

November 16, 2004

Mr. A. Christopher Bakken, III  
President & Chief Nuclear Officer  
PSEG Nuclear - X15  
P.O. Box 236  
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2, REQUEST  
FOR ADDITIONAL INFORMATION RE: AMENDMENT TO IMPLEMENT  
ALTERNATIVE SOURCE TERM (TAC NOS. MC3094 AND MC3095)

Dear Mr. Bakken:

By letter dated April 26, 2004, you submitted a request for changes to the Salem Nuclear Generating Station, Unit Nos. 1 and 2, Technical Specifications. The proposed changes would allow the use of an alternate source term.

The Nuclear Regulatory Commission has determined that responses to the questions in the enclosure to this letter are necessary in order for the staff to complete its review. These questions were discussed in a telephone call with Mr. Jesus Arias and other members of your staff on November 4, 2004. Questions 3(a)-(e) were forwarded electronically to Mr. Arias on that day.

I understand that you will propose a schedule for responding to these questions after you have had time to review them. If you have any questions I can be reached at (301) 415-1494.

Sincerely,

*/RA/*

George F. Wunder, Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-272 and 50-311

Enclosure: As stated

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION  
REGARDING PROPOSED AMENDMENT REQUEST  
SALEM GENERATING STATION, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-272 AND 50-311

- (1) With respect to Technical Specification (TS) 3/4.7.7, "Auxiliary Building Exhaust Air Filtration Ventilation System," you are requesting the removal of the TS requirements, including the 24-hour limiting condition for operation for the auxiliary building ventilation system filtration system. You stated that this change is justified under Title 10 of the *Code of Federal Regulations*, Section 50.36 criteria. Please provide a specific justification for the removal of the TS for the high-efficiency particulate air filter and adsorber.
- (2) Please resubmit the marked-up pages for TS 3/4.4.7 for Salem Unit No. 1. These pages were in your original submittal but were not scanned in to ADAMS.
- (3) In Section 4.1, "Large Break Loss of Coolant Accident Radiological Analysis," of Attachment 1 to your letter dated April 26, 2004 requesting a license amendment to implement an alternative source term, you determined that 4.85% of elemental iodine released from the core to the containment atmosphere and transported to the containment sump becomes the iodine source for the engineered safety feature (ESF) leakage. You assumed all iodine in particulate and organic forms to remain in the emergency core cooling system (ECCS) leaked fluid.

Section 5.5 of Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," states:

For a water temperature above 212 deg. F, the fraction of the leakage that flashes to steam is determined assuming a constant enthalpy process. If the calculated flash fraction is less than 10% or if the water is less than 212 deg. F, then 10% of the iodine in the leakage is assumed to become airborne unless a smaller amount is justified based on actual sump pH history and ventilation rates.

The Nuclear Regulatory Commission staff believes that the flashing fraction should be applied to all iodine and not only the elemental iodine. The staff's position on use of all the iodine in the ECCS leakage is structured to be deterministic and conservative in order to compensate for the lack of research into iodine speciation beyond the containment, and the uncertainties of applying laboratory data to the post-accident environment of the plant. We will need more data before we can determine whether or not your proposed treatment of ECCS leakage is adequately conservative. Please provide a quantitative justification for your assumptions including the following information:

- (a) Please provide clarification regarding the amount of iodine released from the ECCS leakage.

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- (b) Please provide a full description of the iodine speciation analysis that supports your assumptions, including methodology, assumptions, and input data. Consideration should be given to the mass transfer at the surface of the ESF leakage water pool, the possibility of evaporation to dryness, available experiments to justify the assumed chemical forms, and the potential for changing pH in all areas subject to ESF leakage.
  - (c) Please provide an explanation of how the iodine speciation may change as the containment sump water is circulated through the ECCS components and piping.
  - (d) Please explain the impact of all possible post-accident liquid inputs to the cubicle where the ECCS leakage occurs.
  - (e) Please describe how the iodine speciation might change as the ECCS leakage is sprayed out of a leak, or streams across a floor into a building sump.
- (4) Please provide Westinghouse report WCAP-7952, "Iodine Removal By Spray In the Salem Station Containment," August 1972.