

August 4, 2005

Mr. J. W. Moyer, Vice President  
Carolina Power and Light Company  
H.B. Robinson Steam Electric Plant, Unit No. 2  
3581 West Entrance Road  
Hartsville, South Carolina 29550

SUBJECT: EXEMPTION FROM 10 CFR 72.212 AND 72.214 FOR DRY SPENT FUEL  
STORAGE ACTIVITIES - H.B. ROBINSON STEAM ELECTRIC PLANT  
(TAC NO. 23860)

Dear. Mr. Moyer:

This is in response to your letter dated June 13, 2005, as supplemented on July 20, 2005, requesting an exemption from 10 CFR 72.212(a)(2), 72.212(b)(2)(i)(A), 72.212(b)(7), and 10 CFR 72.214, pursuant to 10 CFR 72.7. These regulations specifically require storage in casks approved under the provisions of 10 CFR Part 72 and compliance with the conditions set forth in the Certificate of Compliance (CoC) for each dry spent fuel storage cask used by an ISFSI general licensee. The Transnuclear, Inc. (TN) NUHOMS® CoC provides requirements, conditions, and operating limits in Attachment A, Technical Specifications. Progress Energy Carolinas, Inc. also known as Carolina Power & Light Company (CP&L or licensee), requests an exemption from the requirements of 10 CFR 72.212(a)(2) and 72.214 so that you may be able to store fuel in the TN NUHOMS®-24PTH DSC system prior to the effective date of the final rule change for the Amendment No. 8 to CoC No. 1004, approving the issuance of this amended CoC. CP&L also requests an exemption from the requirements of 10 CFR 72.212(b)(2)(i)(A) and 72.212(b)(7) to allow lifting and handling a loaded transfer cask/dry shielded canister (TC/DSC) above the height limit in the proposed Amendment No. 8, as published in the Federal Register on May 25, 2005 (70 FR 29931). Specifically, the exemption would be from the requirement to limit the lift height of a loaded TC/DSC to 80 inches when outside the spent fuel pool building. In lieu of this requirement, CP&L stated that the TC/DSC will not be lifted higher than 80 inches when not being handled by devices that meet the existing 10 CFR Part 50 license heavy load requirements.

Additionally, TN identified an issue in the proposed Amendment No. 8 to CoC No. 1004 that resulted in a need for clarification to the proposed technical specifications in regard to thermal loading patterns and transit times for the 24PTH DSC. In your letter of June 13, 2005, CP&L committed to only load individual assemblies that have a decay heat of less than or equal to 1.3 kilowatts. The exemption included this commitment as a condition to ensure that the casks loaded by CP&L remain within loading patterns analyzed in support of the proposed Amendment No. 8. Further, the NRC staff identified an issue in the proposed Amendment No. 8 to CoC No. 1004 related to the potential for air (oxygen) to come in contact with spent fuel during DSC draining and vacuum drying evolutions. In your letter of July 20, 2005, CP&L committed to implementing procedural controls to ensure that (1) only nitrogen or helium is used for blowdown during vacuum drying evolutions, and (2) when draining water from the DSC at or below the level of the fuel cladding, a nitrogen or helium cover will be used. CP&L requested that the exemptions remain in effect for 90 days following the effective date of the final rule change to 10 CFR 72.214 to allow time to incorporate TN CoC No. 1004, Amendment No. 8.

We understand that you requested this exemption to begin the transfer of the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP2) spent fuel pool contents to the independent spent fuel storage installation in August 2005. CP&L has planned its dry fuel campaign to support the HBRSEP2 Refuel Outage 23 (RO-23), currently scheduled to begin on September 17, 2005. You stated that the exemption is requested to maintain the ability to offload a full core of 157 fuel assemblies upon restart from RO-23 in October 2005. If no fuel is transferred to dry storage prior to the start of RO-23, there would be insufficient space in the spent fuel pool for the 56 new fuel assemblies that will be loaded into the reactor core during RO-23. This would complicate the fuel handling evolutions required for core reload during the outage. The proposed action is necessary because the 10 CFR 72.214 rulemaking to implement the TN NUHOMS<sup>®</sup> CoC No. 1004, Amendment No. 8, will not be completed until late Fall 2005, which will not support the HBRSEP2 fuel transfer and dry cask storage loading schedule.

In a letter dated September 19, 2003, as supplemented, TN requested an amendment to CoC No. 1004, to add a new system, designated the NUHOMS<sup>®</sup>-24PTH system. In a letter dated April 21, 2004, as supplemented, TN requested another amendment to the Standardized NUHOMS<sup>®</sup> system. The subsequent amendment request included a revision to the (TC/DSC) handling and lifting height technical specifications. The information provided in the amendment requests, as supplemented, is relevant to the exemption request by CP&L and provides the safety basis for the staff's finding with respect to the exemption.

The U.S. Nuclear Regulatory Commission (NRC) staff performed a safety evaluation of the proposed exemption and commitments. The enclosed safety evaluation concludes that the staff has reasonable assurance that allowing CP&L to store spent fuel in the TN NUHOMS<sup>®</sup> - 24PTH system with the revised handling and lifting height technical specifications and with the commitments made by CP&L will not pose an increased risk to public health and safety. For this action, an Environmental Assessment and Finding of No Significant Impact has been prepared and published in the Federal Register (70 FR 44940, dated August 4, 2005). A copy of the Federal Register Notice was provided to you by letter dated July 29, 2005.

Based on the foregoing considerations, the NRC has determined that granting the proposed exemption from the provisions of 10 CFR 72.212(a)(2), 72.212(b)(2)(i)(A), 72.212(b)(7) and 10 CFR 72.214 is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. Accordingly, the NRC hereby grants this exemption effective immediately, to remain in effect for 90 days following the effective date of the final rule change to 10 CFR 72.214 to incorporate TN CoC No. 1004, Amendment No. 8., and subject to the following conditions:

- 1) CP&L shall limit the decay heat level per fuel assembly to 1.3 kilowatts to ensure cask loadings are bounded by the analyses supporting the proposed TN CoC No. 1004, Amendment No. 8.
- 2) CP&L shall implement procedural controls to ensure that (a) only nitrogen or helium is used for blowdown during vacuum drying evolutions, and (b) a nitrogen or helium cover is used when draining water from the DSC at or below the level of the fuel cladding.

J. Moyer

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If you have any questions, please contact me or Raynard Wharton of my staff at 301-415-8500. Any future correspondence related to this action should reference Docket No. 72-60 and TAC No. L23860.

Sincerely,

**/RA/**

William H. Ruland, Deputy Director  
Spent Fuel Project Office  
Office of Nuclear Material Safety  
and Safeguards

Docket Nos. 72-60 (50-261)

Enclosure: Safety Evaluation  
cc: Service List

J. Moyer

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William H. Ruland, Deputy Director  
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Docket Nos. 72-60 (50-261)

Enclosure: Safety Evaluation  
cc: Service List

Distribution: (Closes TAC No. 23860)

NMSS r/f SBaggett CPatel, NRR

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<b>OFC</b>	SFPO	E	SFPO	E	OGC	E	SFPO		SFPO	
<b>NAME</b>	RWharton		DRiffle*		STreby		RLewis		WRuland	
<b>DATE</b>	08/03/05		08/02/05		08/03/05		08/03/05		08/04/05	

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**SAFETY EVALUATION REPORT**

**EXEMPTION FOR**

**CAROLINA POWER AND LIGHT COMPANY**

**H. B. ROBINSON INDEPENDENT SPENT FUEL STORAGE INSTALLATION**

**DOCKET NO. 72-60**

**1.0 SUMMARY**

By letter dated June 13, 2005, as supplemented on July 20, 2005, Progress Energy Carolinas, Inc., also known as Carolina Power & Light Company (CP&L or the licensee), requested the U.S. Nuclear Regulatory Commission's (NRC) approval for an exemption from certain 10 CFR 72.212 and 72.214 requirements. These regulations specifically require storage in casks approved under the provisions of 10 CFR Part 72 and compliance with the conditions set forth in the Certificate of Compliance (CoC) for each dry spent fuel storage cask used by an ISFSI general licensee. The Transnuclear, Inc. (TN) NUHOMS® CoC provides requirements, conditions, and operating limits in Attachment A, Technical Specifications. CP&L requests an exemption from the requirements of 10 CFR 72.212(a)(2) and 72.214 so that you may be able to store fuel in the TN NUHOMS®-24PTH DSC system prior to the effective date of the final rule change for the Amendment No. 8 to CoC No. 1004, approving the issuance of this amended CoC. CP&L also requests an exemption from the requirements of 10 CFR 72.212(b)(2)(i)(A) and 72.212(b)(7) to allow lifting and handling a loaded TC/DSC above the height limit in the proposed Amendment No. 8, as published in the Federal Register on May 25, 2005 (70 FR 29931). Specifically, the exemption would be from the requirement to limit the lift height of a loaded TC/DSC to 80 inches when outside the spent fuel pool building. In lieu of this requirement, CP&L stated that the TC/DSC will not be lifted higher than 80 inches when not being handled by devices that meet the existing 10 CFR Part 50 license heavy load requirements.

The licensee's justifications for the exemption are that: (1) the amendment adding NUHOMS®-24PTH system to CoC No. 1004 is currently in rulemaking and has been reviewed by the NRC staff as part of the TN NUHOMS® CoC No.1004, Amendment No. 8., and its commitments further ensure that safety will not be compromised, and (2) the approval of the amendment via the 10 CFR 72.214 rulemaking will not support the initial cask loading scheduled to begin in August 2005 and the subsequent refueling outage at the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBRSEP2).

The NRC has evaluated the technical issues associated with this exemption request and proposed commitments and concludes in the discussion below that the proposed additions and revisions do not pose any increased risk to public health and safety.

ENCLOSURE

## **2.0 DISCUSSION**

### **TN NUHOMS®-24PTH System**

The licensee's exemption request includes a request to allow storage of spent fuel from HBRSEP2 under its 10 CFR Part 72 general license in the TN NUHOMS®-24PTH DSC system prior to the effective date of the final rule change for the Amendment No. 8 approving the issuance of this amended CoC.

The NUHOMS®-24PTH system consists of new or modified components: (1) the 24PTH dry shielded canister (DSC); (2) a new 24PTH DSC basket design; (3) a modified horizontal storage module (HSM), designated the HSM-H; and (4) a modified transfer cask, designated the OS 197FC transfer cask (TC). The 24PTH is designed to store fuel with a maximum average burnup of up to 62 GWd/MTU; maximum average initial enrichment of 5.0 wt. %; minimum cooling time of 3.0 years; and maximum heat load of 40.8 kW per DSC.

On September 19, 2003, as supplemented, TN submitted an amendment request for the NUHOMS® Storage System which described proposed changes to CoC No. 1004, to add a new NUHOMS® -24PTH system. This amendment request has been reviewed by the staff and is currently in rulemaking. The NRC staff prepared a Preliminary Safety Evaluation Report (SER) which was issued on May 25, 2005, when the direct final rule amending CoC No. 1004 to add Amendment No. 8 was published in the Federal Register (70 FR 29931). The Preliminary SER concluded that the addition of the NUHOMS®-24PTH system to the approved contents of the Standardized NUHOMS® System meets the requirements of 10 CFR Part 72.

### **Handling and Lifting Height Limits**

The licensee's exemption request also includes a request to allow lifting and handling a loaded TC/DSC at heights greater than the 80 inches limit when outside the spent fuel building. At HBRSEP2, the cask handling crane is outside the spent fuel pool building. After roof and wall panels are removed, the TC/DSC must be lifted out of the spent fuel pool and then moved outside the spent fuel pool building before it is lowered into the cask preparation area and then onto the transfer trailer. Therefore, for a short time, the TC/DSC would be lifted higher than 80 inches while outside the spent fuel pool building. This would not be in compliance with the current wording of Technical Specifications (TS) 1.2.10 and 1.2.13.

The basis for the 80 inch lift height limit is related to the structural integrity of the TC/DSC. Evaluations have determined that drops of the TC/DSC of up to 80 inches can be sustained without breaching the confinement boundary, causing a criticality accident, or preventing the removal of spent fuel assemblies from the TC/DSC for transfer back into the spent fuel pool. These evaluations would be applicable to a drop inside or outside the spent fuel pool building. The reason the TS requirements distinguish between inside and outside the spent fuel pool building is based on the assumption that all lifts within the spent fuel pool building will be in compliance with the heavy load requirements and procedures of the 10 CFR Part 50 license and hence a TC/DSC drop is not considered credible inside the spent fuel pool building.

In its April 21, 2004, amendment request, as supplemented, TN proposed a revision to TS 1.2.10 and 1.2.13 regarding TC/DSC handling and lifting height limits. The staff has reviewed

the revised TS lift height limitations and performed an evaluation of the proposed changes. The staff determined that the proposed changes were acceptable and documented its findings in a Preliminary SER transmitted from the NRC to TN in a letter dated March 30, 2005. CP&L in its exemption request, has committed to using procedural controls consistent with the revised wording of the proposed TSs for handling and lifting height limits.

#### Thermal Loading Patterns and Transit Time Limits

TN identified an issue in the proposed Amendment No. 8 CoC that resulted in a need for clarification to the proposed TS with regard to thermal loading patterns and transit times limits for the 24PTH DSC. As initially proposed, the TS would not preclude a licensee from loading fuel assemblies into a cask in a pattern that was not fully supported by the thermal analysis presented in the proposed amendment application Safety Analysis Report. TN clarified the wording in TS Table 1-11, "PWR Fuel Specification for NUHOMS® -24PTH DSC," and TS 1.2.18, "Time Limits for Completion of 24PTH DSC Transfer Operation," to limit the per assembly decay heat to 1.3 kilowatts for certain heat load zone configurations and basket types.

While this exemption is in effect, CP&L has committed to only load individual assemblies that have a decay heat of less than or equal to 1.3 kilowatts to ensure that the casks loaded remain within loading patterns that have been analyzed. CP&L stated the decay heat for each assembly will be calculated. The loading limitations established with this exemption will ensure that analyses forming the basis for the NRC conclusions in the Preliminary SER are met.

#### Spent Fuel Short-Term Loading and Storage Operations

The NRC staff identified an issue in the proposed Amendment No. 8 to CoC No. 1004 related to the potential for air (including oxygen) to come in contact with spent fuel during DSC draining and vacuum drying evolutions. TS 1.2.17c, "24PTH DSC Vacuum Drying Duration Limit," as initially proposed, allowed for air, nitrogen, or helium as the drying blowdown medium. Because the SAR does not specify the use of an inert cover gas while draining water out of the DSC to levels below the fuel cladding, a licensee could use air as a cover gas. Since this issue has not been sufficiently analyzed for the potentially negative effects of cladding oxidation due to contact with air, TN proposed a TS revision to address staff concerns. The staff agrees that deleting the use of air for blowdown of the 24PTH DSC prior to initiation of drying operations resolves materials concerns regarding the potential for spent fuel cladding oxidation. CP&L committed to implementing procedural controls to ensure that (1) only nitrogen or helium is used for blowdown during vacuum drying evolutions, and (2) when draining water from the DSC at or below the level of the fuel cladding, a nitrogen or helium cover will be used.

### **3.0 CONCLUSION**

The staff reviewed the analyses provided by CP&L in the exemption request, as supplemented, to allow use of the TN NUHOMS®-24PTH system with the revised TC/DSC handling and lifting height technical specifications at HBRSEP2, prior to the effective date of the final rule change to 10 CFR 72.214, with additional commitments made by the licensee. Based on the foregoing considerations, the staff has determined that granting the proposed exemption from the provisions of 10 CFR 72.212(a)(2), 72.212(b)(2)(i)(A), 72.212(b)(7), and 10 CFR 214 is

authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. Accordingly, the requested exemption does not pose an increased risk to public health and safety and is acceptable subject to the following conditions:

- 1) CP&L shall limit the decay heat level per fuel assembly to 1.3 kilowatts to ensure cask loadings are bounded by the analyses supporting the proposed TN CoC No. 1004, Amendment No. 8.
- 2) CP&L shall implement procedural controls to ensure that (a) only nitrogen or helium is used for blowdown during vacuum drying evolutions, and (b) a nitrogen or helium cover is used when draining water from the DSC at or below the level of the fuel cladding.

The exemption remains in effect for 90 days following the effective date of the final rule change to 10 CFR 72.214 to incorporate TN CoC No. 1004, Amendment No. 8.