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Nuclear Business Unit

FEB 10 2000

LR-N000002

LCR S99-21, Sup. 1

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Gentlemen:

**REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS  
SUPPLEMENTAL INFORMATION FOR CHARCOAL FILTER TESTING CHANGES  
REQUIRED BY GENERIC LETTER 99-02  
SALEM GENERATING STATION, UNIT NOS. 1 AND 2  
FACILITY OPERATING LICENSE DPR-70 AND DPR-75  
DOCKET NOS. 50-272 AND 50-311**

On November 24, 1999, Public Service Electric and Gas (PSE&G) Company submitted a request for amendment (LR-N99501) to revise the charcoal filter testing requirements for the Auxiliary Building Ventilation (ABV) System, the Control Room Emergency Air Conditioning System (CREACS) and Fuel Handling Building Ventilation (FHV) system consistent with the requirements of Generic Letter 99-02. In submittal LR-N99501, PSE&G stated that additional information would be provided justifying the dose analysis revision performed to establish the methyl iodide removal efficiency Technical Specification (TS) acceptance criteria required by Generic Letter 99-02.

The proposed changes were evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and PSE&G concluded that the request did not involve a significant hazards consideration. The attached information provides the additional justification for the revision to the dose analysis associated with the ABV system and CREACS. In addition to the Technical Specification changes identified in letter LR-N99501, a change to surveillance requirement 4.7.6.1.b.1 & 2 is proposed in this submittal to revise the in-place testing acceptance criteria for CREACS. The change in the in-place testing acceptance criteria is being performed to maintain the safety factor between the charcoal removal efficiency used in the revised dose analysis and the actual tested charcoal removal efficiency. The information provided in this submittal does not impact the significant hazards considerations.

The power is in your hands.

FEB 10 2000

As stated in Generic Letter 99-02, the NRC would exercise enforcement discretion consistent with Section VII.B.6 of the Enforcement Policy provided that licensees:

- submit a Technical Specification amendment request to reference the ASTM D3803-1989 testing protocol,
- perform laboratory surveillance tests of charcoal samples occurring after 60 days of the date of GL 99-02 to the ASTM D3803-1989 standard with an acceptance criteria that is derived from applying a safety factor as low as 2 to the charcoal filter efficiency assumed in the design basis dose analysis
- continue to test in accordance with ASTM D3803-1989 in lieu of the current TS-required laboratory testing until the TS amendment is approved.

To meet the above guidelines for use of the enforcement discretion discussed in GL 99-02, PSE&G would need to test the ABV system charcoal filters to an acceptance criteria of 95%. As discussed in detail in Attachment 1, the ABV system contains a one-inch charcoal filter whose TS testing acceptance criteria can not meet a removal efficiency of 95% when tested to the ASTM D3803-1989 standard.

Since the guidelines of the enforcement discretion of GL 99-02 can not be met, PSE&G must have the proposed changes to the TS for ABV approved prior to performance of the next 18-month charcoal laboratory surveillance test. The 18-month period for the Unit 2 ABV charcoal laboratory surveillance test ends on February 26, 2000. Applying the 25% surveillance interval extension as provided under Salem TS 4.0.2 would mean that the Unit 2 ABV test would need to be completed no later than July 12, 2000.

Upon NRC approval of this proposed change, PSE&G requests that the amendment be made effective on the date of issuance. Should you have any questions regarding this request, please contact Mr. Brian Thomas at 856-339-2022.

Sincerely,



M. B. Bezilla  
Vice President - Operations

Affidavit  
Attachments (3)

FEB 1 0 2000

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**SALEM GENERATING STATION  
FACILITY OPERATING LICENSES DPR-70 & DPR-75  
DOCKET NOS. 50-272 & 50-311**

As stated in Public Service Electric and Gas' (PSE&G) submittal LR-N99501 dated November 24, 1999, additional information is being provided to support the dose analysis revision performed to establish methyl iodine removal efficiency Technical Specification acceptance criteria required by Generic Letter (GL) 99-02 for the Auxiliary Building Ventilation (ABV) System and Control Room Emergency Air Conditioning System (CREACS).

GL 99-02 requires that laboratory testing of charcoal filters be performed in accordance with standard ASTM D3803-1989. As a result of testing to the requirements of ASTM D3803-1989, licensees would be allowed to adopt a safety factor of  $\geq 2$ .

Regulatory Guide (RG) 1.52, Design, Testing, And Maintenance Criteria for Post Accident Engineered –Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants, provides generic guidance for the iodine removal efficiency that can be credited in the accident analysis for two-inch and four-inch charcoal filters. However, no guidance is provided in RG 1.52 for the removal efficiency for a one-inch charcoal filter.

PSE&G conducted testing of a one-inch charcoal bed in accordance with ASTM D3803-1989 with a 95% relative humidity (RH) and a face velocity of 74 fpm. Two tests were performed on different charcoal resulting in a laboratory removal efficiency of 91.33% and 92.91% for methyl iodine. Based on this testing information, PSE&G believes that an acceptable testing value for use of the ASTM D3803-1989 standard for the one-inch charcoal filter in the ABV system would be 90%. Therefore, applying the guidance of Generic Letter 99-02, PSE&G would only be allowed to credit a maximum removal efficiency of 80% in the dose analysis for the ABV system when the safety factor of 2 is applied.

The loss of coolant accident (LOCA) is the current bounding dose analysis for Salem ABV and CREACS. In the current dose analysis, the ABV charcoal filter efficiency is assumed to be 90% (elemental) and the CREACS charcoal filter efficiency is assumed to be 95% for all species. These assumptions resulted in the following results:

**SITE BOUNDARY:**

	Thyroid (rem)	Whole Body (rem)
Exclusion Area Boundary:	22.5	0.8
Low Population Zone:	8.6	0.2

**CONTROL ROOM:**

Thyroid Dose:	28.4 rem
Whole Body Dose:	1.7 rem
Beta Skin Dose:	12.3 rem

The above information was provided to the NRC in letter LR-N96318, dated October 17, 1996. The NRC confirmed the results of PSE&G's dose analysis with the issuance of the Safety Evaluation Report (SER) for Salem Unit 1 Amendment 190 and Salem Unit 2 Amendment 173, dated February 6, 1997.

As stated previously, since the ABV charcoal filters are one-inch, PSE&G determined that the maximum charcoal efficiency that could be used in the dose analysis was 80% for the removal of organic (methyl) iodine. Using a removal efficiency of 80% for ABV without changing the CREACS removal efficiency would result in a control room thyroid dose greater than 30 rem. A dose greater than 30 rem thyroid exceeds the requirements of 10CFR50 Appendix A, General Design Criteria 19 (GDC 19). To maintain the dose limits for the control room operators within the limits of GDC 19, PSE&G increased the CREACS removal efficiency in the dose analysis to 98%.

With the assumptions used in Table 1, the following is a summary of the dose analysis results:

**SITE BOUNDARY:**

	Thyroid (rem)	Whole Body (rem)
Exclusion Area Boundary:	22.6	0.6
Low Population Zone:	8.7	0.1

**CONTROL ROOM:**

Thyroid Dose:	28.3 rem
Whole Body Dose:	0.4 rem
Beta Skin Dose:	8.4 rem

As indicated above, the dose re-analysis using an ABV charcoal removal efficiency of 80% and a CREACS charcoal removal efficiency of 98% results in only a slight increase in the EAB thyroid dose and LPZ thyroid dose. These offsite releases are still well within the requirements of 10CFR100 limits. The control room doses also remain within the requirements of GDC 19.

The TACT5 and CONAHB computer codes in the HABIT computer code package (NUREG/CR-6210) were used to calculate the new off-site doses and doses in the control room. The dose calculations performed to support Amendments 190 and 173 were performed using Stone & Webster's PERC2 computer code. For whole body and beta skin doses, the HABIT computer code package is less conservative since daughter products are not modeled in this code as opposed to Stone & Webster's PERC2 computer code.

TABLE 1

Listed below are some of the dose assessment parameters including those which have changed from the current licensing basis. For a more complete listing see License Change Request S95-21 support information.

Parameter	Value
Iodine Form/Source	
All pathways	
Elemental	91%
Particulate	5%
Organic	4%
ESF Leakage (Maximum Expected x 2)	7600 cc/hr
Fraction of ESF Leakage That Becomes Airborne	10%
Duration of ESF Leakage	18 min to 30 Days
Aux Bldg HEPA filter Alignment Time	0 seconds
Aux Bldg Charcoal filter Alignment Time	2 hours
ESF Filter Efficiency	0% @ t=0; 80% @ t=2 hours
Filtration Factor	50%
ESF Leakage Release Pathway	Unit I Vent
Duration of Release via the Containment Pressure/Vacuum Relief Line	5 sec
Normal Operation Intake Flow (unfiltered)	1,320 cfm
Control Room Pressurization Mode Actuation Signal (LOCA)	SIS
Filtered Emergency Makeup Flow to support Pressurization	2,200 cfm
Filter Recirculation Flow (1 train)	4,880 cfm
CREACS Filter Efficiency	98%
Unfiltered Inleakage	120 cfm
CREACS Pressurization Delay Time	60 seconds



To ensure that the safety factor for the CREACS charcoal filter is appropriately maintained when increasing the credited removal efficiency to 98%, PSE&G is submitting a change to surveillance requirement 4.7.6.1.b.1 in addition to the changes identified in LR-N99501. Currently surveillance requirement 4.7.6.1.b.1 states to verify:

“... that the charcoal adsorbers remove  $\geq 99\%$  of a halogenated hydrocarbon refrigerant test gas when they are tested in-place ...”

An in-place test acceptance criteria of 99% would mean that only 99% of the air flow could be credited with going through the actual charcoal filter. Since the CREACS charcoal filters are tested to demonstrate a methyl iodide removal efficiency  $\geq 99\%$ , the overall CREACS iodide removal rate following surveillance testing could be at  $\sim 98\%$  ( $99\% * 99\% = 98.01\%$ ). Based on this surveillance testing, the current CREACS surveillance testing would allow no room for degradation of the CREACS charcoal filter removal efficiency over the operating cycle.

To ensure that the safety factor between the CREACS charcoal surveillance testing and the value used in the dose analysis is maintained, surveillance requirement 4.7.6.1.b.1 is being revised to changed the in-place testing criteria from  $\geq 99\%$  to  $\geq 99.95\%$  removal of the halogenated hydrocarbon test gas.

In conjunction with revising the in-place testing acceptance criteria of the charcoal adsorber, the HEPA filter in-place testing acceptance criteria in surveillance requirement 4.7.6.1.b.2 is being revised from  $\geq 99\%$  removal of DOP to  $\geq 99.95\%$  removal of DOP.

Revising the in-place test acceptance criteria to 99.95% will ensure that following the completion of surveillance testing, the overall CREACS iodide removal rate would be  $\sim 99\%$  ( $99.95\% * 99\% = 98.95\%$ ). Ensuring that the tested charcoal removal efficiency would be  $\sim 99\%$ , demonstrates that a safety factor of 2 exists between the removal efficiency assumed in the dose analysis and the actual tested removal efficiency.

### Conclusion

The change to surveillance requirement 4.7.6.1.b.1 in this submittal does not alter or impact the significant hazards evaluation provided in LR-N99501, dated November 24, 1999. PSE&G continues to conclude that the proposed changes to the TS do not involve a significant hazards consideration.

**SALEM GENERATING STATION  
FACILITY OPERATING LICENSES DPR-70 & DPR-75  
DOCKET NOS. 50-272 & 50-311  
REVISIONS TO THE TECHNICAL SPECIFICATIONS (TS)**

TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES

The following Technical Specifications for Facility Operating License No. DPR-70 are affected by this change request:

<u>Technical Specification</u>	<u>Page</u>
4.7.6.1.b.1	3/4 7-20
4.7.6.1.b.2	

The following Technical Specifications for Facility Operating License No. DPR-75 are affected by this change request:

<u>Technical Specification</u>	<u>Page</u>
4.7.6.1.b.1	3/4 7-17
4.7.6.1.b.2	

**INSERT M**

Verifying that the charcoal adsorbers remove  $\geq 99.95\%$  of a halogenated hydrocarbon refrigerant test gas when they are tested in-place while operating the ventilation system at a flow rate of  $8000 \text{ cfm} \pm 10\%$ .

**INSERT N**

Verifying that the HEPA filter banks remove  $\geq 99.95\%$  of the DOP when they are tested in-place while operating the ventilation system at a flow rate of  $8000 \text{ cfm} \pm 10\%$ .

## PLANT SYSTEMS

### SURVEILLANCE REQUIREMENTS

4.7.6.1 Each control room emergency air conditioning system filtration train shall be demonstrated OPERABLE:

- a. At least once per 31 days by initiating flow through the HEPA filter and charcoal adsorber train(s) and verifying that the train(s) operates with each fan operating for at least 15 minutes.
- b. At least once per 18 months or prior to return to service (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system, by:

1. Verifying that the charcoal adsorbers remove  $\geq 99\%$  of a halogenated hydrocarbon refrigerant test gas when they are tested in-place while operating the ventilation system at a flow rate of 8000 cfm  $\pm 10\%$ .

2. Verifying that the HEPA filter banks remove  $\geq 99\%$  of the DOP when they are tested in-place while operating the ventilation system at a flow rate of 8000 cfm  $\pm 10\%$ .

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from one of the charcoal adsorbers demonstrates a removal efficiency of  $\geq 99\%$  for radioactive methyl iodide when the sample is tested at 30°C, 95% relative humidity.

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of  $\geq 99\%$  for radioactive methyl iodide when the sample is tested at 30°C, 95% relative humidity.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filter and charcoal adsorber bank is  $\leq 3.5$  inches water gauge while operating the ventilation system at a flow rate of 8000 cfm  $\pm 10\%$ .
- 2.\* Verifying that on a safety injection test signal or control room intake high radiation test signal, the system automatically actuates in the pressurization mode by opening the outside air supply and diverting air flow through the HEPA filter and charcoal adsorber bank.
3. Verifying that the system can maintain the control room at a positive pressure  $\geq 1/8$ " water gauge relative to the adjacent areas during system operation with makeup air being supplied through the HEPA filters and charcoal adsorbers at the design makeup flow rate of  $\leq 2200$  cfm.

\* A one time extension to this surveillance requirement which is satisfied by performance of the Manual SI test is granted during fuel cycle thirteen allowing Unit 1 operations to continue to the thirteenth refueling outage (1R13). The surveillance testing is to be completed at the appropriate time during the 1R13 outage, prior to the unit returning to Mode 4 upon outage completion.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.7.6.1 The control room emergency air conditioning system shall be demonstrated OPERABLE:

- a. At least once per 31 days by initiating flow through the HEPA filter and charcoal adsorber train(s) and verifying that the train(s) operates with each fan operating for at least 15 minutes.
- b. At least once per 18 months or prior to return to service (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system, by:

1. ~~Verifying that the charcoal adsorbers remove  $\geq 99\%$  of a halogenated hydrocarbon refrigerant test gas when they are tested in-place while operating the ventilation system at a flow rate of 8000 cfm  $\pm 10\%$ .~~

INSERT  
M

2. ~~Verifying that the HEPA filter banks remove  $\geq 99\%$  of the DOP when they are tested in-place while operating the ventilation system at a flow rate of 8000 cfm  $\pm 10\%$ .~~

INSERT  
N

3. Verifying within 31 days after removal that a laboratory analysis of a carbon sample from one of the charcoal adsorbers demonstrates a removal efficiency of  $\geq 99\%$  for radioactive methyl iodide when the sample is tested at 30°C, 95% relative humidity.

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of  $\geq 99\%$  for radioactive methyl iodide when the sample is tested at 30°C, 95% relative humidity.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filter and charcoal adsorber bank is  $\leq 3.5$  inches Water Gauge while operating the ventilation system at a flow rate of 8000 cfm  $\pm 10\%$ .

2. Verifying that on a safety injection test signal or control room intake high radiation test signal, the system automatically actuates in the pressurization mode by opening the outside air supply and diverting air flow through the HEPA filter and charcoal adsorber bank.

3. Verifying that the system can maintain the control room at a positive pressure  $\geq 1/8$ " water gauge relative to the adjacent areas during system operation with makeup air being supplied through the HEPA filters and charcoal adsorbers at the design makeup flow rate of  $\leq 2200$  cfm.