**Progress Energy**

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November 16, 2005

SERIAL: BSEP 05-0138
TSC-2005-05

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

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Docket Nos. 50-325 and 50-324/License Nos. DPR-71 and DPR-62
Response to Request for Additional Information
Revised Main Steam Isolation Valve Leakage Limit
(NRC TAC Nos. MC8106 and MC8107)

References: Letter from Cornelius J. Gannon to the U. S. Nuclear Regulatory Commission (Serial: BSEP 05-0102), "Request for License Amendment - Revised Main Steam Isolation Valve Leakage Limit," dated August 11, 2005 (ML052310224)

Ladies and Gentlemen:

On August 11, 2005, Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc., requested a revision to the Technical Specifications (TSs) for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The proposed change revises Surveillance Requirement 3.6.1.3.9 with respect to the allowed leakage rate through each Main Steam Isolation Valve (MSIV). To support the MSIV leakage rate change, additional automatic initiation functions for the Control Room Emergency Ventilation (CREV) system were also included in TS 3.3.7.1, "Control Room Emergency Ventilation (CREV) System Instrumentation."

On October 28, 2005, the NRC provided an electronic request for additional information (RAI) concerning the calculation of control room doses associated with the proposed change to the MSIV leakage rate. The response to this RAI is enclosed.

No regulatory commitments are contained in this letter. Please refer any questions regarding this submittal to Mr. Edward T. O'Neil, Manager - Support Services, at (910) 457-3512.

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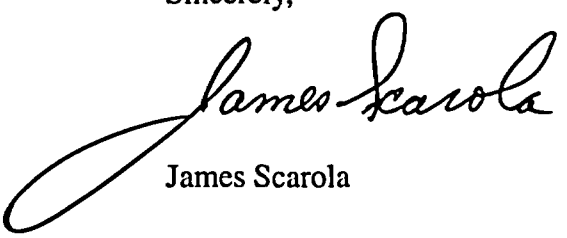
A001

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on November 16, 2005.

Sincerely,



James Scarola

MAT/mat

Enclosure:

Response to Request for Additional Information

cc:

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Response to Request for Additional Information

**Background**

On August 11, 2005, Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc., requested a revision to the Technical Specifications (TSs) for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The proposed change revises Surveillance Requirement 3.6.1.3.9 with respect to the allowed leakage rate through each Main Steam Isolation Valve (MSIV). To support the MSIV leakage rate change, additional automatic initiation functions for the Control Room Emergency Ventilation (CREV) system were also included in TS 3.3.7.1, "Control Room Emergency Ventilation (CREV) System Instrumentation."

On October 28, 2005, the NRC provided an electronic request for additional information (RAI) concerning the calculation of control room doses associated with the proposed change to the MSIV leakage rate. The response to this RAI follows.

**NRC Question 1**

The Licensee states in Section 4 of enclosure 1 that concerning the calculation of direct dose to the control room, "This arrangement of dose analysis locations differs from the previous analysis in that the locations chosen represent actual crew work locations, whereas the previous analysis was based on evaluating the highest dose point in the control building." The Licensee also states that, "There are no control functions or activities that take place in the area previously analyzed for the control room occupancy 30-day dose. The space is not essential to control room functioning in either normal or emergency mode."

Using the assumptions outlined in the proposed change what is the control room occupancy 30-day dose for the highest dose point in the control building?

Response to NRC Question 1

Using the assumptions outlined in the proposed change, the control room occupancy 30-day dose for the highest dose point in the control building is 4.722 Rem TEDE.

The following table provides a summary of the various dose contributions to the 30-day control room dose. For comparison purposes, it also provides the results from the calculation supporting the MSIV leakage change and the original Alternative Source Term calculation. The only dose contribution that varies between the "highest dose location" case and the case provided in support of the MSIV leakage submittal is the Emergency Core Cooling System (ECCS) piping shine. This dose is from a core spray discharge line located to the west of the control room. Assuming operators at the "worst case location" increases this dose. However, the dose received from other sources to the control room staff were not reduced due to the assumed receiver location near the exterior wall at either the northwest or southwest corner of the control room. Thus, for example, the dose received from the source buildup on the CREV filter is assumed to

be the same, although it is in fact dependent on position. The "highest dose location" actually refers only to the dose received from the core spray shine, whereas the underlying assumption for CREV filter dose has always been an individual standing directly beneath (i.e., physically closest to) the filter. This conservative method of dose summation is consistent with previous practice.

| Control Room Dose Comparisons (Rem TEDE) | | | |
|---|---|---|---|
| **Dose Contribution** | **Highest Dose Location** | **MSIV Leakage Increase Calculation** | **Original Alternative Source Term Calculation** |
| Primary Leakage - Reactor Building | 0.6321 | 0.6321 | 0.22 |
| Primary Leakage - Stack | 0.1128 | 0.1128 | ---- |
| Engineered Safety Feature Leakage - Reactor Building | 0.4940 | 0.4940 | 0.25 |
| Engineered Safety Feature Leakage - Stack | 0.0797 | 0.0797 | ---- |
| MSIV/Secondary Containment Leakage | 2.9402 | 2.9402 | 1.64 |
| External Cloud | 0.0057 | 0.0057 | 0.01 |
| Reactor Building Direct Shine | 0.0572 | 0.0572 | 0.36 |
| Standby Gas Treatment System Filter Direct Shine | Negligible | Negligible | 0.18 |
| CREV Filter Direct Shine | 0.0676 | 0.0676 | 0.64 |
| ECCS Piping Shine | 0.333 | 0.0001 | 0.10[1] |
| **Totals** | **4.7223** | **4.3894** | **3.40** |
| Regulatory Limit | 5 | 5 | 5 |

The result shows that the total 30-day dose of 4.39 Rem TEDE, calculated in support of the MSIV leakage increase, is comparable to the dose as calculated for the "highest dose location" in the control room. Additionally, assuming previous worst case locations, the control room dose remains below the regulatory limit of 5 Rem TEDE.

## NRC Question 2

The evaluation of direct shine dose in the control room appears to take credit for limitations on the time that operations personnel can occupy certain locations within the control room. The submittal states that, "BSEP's current emergency plans post a health physics technician in the control room to monitor exposure rates."

[1] This value differs from that for the highest dose location due to an error identified in the original dose calculation. The original dose calculation value of 0.10 Rem is based on a mistaken assumption of a 6-inch diameter pipe line, whereas the recalculated value of 0.333 Rem is correctly based on a 12-inch diameter pipe line.

A. Is this health physics position in the control room an emergency plan required minimum staff position?

B. Does the health physics technician have other duties in addition to monitoring personnel exposure within the control room?

C. Are there plans to incorporate any warning signs or physical barriers to limit stay times in the specified higher dose areas within the control room?

Response to NRC Question 2

*Item A*

No, a health physics (HP) technician is not proposed or currently a part of the required control room staff complement. This position is fulfilled by the radiological team assigned to respond to site radiological events in accordance with the BSEP emergency response program.

*Item B*

Yes, as a part of the radiological team, a technician who performs the control room surveys/exposure monitoring may also be assigned to assist radiological conditions assessment for a particular in-plant mission. Nevertheless, the radiological team performs periodic control room habitability surveys, approximately hourly.

*Item C*

Yes, closeout activities associated with this project include placing placards in the northwest and southwest corners of the control room to identify the potential elevated dose rates in these areas in the event of a corresponding unit LOCA. An action item has been established in the plant Corrective Action Program to ensure this activity is completed. However, as stated in response to Question 1, even assuming previous worst case locations, the control room dose remains below the regulatory limit of 5 Rem TEDE.