

ATTACHMENT 1
PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS

LICENSE AMENDMENT APPLICATION
HYDROGEN RECOMBINER SURVEILLANCE REQUIREMENT REVISION
SALEM GENERATING STATION UNIT NOS. 1 AND 2
FACILITY OPERATING LICENSE NOS. DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311

NLR-N94170
LCR 94-23

I. DESCRIPTION OF THE PROPOSED CHANGES

As indicated in the marked-up pages, enclosed as Attachments 2 and 3 for Salem Unit Nos. 1 and 2 respectively, Surveillance Requirement (SR) 4.6.4.2 is revised as follows:

- A) Eliminate the 6 month Hydrogen Recombiner (HR) functional test of SR 4.6.4.2.a;
- B) Remove the requirement to maintain HR heater sheath temperature $\geq 1200^{\circ}\text{F}$ for at least 4 hours from SR 4.6.4.2.b.3.
- C) Remove the note stating that the requirements of the 6 month HR functional test are met when the 18 month HR functional heatup test is satisfactorily performed.

II. REASONS FOR THE CHANGES

In December of 1992, the NRC issued NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," which provided the results of a comprehensive examination of surveillance testing required by Technical Specifications (TS). This document found that while some testing at power is essential to verify equipment and system operability, safety can be improved, equipment degradation decreased, and unnecessary personnel burden relaxed by reducing the amount of testing at power. As part of the examination of surveillance testing, the 6 month HR functional test was identified as an at power test which could be revised to once each refueling interval.

On September 27, 1993, the NRC issued Generic Letter 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation." The line-item improvements of Generic Letter 93-05 were based on the NRC study of SRs

which were reported in NUREG-1366. Consistent with NUREG-1366, Generic Letter 93-05 identified the 6 month HR functional test as an at power test which could be revised to once each refueling interval.

Currently, the Salem Generating Station TS require two types of system functional tests on the HRs. The first (SR 4.6.4.2.a) is the 6 month HR functional test. This test is the HR functional test addressed by NUREG-1366 and Generic Letter 93-05. This test verifies that the HR minimum heater sheath temperature reaches $\geq 700^{\circ}\text{F}$ in ≤ 90 minutes. Upon reaching 700°F , it is verified that, after increasing the power setting to maximum power for 2 minutes, the power meter reads ≥ 60 kW. The second (SR 4.6.4.2.b.3) is the functional heatup test performed at least once per 18 months. This test verifies that the heater sheath temperature increases to $\geq 1200^{\circ}\text{F}$ within 5 hours and is maintained $\geq 1200^{\circ}\text{F}$ for at least 4 hours.

The proposed changes would revise the HR SRs by eliminating the 6 month functional test of SR 4.6.4.2.a. As revised, the 18 month functional heatup test would be the exclusive system functional test for the HRs. The proposed changes are consistent with the intent of NUREG-1366 and Generic Letter 93-05 in that at power testing will be reduced and subsequent HR functional testing will be performed at least once per 18 months.

In addition, the proposed changes revise the 18 month HR functional heatup test of SR 4.6.4.2.b.3. Specifically, the requirement to maintain HR heater sheath temperature $\geq 1200^{\circ}\text{F}$ for at least 4 hours would be removed. The balance of SR 4.6.4.2.b.3 which requires that the HR heater sheath temperature be $\geq 1200^{\circ}\text{F}$ within 5 hours is not affected and has been retained. These proposed changes would reduce the potential for component degradation while increasing reliability.

III. JUSTIFICATION FOR CHANGES

Elimination of at power testing for the HRs (i.e., the 6 month functional test) is supported by industry operating experience. NUREG-1366 in part, provided the results of a search of industry wide Licensee Event Reports (LERs) on reliability of HRs. Specifically, it was determined that because of the redundancy and apparent high reliability,

surveillance testing of the HRs should be revised to once each refueling interval.

In accordance with the provisions of Generic Letter 93-05, the proposed changes were reviewed to assess compatibility with plant operating experience. Specifically, the operating history of the Salem Generating Station HRs was reviewed (i.e., License Event Reports and HR corrective maintenance work orders over the last five years). This review indicated no conditions which would have adversely affected the ability of the HRs to meet the requirements of the 6 or 18 month system functional test.

NUREG-1366 and Generic Letter 93-05 recommend extending the 6 month functional test to once each refueling interval. The proposed changes eliminate the 6 month functional test (SR 4.6.4.2.a) and make the revised 18 month functional heatup test (SR 4.6.4.2.b.3) the exclusive system functional test for the HRs.

The proposed 18 month functional heatup test provides increased assurance in component operability. Hydrogen recombination occurs at approximately 1200°F. The proposed 18 month HR functional heatup test requires that a heater sheath temperature of $\geq 1200^\circ\text{F}$ be reached within 5 hours. The 6 month functional test, only requires a heater sheath temperature of 700°F to be reached within 90 minutes and then upon reaching 700°F, the power setting is increased to maximum power for 2 minutes and then the power meter is verified to read ≥ 60 kW.

Requiring the HRs to maintain a heater sheath temperature $\geq 1200^\circ\text{F}$ for four hours provides assurance that the HR are capable of sustaining temperatures to support hydrogen recombination. However, removal of this requirement would not adversely affect the 18 month functional heatup test. A review of HR 18 month functional heatup tests over the last 6 years indicates demonstrated capability of the HR to maintain heater sheath temperatures $\geq 1200^\circ\text{F}$ for 4 hours. Removal of this requirement would reduce the potential for component degradation while increasing reliability.

In addition, the proposed HR surveillance testing would be more extensive than that conducted by the Standard Technical Specifications (STS) (NUREG-1431, "Standard Technical Specifications Westinghouse Plants,"). Consistent with the recommendations of NUREG-1366 and Generic Letter 93-05, the

STS perform the 6 month HR functional test at least once each refueling interval. This is the same functional test (i.e., the 6 month functional test) addressed in NUREG-1366 and Generic Letter 93-05, as detailed above. The STS do not require the proposed 18 month functional heat up test or the removed requirement of maintaining heater sheath temperatures $\geq 1200^{\circ}\text{F}$ for 4 hours.

IV. DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Public Service Electric and Gas (PSE&G) has, pursuant to 10CFR50.92, reviewed the proposed amendment to determine whether our request involves a significant hazards consideration. We have determined that operation of the Salem Generating Station in accordance with the proposed changes:

1. Will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The hydrogen recombiners (HRs) are designed to limit post accident hydrogen accumulation inside containment and can have no affect on the probability of any accident previously evaluated.

The proposed HR Surveillance Requirement (SR) revisions would continue to demonstrate the ability of the HRs to perform their safety function. The proposed changes are consistent with the intent of NUREG-1366 and Generic Letter 93-05 in that at power testing will be reduced and subsequent testing will be performed at least once per 18 months. In accordance with the provisions of Generic Letter 93-05, the proposed changes were reviewed to assess compatibility with plant operating experience. A review of the last 5 years of HR operating history indicates no adverse conditions which would preclude removal of the 6 month functional test.

In regard to the specific testing conducted, the proposed changes retain the 18 month functional heatup test, as revised. This is different than the recommendations of NUREG-1366 and Generic Letter 93-05 which extend the 6 month functional test to at least once each refueling interval. However, the 18 month

functional heatup test provides a more meaningful demonstration of operability, and on this basis, was chosen to be retained.

The proposed changes revise the 18 month functional heatup test so that HR heater sheath temperatures are no longer required to be maintained $\geq 1200^{\circ}\text{F}$ for at least 4 hours. The requirement to increase HR heater sheath temperature to $\geq 1200^{\circ}\text{F}$ within 5 hours is not affected and has been retained. A review of HR 18 month functional heatup tests over the last 6 years indicates demonstrated capability of the HR to maintain heater sheath temperatures $\geq 1200^{\circ}\text{F}$ for 4 hours. Removal of this requirement would reduce the potential for component degradation while increasing reliability.

Therefore, the proposed changes will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes would only affect the SRs of the HRs. The proposed changes would not allow operation in any configuration prohibited by the present Technical Specifications. Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any previously evaluated.

3. Will not involve a significant reduction in a margin of safety.

The proposed changes will not reduce the ability of the HRs to perform their safety function. The basis for NUREG-1366 and Generic Letter 93-05 is that plant safety can be improved, equipment degradation decreased and personnel burden decreased by reducing the amount of testing at power. The proposed changes do this by eliminating the 6 month HR functional test and making the revised 18 month functional heatup test the exclusive system functional test for the HRs.

The proposed changes also revise the 18 month HR functional heatup test. The 18 month functional heatup test provides a more meaningful demonstration of system

operability, and on this basis, was chosen to be retained. In addition, these changes would reduce the potential for component degradation while increasing reliability.

Therefore, the proposed changes will not involve a significant reduction in the margin of safety.

V. CONCLUSION

Based on the above, PSE&G has determined that the proposed changes do not involve a significant hazards consideration.

ATTACHMENT 2
LICENSE AMENDMENT APPLICATION
HYDROGEN RECOMBINER SURVEILLANCE REQUIREMENT REVISION
SALEM GENERATING STATION UNIT NO. 1
FACILITY OPERATING LICENSE NO. DPR-70
DOCKET NO. 50-272

TECHNICAL SPECIFICATION PAGES WITH PEN AND INK CHANGES

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

Technical Specification

Page

4.6.4.2

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CONTAINMENT SYSTEMS

ELECTRIC HYDROGEN RECOMBINERS - W

LIMITING CONDITION FOR OPERATION

3.6.4.2 Two independent containment hydrogen recombiner systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

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

SURVEILLANCE REQUIREMENTS

4.6.4.2 Each hydrogen recombiner system shall be demonstrated OPERABLE; ^K

- ~~1.~~ At least once per 6^{*} months by verifying during a recombiner-system functional test that the minimum heater sheath temperature increases to $\geq 700^{\circ}\text{F}$ within 90 minutes and (upon reaching 700°F) verifying that, after increasing the power setting to maximum power for 2 minutes, the power meter reads ≥ 60 kW.
- ~~2.~~ At least once per 18 months by:
 - a. ~~1.~~ Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits.
 - b. ~~2.~~ Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiner enclosures (i.e., loose wiring or structural connections, deposits of foreign materials, etc.)
 - c. ~~3.~~ Verifying during a recombiner system functional test that the heater sheath temperature increases to $\geq 1200^{\circ}\text{F}$ within 5 hours, and is maintained for at least 4 hours.
 - d. ~~4.~~ Verifying the integrity of all heater electrical circuits by performing a continuity and resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be $\geq 10,000$ ohms.

~~NOTE: The requirements of this 6 month system functional test can be met by satisfactory completion of the 18 month system functional test in Specification 4.6.4.2.b on those occasions where performance of both tests would be required at or near the same time.~~

ATTACHMENT 3
LICENSE AMENDMENT APPLICATION
HYDROGEN RECOMBINER SURVEILLANCE REQUIREMENT REVISION
SALEM GENERATING STATION UNIT NO. 2
FACILITY OPERATING LICENSE NO. DPR-75
DOCKET NO. 50-311

TECHNICAL SPECIFICATION PAGES WITH PEN AND INK CHANGES

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

Technical Specification

Page

4.6.4.2

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CONTAINMENT SYSTEMS

ELECTRIC HYDROGEN RECOMBINERS - W

LIMITING CONDITION FOR OPERATION
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3.6.4.2 Two independent containment hydrogen recombiner systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

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

SURVEILLANCE REQUIREMENTS
.....

4.6.4.2 Each hydrogen recombiner system shall be demonstrated OPERABLE/

~~a. At least once per 6 months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to $\geq 700^{\circ}\text{F}$ within 90 minutes and (upon reaching 700°F) verifying that, after increasing the power setting to maximum power for 2 minutes, the power meter reads $\geq 60\text{ kW}$.~~

b. At least once per 18 months by:

a. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits.

b. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiner enclosures (i.e., loose wiring or structural connections, deposits of foreign materials, etc.)

c. Verifying, during a recombiner system functional test, that the heater sheath temperature increases to $\geq 1200^{\circ}\text{F}$ within 5 hours and is maintained for at least 4 hours.

d. Verifying the integrity of all heater electrical circuits by performing a resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be greater than or equal to 10,000 ohms.

~~NOTE: The requirements of this 6 month system functional test can be met by satisfactory completion of the 18 month system functional test in Specification 4.6.4.2 b on those occasions where performance of both tests would be required at or near the same time.~~