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FILE NO.

DIRECT DIAL NO. 804 788-

May 29, 1981

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Atomic Safety and Licensing Appeal
Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. John H. Buck
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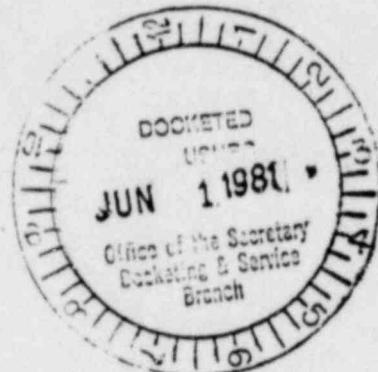
Dr. Lawrence R. Quarles
Atomic Safety and Licensing Appeal
Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Virginia Electric and Power Company
(North Anna Power Station, Units 1 and 2)
Docket Nos. 50-338 OL and 50-339 OL
Turbine Missiles

Gentlemen:

This will update and expand on my letter to you of May 8, which was somewhat abbreviated because of the press of time and my uncertainty about when and how some of the technical issues about turbine missile risk analysis will be resolved by Westinghouse and the NRC Staff.

First, let me advise you of what I may not have made clear before: Vepco has every intention of submitting to you, as part of its final package of evidence on turbine missiles, evidence that the number 1 disk would be contained by the turbine casing and would never reach vital plant equipment even



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if it should burst. The methods of analysis that were used to reach that conclusion I expect to be contained in one of the two Westinghouse "topical reports" that we have told you about. I am informed by Westinghouse that the topical reports should be provided to the NRC Staff by about June 15, but I can make no guarantees, because the preparation of the reports is beyond Vepco's control, and the schedule depends in part on what demands for information are made upon Westinghouse by the NRC Staff.

You should be aware, however, that I am not going to be able to prove to you that all turbine disk missiles, should they be generated, will be contained, because the calculations simply do not show that to be the case. That is why Tables 9-3 of the "Turbine Missile Report" (enclosed with my January 14 letter to you) indicate that only missiles from the No. 1 disk and not Nos. 2-5, are "contained." I understand that the Westinghouse topical report to which I have referred above will explain how the results in Tables 9-13 were derived.

Because there is some probability, however small, that missiles from Disks 2-5 may be generated and will escape the casing, it will be necessary to go beyond the exit energy analysis contained in the Turbine Missile Report and the topical report. That is why Vepco (and other utilities) have been concentrating on the calculation of safe inspection intervals. Because of the recent disk cracking experience, Vepco believes it will be necessary to adopt a schedule of periodic inspections, and the important question now, it seems to us, is how frequently those inspections will need to be done. That is why we think that the ongoing discussions between Westinghouse and the NRC Staff about the methods to use for calculating inspection intervals are important, and we are attempting, through Westinghouse, to keep informed about the progress of those discussions. Information on the appropriate inspection intervals for North Anna will be part of Vepco's final information package, along with the information about turbine missile exit energies and the containment of Disk No. 1 fragments. Vepco does not believe the Appeal Board can reach a sound decision without the former, as well as the latter, evidence.

In short, Vepco expects to submit to you two lines of evidence. One, consisting of a reference to the Westinghouse topical report on exit energies and the "Turbine Missile Report" that I sent you January 14, plus any additional material that seems necessary to clarify the analysis, will

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show that fragments from Disk No. 1 would be contained (except for the 90° fragment destructive overspeed case). The second, consisting of a new calculation of inspection intervals based on the current methods acceptable to the NRC Staff, plus any necessary explanatory material, will show how frequently the turbines should be ultrasonically inspected in order to provide reasonable assurance that turbine missiles should not be generated from Disks 2 through 5 between inspections. This at least is my present plan; since I haven't seen much of the evidence that I hope to submit, I can't say for certain whether any additional evidence will need to be included in the package.

The schedule I foresee is this: The first line of evidence (containment of Disk No. 1) depends on the Westinghouse topical report on exit energies that is planned to reach the NRC Staff by about June 15. I will be in touch with the NRC Staff counsel to arrange to provide you with the necessary information on this subject. The second line of evidence (inspection intervals) depends on the outcome of current NRC Staff-Westinghouse discussions of methodology. Once the calculation methods are approved in writing by the Staff, the inspection intervals for North Anna 1 and 2 can be recalculated, using those approved methods, in about three weeks.

There is also a third line of evidence, consisting of the calculations of the probability of unacceptable missile damage P_4 . These calculations, like the inspection intervals, depend on the outcome of the current Staff-Westinghouse discussions insofar as they are affected by the determination of the missile generation probability P_1 . With my letter of November 6, 1980, I enclosed a Stone & Webster "Summary Report" of the P_4 calculations using the then-accepted, but now somewhat outdated, analytical methods. Stone & Webster have done work on updating the "Summary Report" already. In light of the new approach of periodic inspections at calculated intervals, however, it may not prove necessary to recalculate the P_4 numbers at all.

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I hope this letter clarifies Vepco's plans, insofar as we are able to make plans at this stage. I will try to keep you informed from time to time as I learn more.

Yours very truly,

James N. Christman
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cc: Stuart Treby, Esq.
Anthony J. Gambardella, Esq.
Chief, Docketing and Service Section ✓