



John S. Keenan
Vice President
Brunswick Nuclear Plant
Progress Energy Carolinas, Inc

FEB 17 2003

SERIAL: BSEP 03-0036

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0901

SUBJECT: Brunswick Steam Electric Plant, Unit No. 2
Docket No. 50-324/License No. DPR-62
Response to Request for Additional Information Regarding Technical
Specification 2.1.1.2, Reactor Core Safety Limits
Minimum Critical Power Ratio Safety Limit

Ladies and Gentlemen:

On November 7, 2002 (i.e., Serial: BSEP 02-0174), Progress Energy Carolinas, Inc. requested a revision to the Technical Specifications for the Brunswick Steam Electric Plant (BSEP), Unit No. 2. The proposed license amendment revises the Minimum Critical Power Ratio (MCPR) Safety Limit values contained in Technical Specification 2.1.1.2 from 1.09 to 1.11 for two recirculation loop operation and from 1.10 to 1.13 for single recirculation loop operation. On February 6, 2003, the NRC provided an electronic version of a request for additional information (RAI) concerning the MCPR Safety Limit amendment request. The response to this RAI is included in Enclosure 1. Some of the information contained in the response is considered proprietary by Global Nuclear Fuel – Americas, LLC and should be withheld from public disclosure in accordance with 10 CFR 9.17(a)(4) and 10 CFR 2.790(a)(4). An affidavit attesting to this fact is provided in Enclosure 2. A non-proprietary version of the response is provided in Enclosure 3.

Enclosure 4 contains an updated typed technical specification page associated with this amendment request. An editorial change has been made to Specification 2.1.1.1 to incorporate a revision previously issued by License Amendment No. 247 dated May 31, 2002. Progress Energy Carolinas, Inc. has determined that this editorial change does not affect the bases for concluding that the proposed amendment does not involve a Significant Hazards Consideration. As such, the 10 CFR 50.92 Evaluation, provided in the November 7, 2002, submittal and published in the Federal Register (i.e., 67 FR 75869, dated December 10, 2002) remains valid.

PO Box 10429
Southport, NC 28461

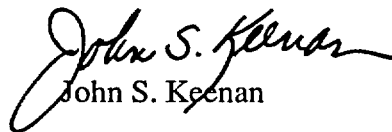
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F > 910 457 2803

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Please refer any questions regarding this submittal to Mr. Edward T. O'Neil,
Manager - Support Services, at (910) 457-3512.

Sincerely,

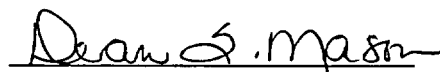

John S. Keenan

WRM/wrm

Enclosures:

1. Response to Request for Additional Information (**Proprietary Information**)
2. Global Nuclear Fuel – Americas, LLC Affidavit Regarding Withholding From Public Disclosure
3. Response to Request for Additional Information (**Non-Proprietary Version**)
4. Typed Technical Specification Page – Unit 2

John S. Keenan, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, and agents of Carolina Power & Light Company.


Notary (Seal)



My commission expires: Aug. 29, 2004

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cc (with Enclosures 1 through 4):

U. S. Nuclear Regulatory Commission, Region II
ATTN: Mr. Luis A. Reyes, Regional Administrator
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, GA 30303-8931

U. S. Nuclear Regulatory Commission
ATTN: Mr. Theodore A. Easlick, NRC Senior Resident Inspector
8470 River Road
Southport, NC 28461-8869

U. S. Nuclear Regulatory Commission
ATTN: Ms. Brenda L. Mozafari (Mail Stop OWFN 8G9)
11555 Rockville Pike
Rockville, MD 20852-2738

cc (with Enclosures 2 through 4 only):

Ms. Jo A. Sanford
Chair - North Carolina Utilities Commission
P.O. Box 29510
Raleigh, NC 27626-0510

Ms. Beverly O. Hall, Section Chief
Radiation Protection Section, Division of Radiation Protection
North Carolina Department of Environment and Natural Resources
3825 Barrett Drive
Raleigh, NC 27609-7221

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Enclosure 3

**Response to Request for Additional Information
(Non-Proprietary Version)**

NRC Requests for Additional Information for February 11, 2003
Brunswick Steam Electric Plant, Unit No. 2
Docket No. 50-324/License No. DPR-62
Request For License Amendment Regarding
Technical Specification 2.1.1.2, Reactor Core Safety Limits
Minimum Critical Power Ratio Safety Limit

NRC Question 1

Describe detailed calculation process including approved methods used, based on a plant/cycle specific parameters, to model [[
]] the entire cycle operation. Also, provide a Table to show net adjustment to SLMCPR for both dual loop operation and single loop operation including BOC, MOC and EOC.

Response

In the last paragraph of the *Summary* section of the attachment titled "Additional Information Regarding the Cycle Specific SLMCPR for Brunswick Unit 2 Cycle 16" it is stated that [[

]]. Thus a table [[

]] is not necessary. If present, the table would simply show that no adjustments were necessary to the calculated dual loop and single loop SLMCPR values. [[

]] The process for determining whether adjustments were required is documented in Reference 6 of the aforementioned attachment.

NRC Question 2

Provide description for the cause of the large increase of SLMCPR value from Cycle 15 to Cycle 16. Also, identify the major core design difference between Cycle 15 and Cycle 16 [[

]].

Response

The calculated SLMCPR value for Cycle 16 is substantially higher than for Cycle 15 because the core MCPR distribution is significantly flatter. This fact is reflected in the increase [[

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]] The conclusion is that requested Technical Specification SLMCPR value of 1.11 for dual loop operations is appropriate. The 1.13 value for single loop operation is also consistent with expectations for the Cycle 16 core.

Another aspect of the NRC request is to identify the major core design difference between Cycle 15 and Cycle 16, especially with regard to how these differences impact the increase in the calculated SLMCPR. First and foremost is the fact Cycle 16 was licensed to accommodate an additional 365 MW_{th} relative to Cycle 15. To gain the extra energy requires a larger batch size (42.5% for Cycle 16 versus 39.3% for Cycle 15) and higher batch enrichment (4.24% for Cycle 16 versus 3.99% for Cycle 15). The result is that the fresh batch of fuel produces a higher fraction of the core power in Cycle 16 compared to Cycle 15 which means that the radial power distribution must be flattened to provide operating margin at the uprated power level. Evidence of this increased flatness is given in the fact that for the limiting point in the cycles that set the cycle SLMCPR, Cycle 15 at BOC has [[

]] whereas for Cycle 16 at EOR [[

]] In fact, for

Cycle 16 at EOR, [[

]]. The impact that this increase in the flatness of the MCPR has on the calculated SLMCPR was discussed in the previous paragraph.

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Enclosure 4

Typed Technical Specification Page – Unit 2

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be \leq 23% RTP.

2.1.1.2 With the reactor steam dome pressure \geq 785 psig and core flow \geq 10% rated core flow:

MCPR shall be \geq 1.11 for two recirculation loop operation or \geq 1.13 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be \leq 1325 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.
