

March 11, 2003

Mr. Harold W. Keiser
Chief Nuclear Officer & President
PSEG Nuclear LLC-X04
Post Office Box 236
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK GENERATING STATION - ISSUANCE OF AMENDMENT ADDING
A MAIN VACUUM PUMP TRIP SPECIFICATION (TAC NO. MB3773)

Dear Mr. Keiser:

The Commission has issued the enclosed Amendment No. 143 to Facility Operating License No. NPF-57 for the Hope Creek Generating Station. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated January 4, 2002, as supplemented January 9, 2003. The amendment adds a limiting condition for operation of the mechanical vacuum pump instrumentation to trip the pumps on indication of high radiation levels in the main steam line, and adds associated Surveillance Requirements.

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

Sincerely,

/RA/

George F. Wunder, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-354

Enclosures: 1. Amendment No. 143 to
License No. NPF-57
2. Safety Evaluation

cc w/encls: See next page

Hope Creek Generating Station

cc:

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Municipal Building, P.O. Box 157
Hancocks Bridge, NJ 08038

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OFFICIAL RECORD COPY

*Safety Evaluation dated January 30, 2003

PSEG NUCLEAR LLC

DOCKET NO. 50-354

HOPE CREEK GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 143
License No. NPF-57

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by the PSEG Nuclear LLC dated January 4, 2002, as supplemented January 9, 2003, 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 set forth in 10 CFR Chapter I;
 - 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. NPF-57 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 143, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into the license. PSEG Nuclear LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by JBoska for/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 11, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 143

FACILITY OPERATING LICENSE NO. NPF-57

DOCKET NO. 50-354

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

x

xviii

Insert

x

xviii

3/4 3-109

B 3/4 3-9

B 3/4 3-10

B 3/4 3-11

B 3/4 3-12

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 143 TO FACILITY OPERATING LICENSE NO. NPF-57

PSEG NUCLEAR LLC

HOPE CREEK GENERATING STATION

DOCKET NO. 50-354

1.0 INTRODUCTION

By letter dated January 4, 2002, as supplemented January 9, 2003, PSEG Nuclear LLC (PSEG, or the licensee) submitted a request for changes to the Hope Creek Generating Station Technical Specifications (TSs). The requested changes add a limiting condition for operation of the mechanical vacuum pump instrumentation to trip the pumps on indication of high radiation levels in the main steam line and adds associated Surveillance Requirements (SRs). The January 9, 2003, supplement contained clarifying information and did not change the staff's proposed finding of no significant hazards consideration.

2.0 REGULATORY EVALUATION

10 CFR 50.36(c)(2)(ii), Criterion 3 requires that a TS limiting condition for operation (LCO) of a nuclear reactor must be established for a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier. Since the licensee's reconstituted radiological consequence analysis explicitly credits the automatic trip of the mechanical vacuum pump (MVP), the proposed new LCO must be included in the Hope Creek TS.

3.0 TECHNICAL EVALUATION

3.1 Radiological Evaluation

Two 50 percent MVPs at Hope Creek established a vacuum in the condenser during plant startup when there is insufficient steam flow to operate the steam air ejectors. Plant operating procedure prohibits MVP operation when reactor power exceeds 5 percent. If high radiation is detected in the main steam lines, the MVPs are automatically tripped to ensure radiation doses to the site boundaries and to the control room operator do not exceed the relevant dose criteria following a control rod drop accident (CRDA). The postulated CRDA occurs when a rod that has been stuck in the upper portion of the core becomes disconnected from the rod drive, the drive is subsequently withdrawn, and the rod becomes unstuck and falls rapidly onto the drive.

The licensee stated that the need of this proposed TS change was identified during the reconstitution of the design basis radiological consequence analysis for the CRDA. The reconstituted analysis was performed by the licensee to provide documentation in the Hope Creek UFSAR Section 15.4.9.5, "Radiological Consequences" for the CRDA and to

substantiate that the control room habitability for the CRDA is bounded by the loss-of-coolant accident (LOCA).

The licensee evaluated the CRDA assuming the MVP trips automatically due to either the main steam line radiation high signal or a loss of offsite power, the main steam isolation valves (MSIVs) are open, the gaseous waste off gas system is not available, and reactor power is < 5 percent. The licensee also made assumptions consistent with the guidelines provided in Standard Review Plan (SRP) Section 15.4.9, "Radiological Consequences of a Control Rod Drop Accident."

The licensee's analysis is based, in part, on the General Electric (GE) Licensing Topical Report NEDO-31400A, "Safety Evaluation for Eliminating the Boiling Water Reactor Main Steam Isolation Valve Closure Function and Scram Function of the Main Steam Line Radiation Monitor," dated October 1992. The staff accepted NEDO-31400 in May 1991 as a direct reference in future individual plant submittals. In NEDO-31400, GE evaluated the radiological consequences for two CRDAs: One with automatic MSIV closure and the gaseous waste off gas system not available, and one without automatic MSIV closure and the gaseous waste offgas system available. The licensee reconstituted its radiological consequence analysis for a CRDA using the radiological doses calculated by GE. GE used in its dose calculation an enveloping value of atmospheric dispersion factor at the exclusion area boundary for a ground level release. The licensee reconstituted site boundary doses by scaling directly from GE values using its own Hope Creek site boundary atmospheric dispersion factors. The licensee concluded that the resulting doses bound the doses shown in the current Hope Creek updated final safety analysis report (UFSAR) Table 15.4-10. The calculated doses by the licensee are well within 10 CFR Part 100 dose guidelines and, therefore, meet the dose acceptance criteria specified in SRP Section 15.4.9.

The licensee performed an engineering analysis to determine control room doses following a CRDA. The licensee's calculations indicate that, although post-CRDA doses at the control room air intake are higher than the corresponding post-LOCA doses in the control room, the post-CRDA doses in the control room are estimated to be lower than the post-LOCA doses. This would be due to dilution of the air at the intake by uncontaminated air in the control room. All doses were within the acceptance criteria of SRP Section 6.4, "Control Room Habitability System."

The staff has reviewed the licensee's calculations and has determined that, with the postulated CRDS, doses at the site boundary are well within the limits of 10 CFR Part 100. The staff has also determined that, with the postulated CRDA, the licensee meets General Design Criteria 19 for control room habitability. The proposed changes are, therefore, acceptable.

3.2 Instrumentation Evaluation

The Hope Creek TSs state that the Main Steam Line Radiation - High, High trip function also trips the mechanical vacuum pump; however, there is no LCO for the mechanical vacuum pump automatic trip function in the current TS. The licensee proposes to add TS Section 3.3.10. The Applicability clause in TS Section 3/4.3.10 states that the MVP trip is required to mitigate the consequences of a postulated core rod drop accident in OPERATIONAL CONDITIONS 1 and 2

when the MVP is in service and any main steam line not isolated. In OPERATIONAL CONDITIONS 3, 4, and 5 the consequences of a control rod drop are insignificant and are not expected to result in any fuel damage or fission product release.

ACTION statement "a." of TS 3.3.10 allows one channel of the Main Steam Line High-High function for the MVP trip to be inoperable for 12 hours before tripping the MVP. The licensee stated that, based on operating experience, the allowed completion time of 12 hours is a reasonable time in which to reach OPERATIONAL CONDITION 3 from full-power conditions in an orderly manner without challenging plant systems. The 12-hour allowed outage time is also found to be acceptable in NEDC-30851 P-A, Supplement 2, "Technical Specification Improvement Analysis for BWR [boiling water reactor] Isolation Instrumentation Common to RPS and ECCS Instrumentation." In approving NEDC-30851P-A, Supplement 2, by letter dated January 6, 1989, the NRC stated that for plant-specific applications of NEDC-30851P-A, Supplement 2, the licensee must:

- 0.01 confirm the applicability of the generic analysis to the plant; and
- b. confirm that any increase in instrument drift, due to the extended surveillance test intervals is properly accounted for in the setpoint calculation methodology.

In response to a staff request for additional information the licensee confirmed, by letter dated January 9, 2003, that the generic report NEDC-30851P-A, Supplement 2, is applicable for the Hope Creek plant and that the instrument drift for the proposed surveillance test intervals is bounded by the allowance for instrument drift in the current setpoint calculation, which conforms to ISA-S67.04, 1982, and Regulatory Guide 1.105, Revision 2. Regulatory Guide 1.105, Revision 2, endorses ISA-S67.04, 1982. In a telephone call, on or about January 17, 2003, the licensee confirmed that their calculation methodology conforms to the requirements of Regulatory Guide 1.105, Revision 2, including the requirement for "two sigma" error distribution.

ACTION statement "b." of TS 3.3.10 states that the provisions of TS 3.0.4 are not applicable. The exception to Specification 3.0.4 is consistent with the provisions of TS Section 3.3.2 for an inoperable isolation actuation instrumentation channel.

ACTION statement "c." of TS 3.3.10 states that, when a channel of MVP trip is placed in an inoperable status solely for the performance of required surveillances, entry into the associated ACTION statement can be delayed for up to 6 hours. The licensee stated that this 6-hour delay is based on the reliability analysis in NEDC-30851P-A, Supplement 2, and the NRC-approved TS Amendment 70 for the Main Steam Line Radiation - High, High function.

The proposed SURVEILLANCE REQUIREMENTS for this TS require the performance of a CHANNEL CHECK at least every 12 hours, the performance of a CHANNEL FUNCTIONAL TEST at least every 92 days, the performance of a CHANNEL CALIBRATION at least every 18 months, and the performance of a LOGIC SYSTEM FUNCTIONAL TEST at least every 18 months. The Surveillance Requirements also require that, for the CHANNEL CALIBRATION, the allowable value shall be < 3.6 times normal background. The licensee stated the proposed surveillance requirements are consistent with the NRC-approved Main Steam Line Radiation - High, High function in TS Amendment 70. The licensee stated that the allowable value specified for the Main Steam Line Radiation - High, High function is based on the nominal trip setpoint specified in the setpoint calculations and adequately allows for instrument drift.

The staff has reviewed the proposed TS and finds that the proposed addition of TS Section 3/4.3.10 and the associated bases correct a deficiency of the current TS. The staff also finds that the proposed TS 3.3.10 is in conformance with the NRC-approved TS Amendments 53 and 70 for Hope Creek; with NRC-approved General Electric Topical Report NEDC-30851P-A, Supplement 2, with similar current TS; and with NUREG-1433, "Standard Technical Specifications General Electric Plants, BWR/4." The staff concludes, therefore, that the proposed changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Jersey State 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 and changes surveillance requirements. 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 7421). 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.

Principal Contributors: J. Lee
S. Mazumdar

Date: March 11, 2003