

October 16, 2007

Mr. William Levis
President & Chief Nuclear Officer
PSEG Nuclear LLC - N09
Post Office Box 236
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK GENERATING STATION - ISSUANCE OF AMENDMENT RE:
REMOVAL OF TURBINE FIRST STAGE PRESSURE VALUES FROM
TECHNICAL SPECIFICATIONS (TAC NO. MD6165)

Dear Mr. Levis:

The Commission has issued the enclosed Amendment No. 172 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 July 26, 2007. The amendment removes values for turbine first stage pressure associated with P_{bypass} from the TSs. P_{bypass} is the reactor power level below which the turbine stop valve closure and the turbine control valve fast closure reactor protection system trip functions and the end-of-cycle recirculation pump trip are bypassed automatically.

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/

Richard B. Ennis, Senior Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-354

Enclosures:

1. Amendment No. 172 to License No. NPF-57
2. Safety Evaluation

cc w/encls: See next page

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Hope Creek Generating Station

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PSEG NUCLEAR LLC

DOCKET NO. 50-354

HOPE CREEK GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

172

Amendment No.

License No. NPF-57

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by PSEG Nuclear LLC dated July 26, 2007, 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. 172, 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/

Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating License
and the Technical Specifications

Date of Issuance: October 16, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 172

FACILITY OPERATING LICENSE NO. NPF-57

DOCKET NO. 50-354

Replace the following page of Facility Operating License No. NPF-57 with the attached revised page as indicated. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove
Page 3

Insert
Page 3

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

Remove
3/4 3-5
3/4 3-47

Insert
3/4 3-5
3/4 3-47

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 172 TO FACILITY OPERATING LICENSE NO. NPF-57

PSEG NUCLEAR LLC

HOPE CREEK GENERATING STATION

DOCKET NO. 50-354

1.0 INTRODUCTION

By letter dated July 26, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML072150248), PSEG Nuclear LLC (the licensee) requested changes to the Hope Creek Generating Station (HCGS) Technical Specification (TSs). The proposed amendment would remove values for turbine first stage pressure associated with P_{bypass} from the TSs. P_{bypass} is the reactor power level below which the turbine stop valve (TSV) closure and the turbine control valve (TCV) fast closure reactor protection system (RPS) trip functions and the end-of-cycle recirculation pump trip (EOC-RPT) are bypassed automatically.

2.0 REGULATORY EVALUATION

The Nuclear Regulatory Commission's (NRC's or the Commission's) regulatory requirements related to the content of the TSs are set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, "Technical specifications." This regulation requires that the TSs include items in five specific categories. These categories include (1) safety limits, limiting safety system settings and limiting control settings, (2) limiting conditions for operation (LCOs), (3) surveillance requirements (SRs), (4) design features, and (5) administrative controls. However, the regulation does not specify the particular TSs to be included in a plant's TSs.

Additionally, 10 CFR 50.36(c)(2)(ii) sets forth four criteria to be used in determining whether an LCO is required to be included in TSs. These criteria are:

- Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
- Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
- Criterion 3: 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.

Criterion 4: A structure, system or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Existing LCOs and related SRs included as TS requirements which satisfy any of the criteria stated above must be retained in the TSs. Those TS requirements which do not satisfy these criteria may be relocated to other licensee-controlled documents.

3.0 TECHNICAL EVALUATION

The RPS is designed to cause rapid insertion of control rods (i.e., scram) to shutdown the reactor when specific parameters exceed predetermined limits. For HCGS, the parameters providing input to the RPS scram logic are shown in TS Table 3.3.1-1, "Reactor Protection System Instrumentation." Two of the monitored parameters include TSV closure and TCV fast closure.

The TSV closure RPS trip function is discussed in Section 7.2.1.1.4 of the HCGS Updated Final Safety Analysis Report (UFSAR). A turbine trip initiates closure of the TSVs, which can result in a significant addition of positive reactivity to the core as the reactor pressure rise causes steam voids to collapse. The TSV closure RPS trip initiates a reactor scram earlier than either the neutron monitoring system trip or reactor vessel high pressure trip to provide the required safety margin below core thermal-hydraulic limits for this abnormal operational transient.

The TCV fast closure RPS trip function is discussed in Section 7.2.1.1.5 of the HCGS UFSAR. A generator load rejection, with reactor power above 30% of RTP, or a turbine trip automatically initiates a fast closure of the TCVs. Fast closure of the TCVs results in a situation similar to closure of the TSVs and, as such, the TCV fast closure RPS trip is provided for the same reasons as those discussed above for the TSV closure RPS trip.

The instrumentation associated with the EOC-RPT is discussed in Section 7.6.1.5 of the HCGS UFSAR. The EOC-RPT instrumentation initiates tripping of both recirculation pumps based on inputs from the RPS logic associated with closure of the TSVs or fast closure of the TSVs. The reason for tripping the recirculation pumps is to reduce the impact on the fuel of thermal transients caused by a turbine trip, generator trip, or load rejection. The rapid core flow reduction increases void content and thereby introduces negative reactivity in conjunction with control rod insertion.

The TSV closure and TCV fast closure RPS trip functions and the EOC-RPT function are bypassed automatically if turbine first stage pressure is less than a pressure corresponding to 30% of rated thermal power (RTP). The intent of this automatic bypass (which is designated as P_{bypass}) is to reduce scrams and recirculation pump trips at low power levels where the turbine steam bypass system is effective for turbine trips and generator load rejections.

TS LCO 3.3.1 requires the RPS instrumentation channels to be operable as specified by TS Table 3.3.1-1. TS Table 3.3.1-1 requires that the TSV closure and TCV fast closure RPS trip functions be operable in operational condition 1 (i.e., power operation). The applicable operational condition for these functions is modified by note "j" which currently reads as follows:

This function shall be automatically bypassed when turbine first stage pressure is ≤ 159.7 psig [pounds per square inch gauge] equivalent to THERMAL POWER less than 30% of RATED THERMAL POWER. To allow for instrument accuracy, calibration, and drift, a setpoint of ≤ 135.7 psig is used.

TS LCO 3.3.4.2 requires the EOC-RPT system instrumentation channels shown in TS Table 3.3.4.2-1 to be operable in operational condition 1 when thermal power is greater than or equal to 30% of RTP. TS Table 3.3.4.2-1, note "b" currently states that:

This function shall be automatically bypassed when turbine first stage pressure is ≤ 159.7 psig equivalent to THERMAL POWER less than 30% of RATED THERMAL POWER. To allow for instrument accuracy, calibration and drift, a setpoint of ≤ 135.7 psig is used.

The licensee's application dated July 26, 2007, states that modifications to the high-pressure turbine, planned to be performed during the fall 2007 refueling outage, will change the relationship between turbine first stage pressure and RTP. To support this planned modification, the proposed amendment would revise note "j" in TS Table 3.3.1-1 and note "b" in TS Table 3.3.4.2-1 to remove the values for turbine first stage pressure. Specifically, the notes would read as follows:

This function shall be automatically bypassed when turbine first stage pressure is equivalent to THERMAL POWER less than 30% of RATED THERMAL POWER.

The licensee's application dated July 26, 2007, states that the turbine first stage pressure values in TS Tables 3.3.1-1 and 3.3.4.2-1 are details of system design that are not required by 10 CFR 50.36(c)(2)(ii) to be included in the TSs because:

1. Turbine first stage pressure instrumentation is not used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. Turbine first stage pressure is not a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. P_{bypass} is an initial condition for some transient analyses and is retained in TS Tables 3.3.1-1 and 3.3.4.2-1.
3. Turbine first stage pressure instrumentation is not 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.
4. Turbine first stage pressure instrumentation is not a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The application dated July 26, 2007, also states that a turbine first stage pressure setpoint will be established in accordance with plant procedures before plant startup to ensure compliance with the TS requirements. Testing will be performed to confirm the turbine first stage pressure at P_{bypass} during the plant startup after the fall 2007 outage.

In addition to the sections in Chapter 7 of the HCGS UFSAR referenced above, the NRC staff reviewed the following portions of Chapter 15 of the HCGS UFSAR which describe the applicable transient analyses:

- 1) Section 15.2.2, "Generator Load Rejection"
- 2) Section 15.2.3, "Turbine Trip"
- 3) Section 15.9.6.3, "Anticipated Operational Transients"
- 4) Section 15.9.6.4, "Abnormal Operational Transients"
- 5) Figure 15.9-32, "Protection Sequences for Main Turbine Trip with Bypass"
- 6) Figure 15.9-34, "Protection Sequences for Main Generator Trip with Bypass System Operation"
- 7) Figure 15.9-36, "Protection Sequences for Main Generator Trip with Bypass System Failure"
- 8) Figure 15.9-37, "Protection Sequences for Main Turbine Trip with Bypass System Failure"

The UFSAR transient analyses noted above are based, in part, on the assumption that the TSV closure and TCV fast closure RPS trip functions and the EOC-RPT function are operable at or above 30% of RTP. The transient analyses do not discuss the turbine first stage pressure values in terms of psig.

Based on review of the HCGS UFSAR, the NRC staff agrees with the licensee's determination that the turbine first stage pressure values in TS Tables 3.3.1-1 and 3.3.4.2-1 are details of system design that are not required by 10 CFR 50.36(c)(2)(ii) to be included in the TSs. The NRC staff also finds that the provisions of 10 CFR 50.59 provide adequate control to establish the turbine first stage pressure setpoint in the associated plant procedures. Based on these considerations, the NRC staff concludes that the proposed amendment is acceptable.

The NRC staff notes that removal of the turbine first stage pressure values from the TSs is consistent with NUREG-1433, Revision 3, "Standard Technical Specifications, General Electric Plants BWR/4."

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. 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 (72 FR 45460). 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 Contributor: R. Ennis

Date: October 16, 2007