



LR-N06-0025  
LCR H06-01  
FEB 23 2006

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

**REQUEST FOR CHANGE TO OPERATING LICENSE  
LICENSE CONDITION 2.C.(6)  
HOPE CREEK GENERATING STATION  
FACILITY OPERATING LICENSE NO. NPF-57  
DOCKET NO. 50-354**

In accordance with the provisions of 10CFR50.90, PSEG Nuclear, LLC (PSEG) hereby transmits a request for amendment of the Operating License (OL) for Hope Creek Generating Station. Pursuant to the requirements of 10CFR50.91(b)(1), a copy of this request for amendment has been sent to the State of New Jersey.

The proposed change will revise OL Condition 2.C.(6), "Fuel Storage and Handling," to clarify that the condition does not apply to fuel located in NRC-approved dry spent fuel storage systems. This clarification is consistent with 10 CFR Part 72, which permits NRC-certified dry storage systems to be used by any Part 72 general licensee. PSEG intends to store fuel at an onsite Independent Spent Fuel Storage Installation (ISFSI) under the general license provisions of 10 CFR 72, Subpart K. This change is required to support dry storage cask loading operations scheduled for September, 2006.

PSEG has evaluated the proposed change in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and has determined this request involves no significant hazards considerations. An evaluation of the requested change is provided in Attachment 1 to this letter. The marked up OL page affected by the proposed change is provided in Attachment 2.

PSEG requests approval of the proposed change by September 1, 2006 with implementation within 30 days of receipt of the approved amendment.

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If you have any questions or require additional information, please contact Mr. Michael Jesse at (856) 339-1280.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 2/23/06  
(Date)

Sincerely,



George P. Barnes  
Site Vice President – Hope Creek

Attachments (2)

GPB/bg

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**REQUEST FOR CHANGE TO OPERATING LICENSE CONDITION  
FUEL HANDLING**

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## 1. DESCRIPTION

This letter is a request to amend Operating License NPF-57 for the Hope Creek Generating Station. The proposed change will revise License Condition 2.C.(6), "Fuel Storage and Handling," to clarify that the condition does not apply to fuel located in NRC-approved dry spent fuel storage systems.

## 2. PROPOSED CHANGE

Hope Creek Operating License Condition 2.C.(6) currently states the following:

- a. No more than a total of three (3) fuel assemblies shall be out of approved shipping containers or fuel assembly storage racks or the reactor at any one time.
- b. The above three (3) fuel assemblies as a group shall maintain a minimum edge-to-edge spacing of twelve (12) inches from the shipping container array and the storage rack array.
- c. Fresh fuel assemblies, when stored in their shipping containers, shall be stacked no more than three (3) containers high.

The proposed change to this license condition, shown in Attachment 2, clarifies that Subpart 'a' does not apply to fuel in an NRC-approved dry storage system. Subparts 'b' and 'c' are not affected by this request. Dry storage system loading operations take place in the Hope Creek Reactor Building and are therefore governed by the requirements of 10 CFR 50. Because each of the dry spent fuel storage systems chosen for use by PSEG will contain up to 68 fuel assemblies, this license condition requires clarification before dry spent fuel storage operations can commence.

## 3. BACKGROUND

In August 1985, prior to being granted its operating license for the Hope Creek Generating Station (HCGS), PSEG was granted 10 CFR 70 Special Nuclear Materials license SNM-1953 to permit receipt and possession of new fuel until the Part 50 operating license was granted. As a condition of that SNM license, PSEG Nuclear received an exemption from the criticality monitoring requirements of 10 CFR 70.24 for storage of fresh fuel. That license condition included only subparts 'a' and 'b' of the current OL condition and did not include the phrase "or the reactor" in Subpart 'a'.

When the HCGS construction permit was converted to a Part 50 operating license, the SNM license expired. The NRC concluded in Section 9.1 of Supplemental Safety Evaluation Report (SSER) 5 for the operating license (Reference 7.1) that "this condition equally applies to the 10 CFR 50 operating license," referring to the aforementioned exemption. In order to maintain the provisions of the 10 CFR 70.24

exemption in the operating license, License Condition 2.C.(6) was included in the Part 50 operating license, with the term "or the reactor" added to Subpart 'a' and new Subpart 'c' added for reasons discussed in the SSER.

PSEG intends to operate an onsite Independent Spent Fuel Storage Installation (ISFSI) at the Hope Creek Generating Station under the general license provisions of 10 CFR 72, Subpart K on or about September 11, 2006. The first fuel to be loaded into dry storage is BWR fuel from HCGS. The certified dry storage system chosen for use at the ISFSI is the canister-based HI-STORM 100 System (Reference 7.2). The HI-STORM 100 System is listed in 10 CFR 72.214 as an NRC-certified dry storage system (Certificate of Compliance Number 1014). Each dry storage system deployed at the ISFSI, for HCGS fuel, will contain up to 68 HCGS fuel assemblies. This quantity of fuel assemblies exceeds the maximum of three assemblies referred to in Subpart 'a' of HCGS License Condition 2.C.(6). Because dry spent fuel storage system loading operations take place in the HCGS Fuel Building, this operating license condition needs to be clarified to permit dry spent fuel storage loading, transfer and storage operations at HCGS.

#### 4. TECHNICAL ANALYSIS

The HI-STORM 100 dry spent fuel storage system has been certified by the NRC and is listed as an approved spent fuel storage system in 10 CFR 72.214. Any 10 CFR 72 general licensee may deploy the HI-STORM 100 System or any other dry storage system listed in 10 CFR 72.214 at their ISFSI, subject to the provisions of 10 CFR 72.212.

The design of the HI-STORM 100 System is supported by a variety of safety analyses, including a criticality analysis for 68 fresh BWR fuel assemblies that demonstrates the cask system to be safely subcritical under optimum (worst-case) moderation conditions expected during cask loading, transfer, and storage operations. The criticality evaluation for the HI-STORM 100 System is described in Chapter 6 of the HI-STORM FSAR (Reference 7.3) and bounds all HCGS fuel to be placed in dry storage. The NRC reviewed this criticality analysis and found it to be acceptable as part of the certification process for the dry storage system as described in the Safety Evaluation Report for the dry storage system CoC (Reference 7.4). Therefore, the three-assembly limit specified in Subpart 'a' of License Condition 2.C.(6) does not apply to fuel located in this NRC-certified spent fuel storage system. Likewise, this license condition would not apply to any other NRC-certified dry spent fuel storage system used at the onsite ISFSI under a Part 72 general license for the same reasons.

The HI-STORM 100 System with the MPC-68 canister was analyzed for subcriticality using the following conservative assumptions as described in Chapter 6 of the HI-STORM 100 FSAR:

1. The MPC is assumed to be loaded with 68 of the most reactive fresh fuel assemblies permitted by the CoC to be loaded into the canister (no credit is taken for fuel burnup).
2. No credit for fuel-related burnable neutron absorbers (e.g., gadolinia) is taken.
3. 90% credit for neutron absorber efficacy in the fixed poison panels in the fuel basket is taken.
4. The fuel stack density is assumed to be at least 96% of theoretical and 98% of pellet density.
5. No credit is taken for the  $^{234}\text{U}$  and  $^{236}\text{U}$  in the fuel.
6. The MPC-68 canister is assumed to be flooded with unborated water at the temperature and density corresponding to the highest reactivity in the operating range.
7. Neutron absorption in minor structural members such as fuel basket supports and fuel assembly grid straps is neglected.
8. The worst (most reactive) hypothetical combination of physical tolerances for the fuel and canister structure are assumed.
9. The fuel rod pellet-to-clad gap is assumed to be filled with unborated water.
10. Planar average enrichments are assumed.
11. For evaluation of the bias, all benchmark calculations that result in a  $k_{\text{eff}}$  greater than 1.0 are truncated to 1.0.
12. For fuel assemblies that contain low-enriched axial blankets, the governing enrichment is that of the highest planar average, and the blankets are not included in determining the average enrichment.
13. Regarding positioning of the fuel assemblies in the fuel basket, configurations with centered and eccentric positioning of assemblies in the fuel storage locations are considered.

In accordance with NUREG-1536 (Reference 7.5), the criticality analysis acceptance criterion of  $k_{\text{eff}} \leq 0.95$  at a 95/95 probability/confidence level was met with a maximum calculated  $k_{\text{eff}}$  of 0.9448 for the most reactive BWR fuel type permitted for loading in the HI-STORM 100 System (Reference 7.3, Table 6.1.7). Thus, the HI-STORM 100 System with the MPC-68 filled with HCGS fuel has been demonstrated to be safely subcritical under the most reactive conditions possible during loading, transfer, and

storage operations at the ISFSI. Further, any NRC-approved dry spent fuel storage system similarly permits users to load fuel in accordance with the storage system CoC. Therefore, OL condition 2.C.(6) does not apply to fuel in any NRC-approved dry spent fuel storage system.

## 5. REGULATORY ANALYSIS

### 5.1 No Significant Hazards Consideration

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed change is a clarification to the Hope Creek operating license to recognize that the dry spent fuel storage system used at the ISFSI is licensed separately by the NRC under 10 CFR Part 72. The change does not affect any SSCs used to operate the reactor or produce electrical power. The change also does not affect SSCs used to shut down the reactor, maintain it in a safe shutdown condition, or mitigate accidents.

The dry storage cask system design is supported by an NRC-approved criticality analysis that demonstrates the system will remain safely subcritical under all normal, off-normal, and credible accident conditions applicable to the dry spent fuel storage system, as defined in the cask CoC holder's 10 CFR 72 licensing basis. Dry spent fuel storage system loading operations are not addressed in any Part 50 accident as described in Chapter 15 of the HCGS FSAR. Dry spent fuel storage system loading in the spent fuel pool is governed by procedures that are consistent with the requirements in the HI-STORM 100 System 10 CFR 72 FSAR. Heavy load handling inside the Part 50 facility associated with cask loading is conducted in accordance with procedures that comply with the site's existing heavy load control program. Because this change does not affect PSEG's heavy load handling procedures and all structures, systems and components used for cask handling will meet the existing commitments to NUREG-0612, a cask drop event remains non-credible as currently described in HCGS FSAR Section 15.7.5.

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

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change is a clarification to the Hope Creek operating license to recognize that the dry spent fuel storage system is licensed separately by the NRC under 10 CFR Part 72. The change does not affect any SSCs used to operate the reactor or produce electrical power. The change also does not affect SSCs used to shut down the reactor, maintain it in a safe shutdown condition, or mitigate accidents.

The dry spent fuel storage system design is supported by an NRC-approved criticality analysis that demonstrates the system will remain safely subcritical under all normal, off-normal, and credible accident conditions, as defined in the cask CoC holder's 10 CFR 72 licensing basis. Dry spent fuel storage system loading in the spent fuel pool is governed by procedures that are consistent with the requirements in the HI-STORM 100 System 10 CFR 72 FSAR. Heavy load handling inside the Part 50 facility associated with cask loading is conducted in accordance with procedures that comply with the site's existing heavy load control program. Because this change does not affect PSEG's heavy load handling procedures and all structures, systems and components used for cask handling will meet the existing commitments to NUREG-0612, a cask drop event remains non-credible as currently described in HCGS FSAR Section 15.7.5.

Therefore, the proposed change will not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No

The proposed change is a clarification to the Hope Creek operating license to recognize that dry spent fuel storage systems are licensed separately by the NRC under 10 CFR Part 72. The change does not affect any SSCs used to operate the reactor or produce electrical power. The change also does not affect SSCs used to shut down the reactor, maintain it in a safe shutdown condition, or mitigate accidents.

All safety analyses are consistent with the operations described in the dry spent fuel storage system FSAR and have been previously approved by the NRC as having sufficient safety margins. This change does not affect the dry spent fuel storage system operation procedures or change any normal, off-normal, or accident condition for which the dry spent fuel storage system is designed.

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

## 5.2 Applicable Regulatory Requirements/Criteria

As a 10 CFR 50 license holder, PSEG is permitted to receive, possess, and use special nuclear material in the form of reactor fuel. This includes both fresh fuel and spent fuel created as a result of reactor operations, and is reflected in Hope Creek Operating License Condition 2.B.(3). By virtue of being a Part 50 license holder, PSEG is also a Part 70 general license holder in accordance with 10 CFR 70.20. The Hope Creek Part 50 operating license also includes License Condition 2.C.(6) pertaining to handling and storing fuel assemblies on site. This license condition ensures all fuel not located in approved shipping containers, fuel assembly storage racks, or the reactor will be in a safely subcritical configuration. It does not address fuel located in NRC-approved dry spent fuel storage systems.

PSEG intends to operate an Independent Spent Fuel Storage Installation (ISFSI) at the Hope Creek Generating Station under the general license provisions of 10 CFR 72, Subpart K. A 10 CFR 72 general license permits any Part 50 licensee to operate an onsite ISFSI without prior NRC approval subject to certain conditions delineated in 10 CFR 72.212. 10 CFR 72.212(a)(2) requires the Part 72 general licensee to use an NRC-approved spent fuel storage system. The list of NRC-approved spent fuel storage systems is provided in 10 CFR 72.214. PSEG Nuclear intends to use the HI-STORM 100 System, which is listed in 10 CFR 72.214 under Certificate of Compliance (CoC) Number 1014.

In order to receive an NRC CoC for a spent fuel storage cask system, the applicant for the CoC must prepare a Safety Analysis Report that describes the cask system design, operation, and supporting safety analyses. One of the safety analyses required is a criticality analysis to demonstrate that the storage cask complies with the criticality safety criteria in 10 CFR 72.124 and 10 CFR 72.236(c) under optimum moderator conditions. Because ISFSI operations in general, and cask designs in particular, are governed by the regulations in 10 CFR 72, Hope Creek License Condition 2.C.(6) need not apply to fuel in an approved dry spent fuel storage system.

## 6. ENVIRONMENTAL CONSIDERATIONS

PSEG has determined the proposed amendment relates to changes in a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or relates to changes in an inspection or a surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released off site, or (iii) a significant increase in individual or cumulative occupational exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22 (c) (9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed change is not required.

**7. REFERENCES**

- 7.1 Nuclear Regulatory Commission Supplemental Safety Evaluation Report No. 5 for the Hope Creek Generating Station, NUREG-1048, April 1986.
- 7.2 HI-STORM 100 System 10 CFR 72 Certificate of Compliance 1014, Amendment 2.
- 7.3 Final Safety Analysis Report for the HI-STORM 100 System, Revision 3.
- 7.4 NRC Safety Evaluation Report for the HI-STORM 100 System, through Amendment 2.
- 7.5 NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems," January 1997.

**HOPE CREEK GENERATING STATION  
FACILITY OPERATING LICENSE NO. NPF-57  
DOCKET NO. 50-354  
REVISIONS TO THE OPERATING LICENSE**

**OPERATING LICENSE PAGES WITH PROPOSED CHANGES**

The following condition of Facility Operating License NPF-57 is affected by this change request:

| <u>Condition</u> | <u>Page</u> |
|------------------|-------------|
| 2.C.(6)          | 4           |

(4) Inservice Inspection (Section 6.6, SER; Sections 5.2.4.3 and 6.6.3, SSER No. 5)

- a. PSE&G shall submit an inservice inspection program in accordance with 10 CFR 50.55a(g)(4) for staff review by October 11, 1986.
- b. Pursuant to 10 CFR 50.55a(a)(3) and for the reasons set forth in Sections 5.2.4.3 and 6.6.3 of SSER No. 5, the relief identified in the PSE&G submittal dated November 18, 1985, as revised by the submittal dated January 20, 1986, requesting relief from certain requirements of 10 CFR 50.55a(g) for the preservice inspection program, is granted.

(5) Solid State Logic Modules

PSEG Nuclear LLC shall continue, for the life of the plant, a reliability program to monitor the performance of the Bailey 862 SSLMs installed at Hope Creek Generating Station. This program should obtain reliability data, failure characteristics, and root cause of failure of both safety-related and non-safety-related Bailey 862 SSLMs. The results of the reliability program shall be maintained on-site and made available to the NRC upon request.

(6) Fuel Storage and Handling (Section 9.1, SSER No. 5)

- a. No more than a total of three (3) fuel assemblies shall be out of approved shipping containers, NRC-approved dry spent fuel storage systems, fuel assembly storage racks or the reactor at any one time.
- b. The above three (3) fuel assemblies as a group shall maintain a minimum edge-to-edge spacing of twelve (12) inches from the shipping container array and the storage rack array.
- c. Fresh Fuel assemblies, when stored in their shipping containers, shall be stacked no more than three (3) containers high.

(7) Fire Protection (Section 9.5.1.8, SSER No. 5; Section 9.5.1, SSER No. 6)

PSEG Nuclear LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility through Amendment No. 15 and as described in its submittal dated May 13, 1986, and as approved in the SER dated October 1984 (and Supplements 1 through 6) subject to the following provision:

PSEG Nuclear LLC may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.