



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

June 19, 1979

Gary L. Milhollin, Esq., Chairman
1815 Jefferson Street
Madison, Wisconsin 53711

Mr. Lester Kornblith, Jr.
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dr. James C. Lamb, III
313 Woodhaven Road
Chapel Hill, North Carolina 27514

In the Matter of
Public Service Electric & Gas Company
(Salem Nuclear Generating Station, Unit No. 1)
Docket No. 50-272
Proposed Issuance of Amendment to
Facility Operating License No. DPR-70



Dear Members of the Board:

Enclosed is the "NRC Staff Response, In Part, To Board Questions". The professional qualifications of Mr. Zech and Dr. Donohew have previously been submitted in this proceeding. Under separate cover, I am sending to the Board and parties a copy of the Staff Report On The Generic Assessment Of Feedwater Transients In Pressurized Water Reactors Designed By The Babcock & Wilcox Company (NUREG-0560).

Sincerely,

Barry H. Smith
Counsel for NRC Staff

Enclosure
As stated

cc: See Salem Service List

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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(Salem Nuclear Generating Station, Unit No. 1))	

NRC STAFF RESPONSE, IN PART,
TO BOARD QUESTIONS

Q. Please state your name and address.

A. My name is Gary Zech and my address is the Nuclear Regulatory
Commission, Washington, D. C. 20555.

My name is Dr. Jack Donohew and my address is the same as
Mr. Zech's.

Q. Please state the purpose of your testimony.

A. The purpose of our testimony is to respond to the Board's
Questions No. 1 and 3 to the extent that they do not relate to
Class 9 accidents found in the Order of April 18, 1979. It is
the Staff's understanding that question No. 2 was withdrawn by
the Board. The remaining two questions are as follows:

1. To what extent did the accident at Three Mile Island
affect the spent fuel pool at that site?

3. If an accident such as the one at Three Mile Island occurred

1 at Salem, to what extent would the accident affect the spent fuel
2 pool? To what extent would it have mattered how much spent fuel
3 was present at the pool at Salem?

4 Our testimony is not intended to discuss the reasons for the
5 Three Mile Island-2 (TMI-2) accident or to determine whether a
6 similar accident could occur at Salem Unit No. 1. Although
7 there are several task forces now studying the accident at TMI-2,
8 including a Special Inquiry, the Staff believes it has sufficient
9 information now to respond to the Board's questions.

10 Q. Messrs. Zech and Donohew, have you read the Board's questions?

11 A. Yes.

12 Q. Will you please respond to question No. 1.

13 A. The TMI-2 accident had no direct effect on the spent fuel pool
14 at that site. There was no fuel stored in the pool at the time of
15 the accident since TMI-2 was in its first cycle, however, it is the
16 Staff's opinion that even if there had been fuel stored in the pool,
17 there would have been no effect.

18 Q. To respond to Question No. 3, please describe briefly what
19 would happen if an accident similar to the one at TMI-2 occurred
20 at Salem Unit 1 and to what extent the accident would affect the
21 spent fuel pool at Salem Unit 1.

22 A. (Mr. Zech) To do that, I will first need to describe to
23 some extent, what happened at TMI-2 so that the potential effects
24 of a similar accident at Salem Unit No. 1 can be addressed.

1 Based on information contained in Staff Report On The Generic
2 Assessment Of Feedwater Transients In Pressurized Water Reactors
3 Designed By The Babcock & Wilcox Company, NUREG-0560, May 1979,
4 after the reactor scram at TMI-2, which was caused by a loss of
5 feedwater to the steam generators and a turbine trip, a series of
6 events occurred which resulted in damage to fuel assemblies in
7 the reactor core. A relief valve on the reactor coolant system
8 pressurizer opened during the initial pressure transient and failed
9 to reseal, resulting in an overflow of reactor coolant system
10 water from the reactor coolant drain tank to the reactor building
11 (containment) sump. The reactor building sump pumps started
12 automatically due to the rising water level and discharged water
13 into tanks located in the auxiliary building. These tanks
14 became full and overflowed into the auxiliary building. Because this
15 water was contaminated from the damaged fuel in the core, the
16 resulting radiation levels in the auxiliary building were high.

17 Q. (Mr. Zech) Could the automatic transfer of contaminated water
18 from the reactor building containment sump to the auxiliary
19 building occur at Salem Unit No. 1?

20 A. No. As indicated in the Salem Final Safety Analysis Report (Chapter 5),
21 the containment isolation valves in the transfer lines from the
22 Salem Unit No. 1 containment sump are automatically shut on a
23 safeguards signal which starts the safety injection pumps. These
24 valves at TMI-2 remained open during the initial stages of the

1 accident because they were designed to close only on high
2 containment pressure (4 psig), not on the safeguards signal. This
3 pressure in containment did not reach those levels until about
4 20 minutes into the accident during which time contaminated water
5 was transferred to the auxiliary building liquid rad waste storage
6 tanks as discussed earlier. Therefore, it would not be expected
7 that the automatic transfer of the contaminated water in the
8 contaminated water of the containment sump would occur at Salem
9 Unit No. 1 as it did occur at TMI-2.

10 Q. If, for some reason, the containment isolation valves did not work
11 properly, what effect would this have on the spent fuel pool at
12 Salem Unit 1?

13 A. If the inadvertent transfer of contaminated water to the auxiliary
14 building occurred at Salem Unit No. 1, the direct effect on the spent
15 fuel pool would not seriously affect the operation of spent fuel
16 pool (SFP) support system or the pool itself. The pool is located
17 in a separate fuel storage building, however, as at TMI-2, certain
18 support systems such as the SFP cooling system are located in the
19 auxiliary building. Radiation levels that might be expected based
20 on TMI-2 levels in the area of the liquid waste storage tanks and
21 the SFP cooling system would not be expected to preclude accessibility.

22 Q. Dr. Donohew and Mr. Zech, have you examined the design of the
23 auxiliary building for Salem?

24 A. Yes.

1 Q. Based on your examination, do you believe that an accident
2 similar to what happened at TMI-2 could seriously affect operations
3 concerned with the SFP at Salem Unit 1?

4 A. No. We have reviewed Figures 1.2-2 through 1.2-8 of the Salem
5 Final Safety Analysis Report (FSAR) and evaluated the accessibility
6 of the spent fuel pool cooling and purification equipment during an accident
7 at Salem Unit 1 similar to that which occurred at Three Mile Island
8 Unit 2. Access to this equipment is in areas which are not expected
9 to be contaminated during such an accident. The equipment is
10 shielded from areas which may become contaminated by water pumped
11 to the auxiliary building from the containment and from other
12 equipment in the auxiliary building which was used during the
13 Three Mile Island accident and which contained highly radioactive
14 water or gases from the primary coolant system. Therefore, we
15 conclude that an accident similar to that which happened at Three
16 Mile Island should not seriously affect operations concerned
17 with the SFP cooling and purification system.

18 The SFP itself is in the Fuel Handling Building which is a
19 separate building from the Auxiliary Building. Operations in the
20 Fuel Handling Building should not be seriously affected by an
21 accident similar to what happened at Three Mile Island.

22 Q. To respond to Board Question 3, please tell the Board if
23 any of your conclusions would change if the proposed amendment to
24 increase the spent fuel capacity is allowed?

1 A. As we had discussed above, even if the transfer of radioactive
2 water were to occur into the auxiliary building the radiation levels
3 that would result would not be expected to preclude access to the
4 auxiliary building for the purposes of maintaining or insuring the
5 proper operation of the spent fuel pool cooling system and purification
6 system. Furthermore, as indicated in the Staff Safety Evaluation
7 in Section 2.2, spent fuel cooling, and the Environmental Impact
8 Appraisal (EIA) Section 5.3, we have concluded that both the
9 additional heat load and the radioactivity in the spent fuel pool
10 as a result of the expansion are not considered to be significant.
11 Therefore, the amount of spent fuel stored in the spent fuel pool
12 at Salem is not considered to be important to the consequences
13 of the hypothetical accident discussed above.

14 Q. Please summarize your responses to the Board's questions.

15 A. In summary, if an accident such as the one at TMI-2 occurred
16 at Salem Unit No. 1, the effects on the spent fuel pool and support
17 systems would be expected to be negligible.

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