

Public Service  
Electric and Gas  
Company

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Vice President - Nuclear Operations

AUG 10 1992  
NLR-N92100

United States Nuclear Regulatory Commission  
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Washington, DC 20555

Gentlemen:

RESPONSE TO NOTICE OF VIOLATION  
NRC INSPECTION REPORT NOS. 50-272/92-07, 50-311/92-07,  
50-354/92-06  
DOCKET NOS. 50-272, 50-311 AND 50-354

Public Service Electric and Gas (PSE&G) has received the Inspection Report dated July 2, 1992. Within the scope of this inspection, one apparent violation of NRC requirements was identified (VIO 272 and 311/92-07-02) The violation concerns the failure to adequately assess and provide information relative to the on-site storage of ammonium hydroxide and its potential effect on control room habitability as required by a July 10, 1981 NRC Order.

Pursuant to the requirements of 10 CFR 2.201, PSE&G hereby submits its response to the notice of violation.

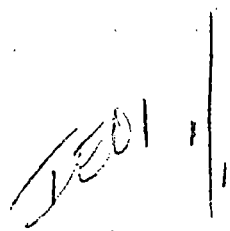
Should you have any questions in regard to this transmittal, do not hesitate to call.

Sincerely,



Attachment

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9208140125 920810  
PDR ADOCK 05000272  
Q PDR



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ATTACHMENT

As a result of the inspection at Salem Station during December 16-20, 1991, and in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1992), the following violation was identified:

On July 10, 1981, an Order Confirming Licensee Commitments on Post-TMI Related Issues was issued to PSE&G. Section IV of the Order stated in part, "IT IS HEREBY ORDERED EFFECTIVE IMMEDIATELY THAT the licensee shall comply with the following conditions:

The licensee shall satisfy the specific requirements described in the Attachment to this Order (as appropriate to the licensee's facility) as early as practicable but no later than 60 days after the effective date of the ORDER."

The Attachment to the Order provided specific requirements for, among other matters, NUREG-0737 Item III.D.3.4, Control Room Habitability. The Attachment to the Order required that the licensee submit, by January 1, 1981, a control room habitability evaluation meeting the requirements of NUREG-0737 Item III.D.3.4.

Contrary to the above, PSE&G failed to satisfy the specific requirements of NUREG-0737 Item III.D.3.4 in that, as of September 13, 1991, PSE&G failed to evaluate the potential impact, relative to NUREG-0737 Item III.D.3.4, of a release of ammonium hydroxide from transfer to and storage in a 3000 gallon storage tank located on the 120 foot elevation of the Unit 1 Turbine Building, on control room habitability. In addition, PSE&G's responses dated July 1, 1980 and August 13, 1980, submitted in response to NUREG-0737 Item III.D.3.4, failed to provide information relative to the presence of ammonium hydroxide.

PSE&G DOES NOT DISPUTE THE VIOLATION

ROOT CAUSE

The root cause was attributed to inadequate depth of evaluation. A contributing cause was inadequate documentation of analysis.

Salem Unit 1 FSAR was approved and an operating license issued with no commitment to the then recently issued Regulatory Guide 1.78.

In the process of licensing Salem Unit 2, an assessment was made on compliance to Regulatory Guide 1.78. An internal memorandum, dated September 14, 1977, qualitatively evaluated several chemicals, including ammonium hydroxide, for impact on control room habitability. It was concluded at that time (September 14, 1977), that since ammonium hydroxide was not listed in Regulatory Guide 1.78 nor its reference documents, it was not considered a hazardous chemical concern for control room habitability. In responding to TMI Action Item III.D.3.4 the previous qualitative evaluation of September 14, 1977 and additional assessments, were used to support PSE&G's responses dated July 1, 1980 and August 13, 1980.

As a result of evaluations conducted in the fall of 1991, it was concluded, that even though ammonium hydroxide is a dilute liquid, ammonia gas could evolve from spilled ammonium hydroxide under postulated accident conditions. Therefore, a postulated accident of ammonium hydroxide storage was evaluated for impact on control room habitability.

#### CORRECTIVE ACTIONS TAKEN

Upon notification of the discrepancy, a preliminary safety assessment was conducted using the computer code "CHARM", and a site survey performed for identification of any additional potentially hazardous chemicals. The preliminary "CHARM" results concluded that there was no impact on control room habitability from a postulated ammonium hydroxide accident. In order to provide a timely response for a final safety evaluation, a different computer code "VAPOR" was used because "CHARM" was not validated and verified to PSE&G software requirements. PSE&G used the "VAPOR" code for the safety evaluation because its software had been documented and verified to comply with appropriate QA requirements for use in "important to safety" evaluations. As a result of finalizing the safety evaluation for control room habitability using the "VAPOR" computer code, additional actions were taken to address the analysis conclusion that the toxic limit in the control room may be exceeded. The immediate compensatory measures included placing a temperature indicator and strip chart recorder in the storage tank area, limiting the amount of ammonium hydroxide volume stored, performed an engineering evaluation and subsequently reduced the concentration of ammonium hydroxide used at Salem to 15 wt%, and initiating precautionary administrative controls for tanker truck deliveries.

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A preliminary analysis was conducted for the two additional chemicals, hydrazine and sodium hydroxide, identified as a result of the site survey. The preliminary assessment resulted in chemical concentrations within the control room that did not exceed the toxic limits provided in authoritative sources. Therefore, it was concluded there would be no impact on control room habitability as a result of a postulated accident regarding either hydrazine or sodium hydroxide.

During the approval cycle for the control room habitability calculation, PSE&G questioned the "VAPOR" model assumptions and design input and determined they were very conservative. As a result, the "CHARM" model was validated and verified and used to complete the final evaluations. The additional evaluations used NRC regulatory criteria in the validated and verified "CHARM" computer code for the postulated accidents for both 27.5 and 15 wt.% ammonium hydroxide storage tank concentrations. The evaluations, utilizing the "CHARM" code model, concluded that the Regulatory Guide 1.78 toxic limit for anhydrous ammonia, based on the concentration that can be tolerated for two minutes, will not be exceeded in the control room during a postulated release at the tank containing either 27.5 wt% or 15 wt.% ammonium hydroxide.

Since the concentration of ammonium hydroxide was reduced, the amount of deliveries on an annual basis, was anticipated to exceed the frequency threshold value for truck traffic of ten per year per Regulatory Guide 1.78. When the frequency criteria are applicable, Regulatory Guide 1.78 requires evaluation of the shipments for impact on control room habitability. Therefore, included in the additional evaluations were postulated accidents to tanker delivery trucks containing 15 wt.% ammonium hydroxide at the site main access point and Salem unloading dock.

A final evaluation of the two additional chemicals was conducted using the validated and verified "CHARM" computer code for hydrazine and a qualitative analysis for sodium hydroxide. The final evaluation confirmed the preliminary assessment that control room habitability would not be impacted. A qualitative evaluation was conducted for sodium hydroxide because of its high boiling point and very low volatility. Under postulated accident conditions no credible toxic airborne source can be determined.

The short term corrective actions immediately implemented, that are currently in place, are the administrative controls for tanker truck deliveries and use of 15 wt.% concentration ammonium hydroxide. However, the "CHARM" code model evaluations support future use of 27.5 wt.% ammonium hydroxide, and the elimination of both tank volume restrictions and continued temperature monitoring of the storage tank area.

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Administrative controls were instituted, per issuance of Chemistry procedure SC.CH-AD.ZZ-0474, for the operators at Salem to isolate the control room when notified that a tanker truck transporting ammonium hydroxide is requesting site access for delivery. The administrative controls also included notification of Hope Creek operators that an ammonium hydroxide delivery is being made for Salem. Evaluations, utilizing the "CHARM" code model, conclude that Regulatory Guide 1.78 toxic limits will not be exceeded in the Hope Creek control room therefore, operator action is not required to isolate the control room.

Operator training was conducted to identify the odor of ammonia and ammonia was added to the annual olfactory recognition testing performed by the Medical Department on licensed operators. An Abnormal Operating Procedure, SC.OP-AB.CR-0003(Q), "Toxic Gas Release", was issued for Salem Generating Station to isolate the control room upon notification or detection by odor of ammonia in the control room. Hope Creek is also required to be notified. A similar procedure for Hope Creek already existed.

Changes to the Salem and Hope Creek UFSAR's have been completed that revise appropriate Sections to identify additional chemicals transported to and stored onsite, discuss the evaluations for control room habitability for these additional chemicals, and describe Salem's position on Regulatory Guide 1.78. The UFSAR changes will be incorporated in the next scheduled revision update.

#### CORRECTIVE ACTIONS TAKEN TO PREVENT RECURRENCE

Procedure NC.NA-AP.ZZ-0019(Q), "Procurement of Materials and Services" is being revised to limit the procurement of quantities of new chemicals to be brought onsite to less than 100 pound containers unless analyzed for their impact on control room habitability.

In the interim, direction on chemical procurement concerning toxic hazards was provided by PSE&G memorandum, GM Nuclear Services to GM Procurement Material Control, dated April 8, 1992.

Nuclear Administrative Procedure NC.NA-AP.ZZ-0038(Q), "The Chemical Control Program", was revised to require review of chemicals for control room habitability before use.

Procedure NC.DE-AP.ZZ-0001(Q), "Design Bases/Input", was revised to address the possible impact from hazardous chemicals, used in conjunction with or added by Design Changes, on control room habitability.

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In addition to the above specific changes, improvements to the engineering process have been implemented since the review and evaluation for the original response to the TMI Action Item III.D.3.4. Safety Evaluations (10CFR50.59) are more defined and comprehensive today to include nonsafety system interaction on safety systems such as the Chemical Feed System using ammonium hydroxide. Design Changes require a formalized design bases/input process that include use of design considerations and specialty review checklists, interface record sheets, multiple reviews including peer review in addition to independent design verification, and cross discipline and programmatic review.

PSE&G is in full compliance