

March 12, 2007

Mr. Thomas D. Walt, Vice President  
Carolina Power & Light Company  
H. B. Robinson Steam Electric Plant  
Unit No. 2  
3581 West Entrance Road  
Hartsville, South Carolina 29550

SUBJECT: H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2 - ISSUANCE OF AN  
AMENDMENT- STEAM GENERATOR TUBE INTEGRITY (TAC NO. MD2136)

Dear Mr. Walt:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 212 to Renewed Facility Operating License No. DPR-23 for the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP2). This amendment changes the HBRSEP2 Technical Specifications in response to your application dated May 30, 2006, as supplemented by letter dated November 20, 2006.

The amendment revises the existing steam generator tube surveillance program.

A copy of the related Safety Evaluation is enclosed. Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

*/RA/*

Chandu P. Patel, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-261

Enclosures:

1. Amendment No. 212 to DPR-23
2. Safety Evaluation

cc w/enclosures: See next page

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The amendment revises the existing steam generator tube surveillance program.

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CAROLINA POWER & LIGHT COMPANY

DOCKET NO.50-261

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 212  
Renewed License No. DPR-23

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Carolina Power & Light Company (the licensee), dated May 30, 2006, as supplemented by letter dated November 20, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment; and paragraph 3.B. of Renewed Facility Operating License No. DPR-23 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 212, are hereby incorporated in the license. Carolina Power & Light Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Stewart N. Bailey  
Plant Licensing Branch II-2, Acting Branch Chief  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to Operating License No. DPR-23  
and the Technical Specifications

Date of Issuance: March 12, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 212

RENEWED FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

Replace page 3 of Operating License No. DPR-23 with the attached page 3.

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

Insert Pages

Index Page iii

Index Page iii

Index Page v

Index Page v

1.1-3

1.1-3

3.4-35

3.4-35

3.4-36

3.4-36

3.4-52

3.4-52

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 212 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-23

CAROLINA POWER & LIGHT COMPANY

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

DOCKET NO. 50-261

1.0 INTRODUCTION

By letter dated May 30, 2006 (ML061520207 [Agencywide Documents Access and Management System Accession Number]), as supplemented by letter dated November 20, 2006, (ML063320520), the Carolina Power & Light Company (licensee) submitted a request for changes to the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP2), Technical Specifications (TS). The requested changes would revise the existing steam generator (SG) tube surveillance program. The changes are modeled after TS Task Force (TSTF) traveler TSTF-449, Revision 4, "Steam Generator Tube Integrity," and the model safety evaluation prepared by the Nuclear Regulatory Commission (NRC) and published in the *Federal Register* on March 2, 2005 (70 FR 10298). In this regard, the scope of the application includes changes to the definition of leakage, changes to the primary-to-secondary leakage requirements, changes to the SG tube surveillance program (SG tube integrity), changes to the SG reporting requirements, and associated changes to the TS Bases.

2.0 REGULATORY EVALUATION

The background, description, and applicability of the proposed changes associated with the SG tube integrity issue and the applicable regulatory requirements were included in the NRC staff's model safety evaluation (SE) published in the *Federal Register* on March 2, 2005 (70 FR 10298). The "Notice of Availability of Model Application Concerning Technical Specification Improvement To Modify Requirements Regarding Steam Generator Tube Integrity Using the Consolidated Line Item Improvement Process" was published in the *Federal Register* on May 6, 2005 (70 FR 24126), and made the model SE available for licensees to reference.

3.0 TECHNICAL EVALUATION

3.1 Overview

In its May 30, 2006, application and November 20, 2006, supplement, the licensee proposed changes to the TSs that are modeled after Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-449, "Steam Generator Tube Integrity." There were minor differences between TSTF-449 and the licensee's application. These included

differences in the facility licensing basis (than that discussed in TSTF-449) and differences in TS numbering. These differences are discussed below.

With respect to the differences in the facility licensing basis, the differences did not invalidate the technical evaluation on TSTF-449; rather they resulted in the licensee having to slightly deviate from some of the modifications discussed in TSTF-449. One example is contained in the Bases section for Steam Generator Tube Integrity. In TSTF-449, it was indicated that the accident analysis for a steam generator tube rupture assumed the contaminated secondary fluid was only briefly released to the atmosphere via safety valves and the majority is discharged to the main condenser. Since the licensee has a different licensing basis than the one described in the standard technical specifications (i.e., TSTF-449), licensee did not include this sentence. Since these differences were minor in nature, they were consistent with the plant's licensing basis, and they were consistent with the intent of TSTF-449, the NRC staff determined they were acceptable.

With respect to the differences in the numbering of the technical specifications, these differences were administrative in nature and did not affect the technical adequacy of the submittal. As a result, the NRC staff determined they were acceptable.

In addition to the above, the licensee also proposed a few changes that went beyond TSTF-449. For example, the licensee proposed to change the normal operating leakage limit from 150 gallons per day (gpd) to 75 gpd. Since this change is more restrictive than that discussed in TSTF-449, the staff found it acceptable. In addition, the licensee modified their previously approved tube repair criteria to indicate that there is a 2 percent reduction in the repair criteria for each 12-month period until the next inspection of the tube. The original technical specifications indicated that there is a 2 percent reduction in the plugging limit for each 12-month period until the next inspection of the inspected steam generator. Replacing "repair criteria" with plugging limit is acceptable since the term "plugging limit" is not used in TSTF-449. Replacing "inspected steam generator" with "tube" is acceptable since the repair criteria should be based on the inspection of the tube rather than the steam generator (given that all tubes are not necessarily inspected during each steam generator inspection). The licensee also added a sentence to the "Actions" section of the Bases for Steam Generator Tube Integrity. The sentence indicated that a specific condition (regarding evaluating tube integrity when a tube should have been plugged was not plugged) does not apply to the occurrence of primary-to-secondary leakage since it is monitored and maintained in accordance with another Limiting Condition for Operation. The staff found this additional sentence acceptable since the occurrence of primary-to-secondary leakage does not necessarily imply that a tube that should have been plugged was not plugged (i.e., the leakage could be a result of a flaw which was less than the repair criteria at the time of the last inspection). However, the staff notes that the occurrence of unexpected operational leakage should be investigated and if the cause is from a tube that should have been plugged (but was not plugged), then Condition A would apply.

In addition, there were some changes in the Bases Section of TSTF-449 that were not incorporated into the licensee's submittal since the licensee did not have the corresponding paragraphs in their version of the Bases. For example, in the Applicable Safety Analyses section of the Bases for Reactor Coolant System Operational Leakage, the licensee's current Bases does not have several paragraphs that are in the standard technical specifications (upon which TSTF-449 is based). As a result, the clarifications made in these paragraphs in TSTF-449 were not made in the licensee's submittal. Since these differences were administrative in nature

and did not affect the technical adequacy of the submittal, the NRC staff determined they were acceptable.

The remainder of the application was consistent with, or more limiting than, TSTF-449 with one exception, as discussed below. In TSTF-449, the limit on normal operating primary-to-secondary leakage rate through any one SG was significantly less than that assumed in the safety analysis. However, for HBRSEP2, the difference between the normal operating primary-to-secondary leakage limit (75 gpd per SG) and the accident-induced primary-to-secondary leakage limit for design-basis accidents (DBAs) other than an SG tube rupture was not as great as assumed in TSTF-449. Even though the normal operating primary-to-secondary leakage limit and the accident-induced leakage limit have a different technical basis, it is not uncommon that the two limits are the same (note, the normal operating primary-to-secondary leakage limit can not be greater than the accident-induced leakage limit). The normal operating primary-to-secondary leakage limit is intended to limit the frequency of steam generator tube ruptures (i.e., it is an early indicator of a potential loss of the structural integrity of a steam generator tube); whereas the accident-induced leakage limit ensures that the dose consequences associated with this leakage are acceptable. Given this situation, the NRC staff evaluated the acceptability of this difference between TSTF-449 and the licensee's submittal. Since the leakage rate observed during operation may increase during a DBA, it may be necessary to ensure that the operational leak rate is kept below its limit in order to meet the accident limit. An increase in leakage during a DBA can be a result of either: (1) the higher differential pressure between the primary coolant system and the secondary system associated with a DBA thus causing the leak rate from flaws that leak during normal operation to leak at higher rates; or (2) the higher stress loadings associated with a DBA causing a flaw that was not leaking during normal operation to leak during the DBA.

To address this issue the licensee indicated that the normal operating leakage limit is less than the accident-induced leakage limit and the HBRSEP2 procedures have guidance for ensuring that the accident-induced leak rate limits are not exceeded. The NRC staff notes that although there may be margin between these limits, the staff's approval of TSTF-449 (and this amendment) was not intended to ensure that satisfying the operating leakage limit would result in the accident-induced leakage limit being met. Rather, the NRC staff reviewed the adequacy of the proposed TS criteria for operational and accident-induced leakage based on the technical basis associated with each limit. Namely, that the operating leakage limit is effective at limiting the frequency of tube ruptures and the accident-induced leakage limit is consistent with the plant's design and licensing basis. Since the TS criteria on operational leakage at HBRSEP2 is more restrictive than that in TSTF-449, and the accident-induced leakage limit is consistent with the licensee's accident analysis, the NRC staff finds the licensee's proposed TS criteria on these values acceptable.

In summary, the staff determined that the model safety evaluation is applicable to this review and finds the proposed changes acceptable.

Consistent with TSTF-449, the proposed TS changes include: (1) a revised definition of LEAKAGE, (2) a revised TS 3.4.13, "RCS (Reactor Coolant System) Operational Leakage," (3) a new TS 3.4.18, "Steam Generator (SG) Tube Integrity," (4) a revised TS 5.5.9, "Steam Generator (SG) Tube Surveillance Program," (5) a revised TS 5.6.8, "Steam Generator Tube Inspection Report," and (6) a revised Table of Content pages to reflect the proposed changes.

### 3.2 Summary

The proposed TS changes establish a programmatic, largely performance-based regulatory framework for ensuring SG tube integrity. The NRC staff finds that it addresses key shortcomings of the current framework by ensuring that SG programs are focused on accomplishing the overall objective of maintaining tube integrity. It incorporates performance criteria for evaluating tube integrity that the NRC staff finds consistent with the structural margins and the degree of leak tightness assumed in the current plant licensing basis. The NRC staff finds that maintaining these performance criteria provides reasonable assurance that the SGs can be operated safely without increase in risk.

The revised TSs will contain limited specific details concerning how the SG Program is to achieve the required objective of maintaining tube integrity; the intent being that the licensee will have the flexibility to determine the specific strategy for meeting this objective. However, the NRC staff finds that the revised TSs include sufficient regulatory constraints on the establishment and implementation of the SG Program such as to provide reasonable assurance that tube integrity will be maintained.

Failure to meet the performance criteria will be reportable pursuant to the requirements of Title 10 *Code of Federal Regulations* (10 CFR) Parts 50.72 and 50.73. The NRC reactor oversight process provides a process by which the NRC staff can verify that the licensee has identified any SG Program deficiencies that may have contributed to such an occurrence and that appropriate corrective actions have been implemented.

In summary, the NRC staff finds that the TS changes proposed by the licensee in its May 30, 2006, application and November 20, 2006, supplement conform to the requirements of 10 CFR 50.36 and establish a TS framework that will provide reasonable assurance that SG tube integrity is maintained without undue risk to public health and safety.

The licensee included in its application the revised TS Bases to be implemented with the TS change. The NRC staff finds that the TS Bases Control Program is the appropriate process for updating the affected TS Bases pages and has, therefore, not included the affected Bases pages with this amendment.

### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of South Carolina official was notified of the proposed issuance of the amendment. The State official had no comments.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (71 FR 75990, December 19, 2006). Accordingly, the amendment meets the eligibility criteria for

categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

## 7.0 REFERENCES

A complete list of references used to complete this review can be found in the NRC's model SE published in the *Federal Register* on March 2, 2005 (70 FR 10298).

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Date: March 12, 2007

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