

September 19, 2002

Mr. J. W. Moyer, 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 2 - ISSUANCE OF
AMENDMENT - TECHNICAL SPECIFICATION CHANGE ON SURVEILLANCE
REQUIREMENT OF CONTAINMENT VESSEL SPRAY NOZZLE TESTING
FREQUENCY (TAC NO. MB4248)

Dear Mr. Moyer:

The Commission has issued the enclosed Amendment No. 194 to Facility Operating License No. DPR-23 for the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP2). This amendment consists of changes to the Technical Specifications (TS) in response to your application dated February 21, 2002, as supplemented by letters dated May 14 and August 2, 2002.

Currently, Surveillance Requirement 3.6.6.8 specifies a 10-year surveillance frequency for verifying the nozzles are unobstructed. The TS Bases further clarify that the test is performed using an air or smoke flow to verify that the nozzles are unobstructed and that flow will be provided when required. The proposed change would revise the surveillance frequency such that the surveillance would be performed only following (1) a major configuration change, or (2) a loss of foreign material control. A similar TS change for the Perry Nuclear Power Plant, Unit 1, was approved by Amendment No. 113 issued June 29, 2000, and for the Clinton Power Station, Unit 1, by Amendment No. 146 issued March 28, 2002.

A copy of the Safety Evaluation is enclosed. Notice of Issuance will be included in the Commission's bi-weekly Federal Register notice.

Sincerely,
/RA/

Ram Subbaratnam, Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-261

Enclosures:

1. Amendment No. 194 to License No. DPR-23
2. Safety Evaluation

cc w/encls: See next page

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cc w/encls: See next page

*See previous concurrence

Package: ML022690767 Amendment: ML022690768

TS Page: ML022660139

PM:PDII-S2	PM:PDII-S2	LA:PDII-S2	SPLB:DSSA	OGC* NLO	SC:PDII-2(A)
RSubbaratnam	MMcConnell	EDunnington	RLobel/SWeerakody	C. Bray	KJabbour
09/18/02	09/18/02	09/18/02	9/10/2002	9/13/2002	09/18/02
Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

OFFICIAL RECORD COPY

AMENDMENT NO. 194 TO FACILITY OPERATING LICENSE NO. DPR-23 - H. B. Robinson,
UNIT 2

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PDII-2 Reading File

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cc: H. B. Robinson 2 Service List

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-261

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

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 194
License No. DPR-23

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by Carolina Power & Light Company (CP&L, the licensee), dated February 21, 2002, as supplemented by letters dated May 14 and August 2, 2002, 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 2.C.(2) of Facility Operating License No. DPR-23 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 194, 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 its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Kahtan N. Jabbour, Acting Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 19, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 194

FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove Page

3.6-17

Insert Page

3.6-17

SAFETY EVALUATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
REGARDING CONTAINMENT VESSEL SPRAY NOZZLE TEST FREQUENCY

H. B. ROBINSON, UNIT 2

DOCKET NO. 50-261

1.0 INTRODUCTION

By letter dated February 21, 2002, as supplemented by letters dated May 14 and August 2, 2002, Carolina Power & Light Company (CP&L, the licensee) requested a revision to the Technical Specifications (TS) for the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP2). The proposed change will revise the testing frequency for the containment spray nozzles as specified in TS Section 3.6.6, "Containment Spray and Cooling Systems," Surveillance Requirement (SR) 3.6.6.8. Specifically, the testing frequency for the containment spray nozzles is revised from testing every "10 years" to testing "following activities which could result in nozzle blockage."

Currently, SR 3.6.6.8 requires verification that the containment spray nozzles are free of blockage. This verification is required to be performed once every 10 years to ensure that the containment spray system (CSS) will operate as designed when needed. The verification test is performed by infrared thermography to verify that the spray nozzles are not obstructed. The licensee stated that the air flow test results in unwarranted occupational radiation exposure without a commensurate increase in system reliability or performance. The licensee is proposing a surveillance inspection be performed on the containment spray nozzles only if maintenance is performed that could block the nozzles. The design of the CSS and cleanliness controls utilized during maintenance activities ensure that line or nozzle blockage is unlikely.

The supplemental letters dated May 14 and August 2, 2002, contained clarifying information only and did not change the initial proposed no significant hazards consideration determination or expand the scope of the initial application.

2.0 BACKGROUND

The primary purpose of the CSS is to spray cool water into the containment atmosphere when appropriate in the event of a postulated loss-of-coolant accident (LOCA) or main steamline break (MSLB) and thereby ensure that containment pressure does not exceed its design value. A second purpose of the CSS is to remove elemental iodine from the containment atmosphere should it be released in the event of a LOCA.

The principal components of the CSS are two pumps, one spray additive tank, spray ring headers and nozzles, and the necessary piping and valves. The spray nozzles are stainless steel and have a 3/8-inch diameter orifice. The spray nozzles, of the ramp bottom design, are not subject to clogging by particles less than 1/4-inch in maximum dimension. The nozzles are connected to six ring headers located within the dome of the containment building. There are 116 Spraco Model 1713 nozzles distributed on the six headers. The piping for the CSS is constructed of stainless steel. The CSS is described in the Updated Final Safety Analysis Report (UFSAR), Section 6.5.2.

Initially, the containment spray nozzle availability was tested by blowing smoke through the nozzles and observing flow through the various nozzles in the containment. Currently, testing is performed by monitoring the flow of hot air through the nozzles using infrared thermography.

The test required by SR 3.6.6.8 was last performed in January 1991. HBRSEP2 is currently utilizing the 25% extension of the surveillance interval provided by SR 3.0.2. Although SR 3.6.6.8 was scheduled to be performed during Refueling Outage (RO)-20 in April/May 2001, the SR was deferred to RO-21 due to the maintenance workload scheduled for RO-20. RO-21 is currently scheduled for October 2002.

3.0 EVALUATION

Performance History at H. B. Robinson, Unit 2

Previous testing, the most recent completed in January 1991, has verified that the spray nozzles are not blocked. A review by the licensee of the maintenance history since January 1991 indicates that 11 maintenance work orders have been performed that required opening the system. The review of these work packages determined that cleanliness controls were utilized for each of these activities. This review verified that there have been no losses of cleanliness controls on this system since January 1991.

The licensee's August 2, 2002, letter states that HBRSEP2 has not experienced an inadvertent actuation of the containment spray system. However, borated water has been discharged from the containment spray nozzles during the testing of containment spray nozzles. Nevertheless, the tests have been completed satisfactorily with no evidence of nozzle blockage. Since the nozzles are stainless steel, residual water in the spray piping is not a corrosion concern.

Industry Experience and Failure Mechanisms

Review of industry experience using the NRC's Sequence Coding and Search System for Licensee Event Reports indicates that spray systems of similar design are highly reliable (i.e., not susceptible to plugging). The staff reviewed industry experience and found that, with a few exceptions, once tested after construction, containment spray nozzles have not been subject to blockage. There have been several exceptions. In the case of one pressurized-water reactor (PWR) no longer operating, a chemical added to the inner surface of a spray system pipe to eliminate a corrosion problem detached material, and the loose material blocked some spray nozzles. Spray piping in currently operating PWRs, and in particular that at HBRSEP2, is corrosion resistant; therefore, this failure mechanism is not applicable to HBRSEP2. The licensee for another PWR found debris, identified as construction debris, in the spray nozzle headers. The fraction of blockage was not significant and the sprays remained functional. The debris was found by visual observation, not by an air flow test.

Other problems have been identified in containment spray and fire protection systems in which water leakage resulted in corrosion and partial blockage. As discussed above, the HBRSEP2 design effectively precludes this condition. The spray ring headers are made of corrosion-resistant stainless steel and, therefore, formation of significant corrosion products is precluded.

Due to their location at the top of the containment, introduction of foreign material exterior to the headers is unlikely. Because maintenance that could introduce foreign material is the most likely cause for obstruction, testing or inspection following such maintenance would suffice to verify the system's capability to perform its safety function. Therefore, the 10-year test frequency is unnecessary. Verifying that the nozzles are not obstructed following maintenance that could introduce foreign materials internal to the spray ring headers (due, for example, to a loss of foreign material control) is more appropriate. This verification could consist of an inspection of the nozzles, an air or smoke test, or infrared thermography.

Review of industry experience indicates that containment spray systems of similar design are highly reliable and not subject to plugging after testing following construction.

H. B. Robinson Unit 2 Foreign Material Exclusion Program

Normal plant operation and maintenance activities at HBRSEP2 are not expected to require performance of this SR. The current foreign material exclusion (FME) program requires that any breaches of system boundaries during maintenance activities be appropriately protected from the intrusion of foreign material. These controls normally include, but are not limited to, temporary covers for open pipes, in-progress and closeout inspections, and accounting for tools and materials during work performance. The FME program provides guidelines that establish cleanliness requirements and accounting for material, tools, and parts to preclude the introduction of foreign materials into systems or components during maintenance, modification, test, or inspection activities. The program requires management involvement in the event FME integrity is lost or cannot be assured.

In the event of a loss of FME integrity when working within the CSS boundary, the FME program requires immediate notification of the responsible CP&L supervisor and requires the stoppage of all work in the FME area. The responsible CP&L supervisor determines those actions required for work to resume. These actions may include flow blockage testing to verify that each nozzle is unobstructed. The staff recognizes that actions with a significant impact on outage scheduling or other work being performed may involve higher levels of management in these decisions. This program provides for the appropriate evaluations to determine those remedial actions that would be necessary to ensure that the spray nozzles are operable prior to being returned to service.

Also, HBRSEP2 has not experienced any inadvertent actuation of the containment spray system, but water was observed being ejected from the containment spray nozzle during the last testing in January 1991. In that case, the plant procedure stipulates that maintenance personnel perform decontamination of the three levels of containment spray piping by forcing compressed/heated air through the containment spray piping and nozzles, and checking for hot exhaust plumes using infrared thermography to verify each containment spray nozzle is unobstructed. As for the inadvertent actuation of the containment spray system or other evidence of the potential for containment spray nozzle blockage such as boric acid, this would require system and component operability evaluations in accordance with TS SR 3.6.6.8, besides any site Corrective Action Program review. This would warrant review of TS 3.6.6, Action F, which in turn requires entry into Limiting Condition for Operation 3.0.3, requiring plant shutdown. Therefore, should HBRSEP2 experience an inadvertent actuation of containment spray nozzles, the existing TS requirements will automatically invoke verification of operability of containment spray nozzles as described above.

The passive design of the nozzles, the construction of the piping and nozzles, and the processes and programs currently in place at HBRSEP2 provide assurance that the potential for nozzle obstruction is very low. The requirement to verify nozzles are not obstructed once per 10 years is, therefore, unnecessary. Verifying that the nozzles are not obstructed following activities that could result in nozzle blockage is the more appropriate frequency.

Hence, the staff finds that the proposed modification to change the testing frequency for the containment spray nozzles is adequate and acceptable.

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

This amendment changes a surveillance requirement. 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 (67 FR 21285). 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 this amendment.

6.0 CONCLUSION

The staff concludes, based on the consideration 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. Therefore, the proposed changes are acceptable.

Principal Contributors: Ram Subbaratnam
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Date: September 19, 2002

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