



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

NRC PUBLIC DOCUMENT ROOM
May 22, 1979



Richard Foster, Esq.
1908 A Lewis Mountain Road
Charlottesville, Virginia 22903

In the Matter of Virginia Electric and Power Company
(North Anna Nuclear Power Station, Units 1 and 2)
Docket Nos. 50-338 OL and 50-339 OL

Dear Mr. Foster:

This constitutes the Staff's response to "Intervenor Geraldine Arnold's interrogatories to Staff-Turbine Missile Issue", dated April 19, 1979. This response, like our response to the pumphouse settlement discovery, is informal in keeping with the Appeal Board's Order. The numbered responses correspond with the interrogatories or requests for documents in your April 19, 1979 letter. The Staff is providing discoverable documents within the meaning of 10 CFR §§ 2.744 and 2.790. Pursuant to your request, I am sending your copies of the documents identified below directly to Ellyn Weiss.

- 1 & 2 The Staff members that have been involved in the North Anna 1 and 2 OL review and testimony effort related to turbine missiles have been contacted regarding your first request. None could identify any Staff member who has dissented from the Staff position regarding the North Anna turbine missile risk. Accordingly, there are no documents as requested in Question No. 2.
3. The Staff objects to the production of documents related to its position in the Offshore Power Systems (Floating Nuclear Power Plants) proceeding as such material is neither relevant to the issues in this proceeding nor is it reasonably calculated to lead to the discovery of admissible evidence.*

* The Staff notes, for your information, that the issue of turbine orientation for the Floating Nuclear Power Plants is addressed in "NRC Staff Testimony in Response to Limited Appearance Statement of Ernst Effenberger", dated December 7, 1976, at pp. 41-43. A copy of that document is available for inspection in the Public Document Room located at 1717 H Street, N.W., Washington, D.C.

4. The following documents were either written by or received by M. Boyle during his term as task manager of A-37 (Mr. Boyle was the first such manager) relating to the task which are not otherwise publicly available.
 - a) letter from J. Knight (NRC) to G. Sliter (Elec. Pwr. Research Inst.) dtd 3/29/78;
 - b) memo from S. Pawlicki to J. Knight (both NRC) dtd 9/13/77;
 - c) paper entitled "Strength of Rotating Wheels" by Edward A. Rothman, undated;
 - d) letter from J. Dickinson (Westinghouse) to S. Pawlicki (NRC) dtd 10/6/76.
5. The following document on the subject of turbine missiles was produced under a research contract: "Stress Corrosion Cracking in Turbine Rotors in Nuclear Powered Reactors" by J. R. Weeks, dated June, 1978 (BNL NUREG 22689-R). See also item "1" in response to Question No. 8.
6. The following are all documents written by F. Clemenson (NRC) on turbine missile matter not in the public document room:
 - a) memo from F. Clemenson (FC) to R. Bryan dtd 8/24/66;
 - b) memo from FC to R. Ireland dtd 4/23/70;
 - c) memo from FC to R. Ireland also dtd 4/23/70;
 - d) memo from FC to V. Moore, Jr. dtd 7/29/71;
 - e) memo from R. Tedesco to R. Maccary dtd 1/22/73;
 - f) memo from R. Tedesco to J. Hendrie dtd 4/24/73 (date approximate);
 - g) memo from FC to files dtd 7/9/74;
 - h) memo from FC to R. Tedesco dtd 3/15/74.

648 174

7. The instrumentation and Control Systems Branch has searched its files and has found no copies of correspondence between Voss Moore and Spencer Bush regarding turbine missiles. Mr. Moore indicated that he does not recall whether he ever wrote or received a letter to/from Mr. Bush on the subject.
8. The following documents related to this proceeding were written or received by K. Campe, F. Costello, and D. Jeng which are not publicly available:
 - a) memo from E. G. Arndt to W. M. Morrision dtd 11/30/78 w/attachments;
 - b) memo from D. Jeng to J. Knight dtd 10/20/77;
 - c) memo from D. Jeng to J. Knight dtd 11/11/77;
 - d) ltr from G. Sliter (EPRI) to J. Knight dtd 1/3/78;
 - e) ltr from D. Jeng to G. Sliter of EPRI, dated 5/11/78; attachment to ltr, Task-A32, was included in its current form as an attachment to the Staff's "Response to Atomic Safety and Licensing Appeal Board's Request For Information On The North Anna Units 1 and 2 Regarding Missiles," dated 9/15/78, a copy of which was sent to you, and is therefore not included in this mailing;
 - f) memo from K. Campe to J. Knight dtd 1/11/78;
 - g) ltr from J. Knight to G. Sliter dtd 3/29/78;
 - h) ltr from J. Sliter to K. Campe dtd 11/16/78;
 - i) memo from R. Lipinski to D. Jeng dtd 5/18/78;
 - j) memo from K. Campe to L. Soffer dtd 5/30/78;
 - k) memo from R. Volmer to D. Vassallo dtd 11/7/77;
 - l) Chapter 4 of draft Staff report entitled "Evaluation of the Damage Probability to Nuclear Power Plants by Turbine Missiles", dtd June 29, 1977. (NOTE: this is a draft of the generic work being performed on the turbine missile issue by the Staff, and would not normally be discoverable. It has not been approved as a final Staff document. However, since Chapter 4 was relied on by K. Campe in his submittal to the Appeal Board (see response to Question No. 9) a copy is being provided.)

9. The following answer was prepared by Kazimieras Campe.
- a. The "generic study preliminary findings" refers to Chapter 4 of a draft Staff document entitled "Evaluation of the Damage Probability to Nuclear Power Plants by Turbine Missiles," a copy of which was provided in response to No. 8, and discussions between K. Campe and Staff members assigned to Task A-37 activities. Chapter 4 of the evaluation contains information regarding turbine overspeed. Reference 3 of Chapter 4 contains information regarding valve testing and inspection.
 - b. Mr. Campe's reference to "site-specific probabilistic analysis" was based on information provided in the North Anna 1 and 2 FSAR regarding plant layout, turbine placement, and plant structural features. The "analysis" consisted of the visual inspection of the plant drawings in the FSAR coupled with some hand calculations performed as a check of VEPCO's calculated turbine missile strike probabilities. You have access to the FSAR, and it is therefore not being provided. The referenced hand calculations were not retained nor were they incorporated in a memo or Staff document.

The "relatively recent but unpublished information" refers to Mr. Campe's current understanding of turbine disc integrity and turbine valve testing and inspection aspects as they relate to turbine failure probabilities. The principal documentation in support of this understanding is the Task Action Plan A-37 draft report referenced above. This understanding also stems from preliminary discussions between Mr. Campe and members of the Task Plan members as well as from discussions with outside consultants contracted for the task.

Sincerely,

Daniel T. Swanson

Daniel T. Swanson
Counsel for NRC Staff

cc w/encls: E. Weiss
M. Maupin
A. Gambardella

448 176