles?

(c) Assuming that the proposed modification is not permitted, what is the probability that such missiles would strike directly more than one fuel assembly?

(d) Assuming that the proposed modification is permitted, what is the probability that such missiles would strike more than one assembly?

10. Is it your opinion that the distance between assemblies stored in the SFP is relevant to the question whether more than one assembly is likely to be struck by a missile or a utility pole? Explain your answer.

11. Based upon operating experience with zircalloy clad fuel, approximately how many of the discharged spent fuel assemblied are expected to contain defective fuel rods? Of these, what percentage of the fuel rods contained therein are expected to be defective?

12. Based upon your experience with and knowledge of zircalloy clad fuel, describe all types of cladding defects that have been observed to occur.

a) For each defect type, describe the causative conditions.

b) For each defect type, state the probable release rate of radioactive matter, in mass and activity units.

13. Describe all information in your possession, including personal knowledge, concerning the adverse effects (including corrosion and stress-related effects) upon:

a) fuel rod cladding;

b) fuel assembly materials other than fuel rod cladding;

c) fuel storage racks; and

d) the pool liner

as a result of exposure to environments similar to that which will exist in the SFP. The response to this question should discuss, but not be limited to,

all nuclear reactors.

14. Describe all adverse effects mentioned in Question 13 as they may be expected to occur over the following time periods:

a) five years

b) fifteen years

c) forty years

If such information is not in your possession, is it in existence? If so identify it. If not, why not?

15. (a) Have there been any changes in the NRC safety requirements relating to spent fuel pool storage since the expansion was proposed?

(b) Describe all such changes. What are the projected costs of compliance with any such requirements?

16. (a) Do you know of any proposed or pending modifications to the NRC requirements regarding spent fuel storage?

(b) Describe these modifications fully and project the cost of compliance with such requirements.

17. Assume that the proposed modification of the SFP is not permitted, and that the SFP is filled to its capacity of 400 fuel assemblies.

(a) Describe all employee activities within the fuel building which involve a risk of radiation exposure, including but not limited to:

(i) changing filters and resin cartridges

(ii) other maintenance, including equipment maintenance

(iii) cleaning operations

(iv) surveillance

(v) fuel loading and unloading

(vi) preparing spent fuel for shipment offsite

(b) Describe the magnitude of the radiation exposures, in person-rems, involved in these activities, including the radiation levels at all relevant locations and the person-hours of activity at those locations.

18. Assume that the proposed modification of the SFP is permitted, and that the SFP is filled to its capacity of 966 fuel assemblies.

(a) Describe all employee activities within the fuel building which involve a risk of radiation exposure, including but not limited to:

(i) changing filters and resin cartridges

(ii) other maintenance, including equipment maintenance

(iii) cleaning operations

(iv) surveillance

(v) fuel loading and unloading

(vi) preparing spent fuel for shipment offsite

(b) Describe the magnitude of the radiation exposures, in person-rems, involved in these activities, including the radiation levels at all relevant locations and the person-hours of activity at those locations.

19. Identify all correspondence between VEPCO and the NRC concerning the proposed modification of the SFP.

20. Identify all correspondence between the United States Department of Energy, its constituent agencies or predecessor agencies, and owners of commercial nuclear generating facilities, including VEPCO, concerning spent nuclear fuel.

21. Identify all memoranda and other correspondence between NRC Staff concerning the proposed modification of the SFP.

22. Summarize briefly the Staff's independent evaluation of the capability of the SFP cooling and purification system to handle the increased cooling requirements as mentioned on p. 1-6 of the Safety Evaluation. Has this evaluation been modified since VEPCO filed LER 79-44 (April 4, 1979)? If not, why not?

Respectfully submitted,

James B. Dougherty

Counsel for the
Potomac Alliance

Of counsel:

Gloria M. Gilman, Esq.

Dated this 1st day
of June, 1979