



**JAN 05 2001**  
LRN-00-0469  
LCR S00-09

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

Gentlemen:

**REQUEST FOR AMENDMENT  
CONTAINMENT SYSTEMS  
COMBUSTIBLE GAS CONTROL - HYDROGEN ANALYZERS  
SALEM GENERATING STATION  
UNIT NOS. 1 AND 2  
DOCKET NOS. 50-272 AND 50-311**

In accordance with the requirements of 10CFR50.90, PSEG Nuclear LLC hereby transmits a request for amendment to Facility Operating Licenses DPR-70 and DPR-75 for Salem Generating Station Unit Nos. 1 and 2 respectively. Pursuant to the requirements of 10CFR50.91(b)(1), a copy of this request for amendment has been sent to the State of New Jersey.

The proposed change will amend Technical Specification 3/4.6.4, Containment Systems, Combustible Gas Control, Hydrogen Analyzers, to reduce the channel calibration frequency of the Hydrogen Analyzers from quarterly to a frequency of once per refueling outage. The proposed change will also add an additional surveillance requirement to perform a quarterly gas calibration. This change is being requested to reduce personnel radiation exposure, and to reduce the potential for heat stress or fall related injuries that is inherent in the current channel calibration surveillance frequency that requires containment entry at power.

The proposed changes have been evaluated in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and it has been determined that this request involves no significant hazards considerations.

A description of the requested amendment, the reason for the changes, and the justification for the changes are provided as Attachment 1. The basis for the no

ADD1

significant hazards consideration determination is provided in Attachment 2. The Technical Specification pages affected by the proposed changes are provided in Attachment 3.

PSE&G has reviewed the proposed License Amendment Request (LCR) against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, nor increase the types and amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. The postulated post accident doses do not increase as a result of operations under the benefit of this request. Based on the foregoing, PSE&G has determined that this request meets the criteria of 10 CFR 51.22(c)(9) and 10 CFR 51.22(c)(10) for a categorical exclusion from the requirements for an Environmental Impact Statement (see Attachment 4).

PSE&G requests a 60-day implementation period following amendment approval.

Should you have any questions regarding this request, please contact Brooke Knieriem, Licensing, at (856) 339-1782.



D. F. Garchow  
Vice President Operations

/rbk  
Affidavit  
Attachments (4)

C Mr. H. J. Miller, Administrator - Region I  
U. S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

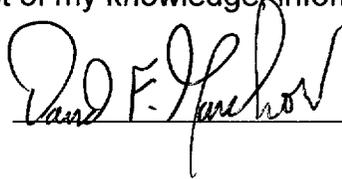
Mr. R. Fretz, Licensing Project Manager - Salem  
U. S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Mail Stop 4D3  
Rockville, MD 20852

Mr. G. Dentel (X24)  
USNRC Senior Resident Inspector

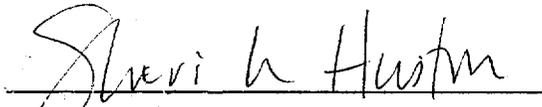
Mr. K. Tosch, Manager IV  
Bureau of Nuclear Engineering  
P. O. Box 415  
Trenton, NJ 08625

STATE OF NEW JERSEY )  
COUNTY OF SALEM ) SS.

D. F. Garchow, being duly sworn according to law deposes and says:  
I am Vice President – Operations, PSEG Nuclear LLC, and as such, I find the matters set forth in the above referenced letter, concerning the Salem Generating Station, Units Nos. 1 and 2, are true to the best of my knowledge, information and belief.

  
\_\_\_\_\_

Subscribed and Sworn to before me  
this 5 day of January, 2001

  
\_\_\_\_\_  
Notary Public of New Jersey

My Commission expires on \_\_\_\_\_  
SHERI L. HUSTON  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires 12/08/2003

## **CONTAINMENT SYSTEMS - COMBUSTIBLE GAS CONTROL - HYDROGEN ANALYZERS**

### **I. DESCRIPTION OF THE PROPOSED CHANGE**

The proposed change will amend the Salem Unit 1 and Salem Unit 2 Technical Specifications to:

- a. Add the requirement to perform a Hydrogen Analyzer gas calibration at least once per 92 days.
- b. Change the required frequency to perform a CHANNEL CALIBRATION of the Hydrogen Analyzer from once per 92 days to once per refueling.

### **II. REASON FOR THE CHANGE**

The Hydrogen Analyzer provides detection and measurement of containment hydrogen concentration so that hydrogen concentration can be maintained below its flammable limit following a Loss of Coolant Accident.

The proposed change to the Hydrogen Analyzer surveillance requirements is being requested to reduce station radiation exposure and to enhance personnel safety by reducing the potential for heat stress and fall related injuries.

The Hydrogen Analyzer consists of three sensors. A hydrogen sensor consisting of a galvanic cell with a permeable membrane is used to measure containment hydrogen concentration. A resistance temperature detector (RTD) is used to measure containment temperature. A pressure transducer is used to measure containment pressure. The containment temperature and pressure measurements are used to compensate indicated hydrogen concentration for temperature and pressure.

Under current Technical Specification requirements, a CHANNEL CALIBRATION of the Hydrogen Analyzer must be performed at least every 92 days. The CHANNEL CALIBRATION procedure involves a calibration of the hydrogen sensor using sample gases containing a known hydrogen concentration that can be accomplished without entering containment. The CHANNEL CALIBRATION also requires that the accuracy of the RTD and the pressure transducer be checked against a secondary standard of a specified accuracy (referred to as a "two point check" by the manufacturer). The calibration of the RTD and the pressure transducer requires that technicians enter the reactor containment at power and access the Hydrogen Analyzer by climbing approximately eighteen feet above floor level to a small platform. During power operation this area is a high neutron dose area and has high ambient temperature. These conditions increase

the probability of heat stress and potential fall related injuries, and impose unnecessary radiation exposure.

The Hydrogen Analyzer manufacturer recommends that the calibration of the hydrogen sensor be accomplished quarterly using sample gases containing a known hydrogen concentration. The manufacturer also recommends that the measurement of the RTD and the pressure transducer be reviewed quarterly for reasonableness by comparison to other installed plant instrumentation (referred to as a "single point check" by the manufacturer). The hydrogen sensor calibration and the single point check of the RTD and the pressure transducer do not require containment entry. In the proposed Technical Specification, the quarterly hydrogen sensor gas calibration and the RTD/pressure transducer single point checks would be combined into a single surveillance requirement referred to as a "gas calibration". The gas calibration would be accomplished at least every 92 days. However, because the gas calibration does not include a calibration of the RTD and the pressure transducer, it does not meet the Technical Specification definition of a CHANNEL CALIBRATION.

In addition, the proposed Technical Specification would require that at least every refueling (18 months), a CHANNEL CALIBRATION be performed consisting of a calibration of the hydrogen sensor using sample gases containing a known hydrogen concentration, as is performed in the "gas calibration". The CHANNEL CALIBRATION will also include a calibration of the RTD and the pressure transducer using a secondary standard of a specified accuracy (referred to by the manufacturer as a "two-point check"). The proposed 18-month periodicity of the CHANNEL CALIBRATION exceeds the manufacturer's recommendation that a two-point check of the RTD and the pressure transducer be performed at least every 36 months. By performing the CHANNEL CALIBRATION during a refueling outage, entry into containment at power will not be required, thus reducing radiation exposure to technicians and the potential for heat stress and fall related injuries.

### **III. JUSTIFICATION FOR CHANGE**

In 1994, Salem Unit 1 and Salem Unit 2 surveillance requirements for the Hydrogen Analyzers were revised by License Amendments 153 and 134, respectively, to reduce the specified frequency for the CHANNEL CALIBRATION from quarterly to once per refueling outage. The reduction in calibration frequency was consistent with NRC Generic Letter 93-05, Line Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation, dated September 27, 1993. However, station personnel did not recognize that the requested change was contrary to the manufacturer's recommendation for a quarterly calibration of the hydrogen sensor. In 1997, this error was identified and a license amendment was requested to again impose a

quarterly frequency for the Hydrogen Analyzer CHANNEL CALIBRATION in order to comply with the manufacturer's recommended frequency. The change of the CHANNEL CALIBRATION frequency back to once per quarter was implemented by License Amendments 204 and 186, for Salem Unit 1 and Salem Unit 2 respectively. However, the impact on personnel safety and on ALARA of performing a CHANNEL CALIBRATION every quarter was not considered. At the time of this request, station personnel did not recognize that the Hydrogen Analyzer manufacturer recommends a one-point check of the RTD and pressure transducer at least quarterly (that does not require containment entry) and a calibration of the RTD and the pressure transducer using a secondary standard of a specified accuracy (two-point check requiring containment) once per 36 months.

The proposed amendment is being requested to bring the Hydrogen Analyzer Technical Specification surveillance requirements into accord with the manufacturer's recommendations in a way that will enhance personnel safety and that will ensure that personnel radiation exposure is as low as reasonably achievable. The required surveillances and their periodicities will ensure that the Containment Hydrogen Analyzers will provide accurate indication of containment hydrogen concentration when required.

## **DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION**

The requested amendment will change Technical Specification 3/4.6.4 to:

- a. Add the requirement to perform a hydrogen sensor gas calibration at least once per 92 days.
- b. Change the required frequency to perform a CHANNEL CALIBRATION of the Hydrogen Analyzer from once per 92 days to once per refueling.

The proposed changes are consistent with the manufacturer's recommendations to assure instrument OPERABILITY.

**1. *The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.***

The Hydrogen Analyzer provides detection and measurement of containment hydrogen concentration so that hydrogen concentration can be maintained below its flammable limit following a Loss of Coolant Accident. As such the Hydrogen Analyzer does not affect the probability of any previously evaluated accident.

The proposed changes are consistent with the manufacturer's recommendations to ensure that the Hydrogen Analyzer will provide accurate indication of containment hydrogen concentration when required. Under the proposed change, a gas calibration consisting of all elements of the Hydrogen Analyzer channel calibration, with the exception of the calibration of the instrument's resistance temperature detector and pressure transducer, would be performed at least every 92 days. As a part of the gas calibration, a comparison of the indication of Hydrogen Analyzer resistance temperature detector and the pressure transducer against installed plant instrumentation measuring containment temperature and pressure would be performed. At least once per each refueling, a channel calibration of the Hydrogen Analyzers, including a calibration of the instrument's resistance temperature detector and pressure transducer using a secondary standard of a specified accuracy would be performed. Therefore, the proposed change would not affect the consequences of any previously evaluated accident.

**2. *The proposed changes do not create the possibility of a new or different kind of accident from accident previously evaluated.***

The proposed change affects only the specified calibration frequency of the Hydrogen Analyzers. The proposed surveillance frequency complies with

the manufacturer's recommendations and will ensure that the Hydrogen Analyzers will provide accurate indication of containment hydrogen concentration when required. The change will not affect the design of any Salem Generating Station structure, system, or component, nor would it result in any new plant configuration. Therefore, the proposed changes do not create the possibility of a new or different kind of accident from accident previously evaluated.

**3. *The proposed changes do not involve a significant reduction in a margin of safety.***

The proposed change to the Hydrogen Analyzer calibration frequency will not affect the design or operating limits of any Salem Generating Station structure, system, or component. The proposed surveillance frequency complies with the manufacturer's recommendations and will ensure that the Hydrogen Analyzers will provide accurate indication of containment hydrogen concentration when required. Therefore the proposed changes to the Technical Specifications do not involve a significant reduction in a margin of safety.

**V. CONCLUSIONS**

Based on the above, PSEG Nuclear LLC has determined that the proposed change does not involve a significant hazards consideration.

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>
3/4.6.4	3/4 6-18

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

<u>Technical Specification</u>	<u>Page</u>
3/4.6.4	3/4 6-21

## INSERT AND MARKED UP PAGES

### INSERT FOR LCR 00-09

#### Insert A

4.6.4.1 Each hydrogen analyzer shall be demonstrated OPERABLE by the performance of :

- a. a CHANNEL CHECK at least once per 12 hours;
- b. a CHANNEL FUNCTIONAL TEST at least once per 92 days;
- c. a gas calibration\* at least once per 92 days using sample gases containing:
  1. Two volume percent hydrogen (low span), balance Nitrogen, and
  2. Six volume percent hydrogen (high span), balance Nitrogen.
- d. a CHANNEL CALIBRATION at least once per refueling using sample gases containing:
  1. Two volume percent hydrogen (low span), balance Nitrogen, and
  2. Six volume percent hydrogen (high span), balance Nitrogen.

\* The hydrogen sensor gas calibration shall consist of all elements of the CHANNEL CALIBRATION, with the exception that only a single point comparison check for reasonableness (by comparison to other installed plant instrumentation) is required to check the hydrogen analyzer temperature and pressure sensors.

CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

---

3.6.4.1 Two independent containment hydrogen analyzers shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.

With both hydrogen analyzers inoperable, restore at least one analyzer to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

---

4.6.4.1 Each hydrogen analyzer shall be demonstrated OPERABLE by the performance of a CHANNEL CHECK at least once per 12 hours, a CHANNEL FUNCTIONAL TEST at least once per 92 days, and at least once per 92 days by performing a CHANNEL CALIBRATION using sample gases containing:

- a. Two volume percent hydrogen (low span), balance Nitrogen, and
- b. Six volume percent hydrogen (high span), balance Nitrogen.

Replace with  
Insert A

CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

---

3.6.4.1 Two independent containment hydrogen analyzers shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.

With both hydrogen analyzers inoperable, restore at least one analyzer to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

---

4.6.4.1 Each hydrogen analyzer shall be demonstrated OPERABLE by the performance of a CHANNEL CHECK at least once per 12 hours, a CHANNEL FUNCTIONAL TEST at least once per 92 days, and at least once per 92 days by performing a CHANNEL CALIBRATION using sample gas containing:

- a. Two volume percent hydrogen (low span), balance Nitrogen, and
- b. Six volume percent hydrogen (high span), balance Nitrogen.

Replace with  
Insert A →

**SALEM GENERATING STATION UNITS 1 AND 2  
FACILITY OPERATING LICENSES DPR-70 AND DPR-75  
DOCKET NOS. 50-272 AND 50-311  
REVISIONS TO THE TECHNICAL SPECIFICATIONS**

**ENVIRONMENTAL IMPACT ASSESSMENT**

PSE&G has reviewed the proposed License Amendment Request (LCR) against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, nor increase the types and amounts of effluents that may be released offsite, not significantly increase individual or cumulative occupational radiation exposures. Based upon the foregoing, PSE&G concludes that the proposed change meets the criteria delineated in 10 CFR 51.22(c)(9) and 10 CFR 51.22(c)(10) for a categorical exclusion from the requirements for an Environmental Impact Statement.