



Serial: NPD-NRC-2009-136  
July 6, 2009

10CFR52.79

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555-0001

**SHEARON HARRIS NUCLEAR POWER PLANT, UNITS 2 AND 3  
DOCKET NOS. 52-022 AND 52-023  
SUPPLEMENT 3 TO RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
REGARDING THE ENVIRONMENTAL REVIEW**

- Reference:
1. Letter from Donald Palmrose (NRC) to James Scarola (PEC), dated November 13, 2008, "Request for Additional Information Regarding the Environmental Review of the Combined License Application for Shearon Harris Nuclear Power Plant, Units 2 and 3"
  2. Letter from Garry D. Miller (PEC) to U.S. Nuclear Regulatory Commission dated February 12, 2009, "Response to Request for Additional Information Regarding the Environmental Review", Serial NPD-NRC-2009-017
  3. Letter from Garry D. Miller (PEC) to U.S. Nuclear Regulatory Commission dated April 28, 2009, "Supplement 1 to Response to Request for Additional Information Regarding the Environmental Review", Serial NPD-NRC-2009-082
  4. Letter from Garry D. Miller (PEC) to U.S. Nuclear Regulatory Commission dated June 5, 2009, "Supplement 2 to Response to Request for Additional Information Regarding the Environmental Review", Serial NPD-NRC-2009-099

Ladies and Gentlemen:

Progress Energy Carolinas, Inc. (PEC) hereby submits a supplemental response to the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) provided in Enclosure 1 of Reference 1.

A revised response to one of the NRC RAI questions (RAI 2.7-2) is provided in Enclosure 1. This revised response is provided to clarify items identified by your staff's review of the reference supplement dated April 28, 2009.

If you have any further questions, or need additional information, please contact Bob Kitchen at (919) 546-6992, or Garry Miller at (919) 546-6107.

DOB4  
NRD

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

Executed on July 6, 2009.

Sincerely,

A handwritten signature in black ink, appearing to read "Garry D. Miller". The signature is fluid and cursive, with the first name "Garry" being the most prominent part.

Garry D. Miller  
General Manager, Nuclear Plant Development

Enclosure/Attachment

cc : U.S. NRC Region II, Regional Administrator  
U.S. NRC Resident Inspector, SHNPP Unit 1  
Mr. Brian Hughes, U.S. NRC Project Manager  
Dr. Donald Palmrose, U.S. NRC Environmental Project Manager  
Ms. Laura Boothe, NC Division of Air Quality  
Mr. Monte K. Matthews, US Army Corps of Engineers

bc : John Elnitsky, VP-Nuclear Plant Development  
Robert Kitchen, Manager-Nuclear Plant Licensing  
Tillie Wilkins, NPD-Licensing  
John O'Neill, Jr. (Pillsbury Winthrop Shaw Pittman, LLP)  
A. K. Singh (Sargent & Lundy, LLC)  
Cynthia Malecki (Sargent & Lundy, LLC)  
Lorin Young (CH2M HILL)  
John Archer (WorleyParsons)  
NPD Document Control Inbox (Records: Correspondence)  
File: NGG-NPD (Dawn Bisson)

**Shearon Harris Nuclear Power Plant Units 2 and 3  
Supplement 3 to Response to NRC Request for Additional Information Regarding the  
Environmental Review, dated November 13, 2008**

<u>NRC RAI #</u>	<u>Progress Energy RAI #</u>	<u>Progress Energy Response</u>
7.4-1	H-0287	February 12, 2009; NPD-NRC-2009-017
5.2.1.3-1	H-0288	February 12, 2009; NPD-NRC-2009-017
5.2.2-1	H-0289	February 12, 2009; NPD-NRC-2009-017
5.2.2-2	H-0290	February 12, 2009; NPD-NRC-2009-017
5.2.2-3	H-0291	February 12, 2009; NPD-NRC-2009-017
2.3.1.3-1	H-0292	February 12, 2009; NPD-NRC-2009-017
2.7-1	H-0293	February 12, 2009; NPD-NRC-2009-017
2.7-2	H-0478	Revised response enclosed
5.3.3.1-1	H-0295	February 12, 2009; NPD-NRC-2009-017
5.3.3.1-2	H-0296	February 12, 2009; NPD-NRC-2009-017
7.1-1	H-0297	February 12, 2009; NPD-NRC-2009-017
7.2-1	H-0298	February 12, 2009; NPD-NRC-2009-017
7.2-2	H-0299	February 12, 2009; NPD-NRC-2009-017
7.3-1	H-0300	February 12, 2009; NPD-NRC-2009-017
7.3-2	H-0301	February 12, 2009; NPD-NRC-2009-017
7.3-3	H-0302	February 12, 2009; NPD-NRC-2009-017
9.2-1	H-0303	February 12, 2009; NPD-NRC-2009-017
9.4-1	H-0470	June 5, 2009; NPD-NRC-2009-099
9.4-2	H-0305	February 12, 2009; NPD-NRC-2009-017
5.4.2-1	H-0306	February 12, 2009; NPD-NRC-2009-017
4.5-1	H-0307	February 12, 2009; NPD-NRC-2009-017
4.5-2	H-0308	February 12, 2009; NPD-NRC-2009-017
2.5.3-1	H-0309	February 12, 2009; NPD-NRC-2009-017
2.5.3-2	H-0310	February 12, 2009; NPD-NRC-2009-017
2.5.3-3	H-0311	February 12, 2009; NPD-NRC-2009-017
2.4.1-1	H-0449	April 28, 2009; NPD-NRC-2009-082
2.4.1-2	H-0450	April 28, 2009; NPD-NRC-2009-082
2.4.1-3	H-0314	February 12, 2009; NPD-NRC-2009-017
4.3.1-1	H-0315	February 12, 2009; NPD-NRC-2009-017
4.3.1-2	H-0471	June 5, 2009; NPD-NRC-2009-099
4.3.1-3	H-0317	February 12, 2009; NPD-NRC-2009-017
4.3.1-4	H-0318	February 12, 2009; NPD-NRC-2009-017
2.4-2	H-0319	February 12, 2009; NPD-NRC-2009-017
4.3.2-1	H-0320	February 12, 2009; NPD-NRC-2009-017
4.3.2-2	H-0321	February 12, 2009; NPD-NRC-2009-017
4.3.2-3	H-0322	February 12, 2009; NPD-NRC-2009-017

<u>NRC RAI #</u>	<u>Progress Energy RAI #</u>	<u>Progress Energy Response</u>
4.3.2-4	H-0455	April 28, 2009; NPD-NRC-2009-082
2.4.2-1	H-0324	February 12, 2009; NPD-NRC-2009-017
6.5.2-1	H-0325	February 12, 2009; NPD-NRC-2009-017
2.4.2-2	H-0326	February 12, 2009; NPD-NRC-2009-017
2.4.2-3	H-0327	February 12, 2009; NPD-NRC-2009-017
2.4.2-4	H-0328	February 12, 2009; NPD-NRC-2009-017
5.3.1.2-1	H-0329	February 12, 2009; NPD-NRC-2009-017
4.3.2-5	H-0330	February 12, 2009; NPD-NRC-2009-017
4.3.2-6	H-0331	February 12, 2009; NPD-NRC-2009-017
5.3.4-1	H-0332	February 12, 2009; NPD-NRC-2009-017
2.4-1	H-0333	February 12, 2009; NPD-NRC-2009-017
4.1.1-1	H-0451	April 28, 2009; NPD-NRC-2009-082
3.7-1	H-0452	April 28, 2009; NPD-NRC-2009-082
2.5.2-1	H-0336	February 12, 2009; NPD-NRC-2009-017
2.5.2-2	H-0337	February 12, 2009; NPD-NRC-2009-017
2.5.4-1	H-0338	February 12, 2009; NPD-NRC-2009-017
4.4.2-1	H-0339	February 12, 2009; NPD-NRC-2009-017
2.5.2-3	H-0340	February 12, 2009; NPD-NRC-2009-017
4.4.1-2	H-0341	February 12, 2009; NPD-NRC-2009-017
4.4.1-3	H-0342	February 12, 2009; NPD-NRC-2009-017
2.5.2-4	H-0343	February 12, 2009; NPD-NRC-2009-017
10.4.2-1	H-0344	February 12, 2009; NPD-NRC-2009-017
10.4.2-2	H-0345	February 12, 2009; NPD-NRC-2009-017
10.4.1-1	H-0346	February 12, 2009; NPD-NRC-2009-017
10.4.2-3	H-0347	February 12, 2009; NPD-NRC-2009-017
10.4.3-1	H-0348	February 12, 2009; NPD-NRC-2009-017
4.1-1	H-0349	February 12, 2009; NPD-NRC-2009-017
1.2-1	H-0350	February 12, 2009; NPD-NRC-2009-017

Attachments

Technical Memo 338884-TMEM-100

Associated NRC RAI #

2.7-2

# pages

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**NRC Letter No.:** HAR-RAI-LTR-ER-NRC-001

**NRC Letter Date:** November 13, 2008

**NRC Review of Environmental Report**

**NRC RAI #:** 2.7-2

**Text of NRC RAI:**

Quantify expected direct and indirect ozone (and ozone precursor) emission rates and establish if a conformity determination is required under 40 CFR 51, Subpart W. Section 2.7.2 of the ER states that "Although Wake County is currently designated by USEPA and NCDENR to be in non-attainment of the NAAQS for ozone, the operation of the HNP facility (including the proposed units) should not result in an increase in ozone levels at any location because there will be no significant emissions of any ozone forming pollutants from the facility." Please quantify expected direct and indirect ozone (and ozone precursor) emission rates to establish if a conformity determination is required under 40 CFR 51, Subpart W.

**PGN RAI ID #:** H-478

**PGN Response to NRC RAI:**

Since the February 2008 submittal of the HAR COLA, Wake County has been re-designated as a maintenance area for ozone. Wake County is also designated as a maintenance area for carbon monoxide (CO).

The requirements of 40 CFR 51, Subpart W, specify that a conformity analysis is not required in any air quality maintenance area if the individual project-related emissions of nitrogen oxide (NO<sub>x</sub>), volatile organic compounds (VOCs) (i.e., ozone precursor pollutants) or CO will be less than 100 tons per year (tons/yr). There will be no direct emissions of ozone.

The estimated maximum annual emissions during the operation of the HAR facility (proposed Shearon Harris Nuclear Power Plant Units 2 and 3 [HAR 2 and 3]) will be well below this threshold, as follows:

<u>Pollutant</u>	<u>HAR Operating Emissions (tons/yr)</u>
NO <sub>x</sub>	16.4
VOC	3.5
CO	2.4

These emissions will be attributable to the infrequent operation (maintenance and testing) of diesel-fueled emergency generators and fire pump engines. There will be no other sources of these pollutant emissions from the HAR facility. The operation of the existing Shearon Harris Nuclear Power Plant Unit 1 (HNP 1) is expected to generate a lesser quantity of emissions than HAR 2 and 3 and the total combined emissions from both facilities will also be well below the 100 ton/yr threshold.

Estimates of the construction related air emissions during each year of construction of the HAR facility were based on the projected construction activities during each year of construction, which was assumed to occur during the period 2011 through 2017, with the peak year of construction being 2013. A summary of the construction related emissions for each year of construction is provided in Table 1. This table presents three categories of activities; namely construction equipment, onsite trucks used during construction (i.e., cement mix trucks and delivery trucks), and onsite rail emissions. The basis of the calculations used to obtain these estimates, including the types and numbers of equipment that will be used and the assumptions regarding the use of the construction equipment throughout the period of construction, are provided in a technical memorandum (338884-TMEM-100, Rev 1). A copy of this technical memorandum is provided as an attachment to this response (Attachment 001). During the year of peak construction (2013), air emissions are estimated (based on the ton/day emission estimates, 5 days/week and 52 weeks/year construction) to be as follows:

<u>Pollutant</u>	<u>2013 emissions (tons/yr)</u>
NOx	523
VOC	42
CO	185

Since the emissions of NOx and CO during the construction period will exceed 100 tons/year, a conformity analysis and demonstration will be required to demonstrate that the construction of the plant will conform to the requirements of North Carolina's State Implementation Plan (SIP) for Ozone and Carbon Monoxide. Specific conformity requirements and demonstrations will have to be evaluated and discussed with the North Carolina Department of Environment and Natural Resources (NCDENR) prior to the commencement of construction.

**Table 1**  
**Summary of Construction Related Emissions for Typical Construction Day (Tons/Day)**  
**HAR Units 2 and 3**

<b>Activities</b>	<b>Daily Emissions for Winter 2011 (tons/day)</b>		
	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.42	0.084	1.12
Onsite Rail Idling	0.0167	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.00076	0.00014	0.0013
<b>Total, Construction Emissions, tons/day</b>	<b>0.44</b>	<b>0.090</b>	<b>1.21</b>

**Daily Emissions for Summer 2011  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.42	0.084	1.12
Onsite Rail Idling	0.0167	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.00071	0.00014	0.0012
Total, Construction Emissions, tons/day	0.44	0.090	1.21

**Daily Emissions for Winter 2012  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.38	0.079	1.03
Onsite Rail Idling	0.0167	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.00066	0.00013	0.0011
Total, Construction Emissions, tons/day	0.39	0.085	1.12

**Daily Emissions for Summer 2012  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.38	0.079	1.03
Onsite Rail Idling	0.0167	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.00062	0.00013	0.0011
Total, Construction Emissions, tons/day	0.39	0.085	1.12



**Daily Emissions for Winter 2013  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.69	0.15	1.91
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1)(2)</sup>	0.0032	0.00084	0.0066
Total, Construction Emissions, tons/day	0.71	0.16	2.01

**Daily Emissions for Summer 2013  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.69	0.15	1.91
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1)(2)</sup>	0.0030	0.00082	0.0061
Total, Construction Emissions, tons/day	0.71	0.16	2.01

**Daily Emissions for Winter 2014  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.64	0.14	1.74
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1)(2)</sup>	0.0028	0.00080	0.0056
Total, Construction Emissions, tons/day	0.66	0.15	1.84

**Daily Emissions for Summer 2014  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.64	0.14	1.74
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.0027	0.00079	0.0052
Total, Construction Emissions, tons/day	0.66	0.15	1.84

**Daily Emissions for Winter 2015  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.57	0.13	1.54
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.0025	0.00076	0.0049
Total, Construction Emissions, tons/day	0.59	0.14	1.63

**Daily Emissions for Summer 2015  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.57	0.13	1.54
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.0023	0.00075	0.0045
Total, Construction Emissions, tons/day	0.59	0.14	1.6

**Daily Emissions for Winter 2016  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.33	0.074	0.88
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.0016	0.00053	0.0030
Total, Construction Emissions, tons/day	0.34	0.081	0.97

**Daily Emissions for Summer 2016  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.33	0.074	0.88
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.0015	0.00052	0.0029
Total, Construction Emissions, tons/day	0.34	0.081	0.97

**Daily Emissions for Winter 2017  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.11	0.029	0.33
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.00031	0.00011	0.00055
Total, Construction Emissions, tons/day	0.13	0.035	0.42

**Daily Emissions for Summer 2017  
(tons/day)**

<b>Activities</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>
Construction Equipment	0.11	0.029	0.33
Onsite Rail Idling	0.017	0.0061	0.087
Onsite Trucks <sup>(1) (2)</sup>	0.00030	0.00011	0.00052
Total, Construction Emissions, tons/day			
	0.13	0.035	0.42

**Notes:**

- (1) Delivery and concrete mix trucks.
- (2) Includes emissions from delivery trucks during normal operation and idling.

**Associated HAR COL Application Revisions:**

The following changes will be made in a future revision of the HAR COLA:

The second and third paragraphs of ER Subsection 2.7.2 "Regional Air Quality" will be revised in a future revision from:

"The HAR site is located in Wake County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as being in non-attainment of the NAAQS for 8-hour Ozone Subpart I and in attainment for the remaining NAAQS (Reference 2.7-007). Wake County is also designated as a CO maintenance area. The county was re-designated as being in attainment for CO on September 18, 1995 (Reference 2.7-008).

The North Carolina Department of Environment and Natural Resources (NCDENR) operates a network of ambient air quality monitoring stations throughout the State. The NCDENR separates the State into seven regions. The HAR site is located in the Raleigh region, which includes 13 monitoring locations. Three of the monitoring stations are located within Wake County. These stations monitor for various NAAQS criteria pollutants (i.e., ozone, PM2.5, particulate matter of 10 µm and smaller [PM10], sulphur dioxide [SO2], and CO) (Reference 2.7-008 and Reference 2.7-009). Although Wake County is currently designated by USEPA and NCDENR to be in nonattainment of the NAAQS for ozone, the operation of the HNP facility (including the proposed units) should not result in an increase in ozone levels at any location because there will be no significant emissions of any ozone forming pollutants from the facility."

to read:

"The HAR site is located in Wake County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as a maintenance area for the 8-hour Ozone

standard and in attainment for the remaining NAAQS (Reference 2.7-007). Wake County is also designated as a CO maintenance area. The county was re-designated as being in attainment for CO on September 18, 1995 (Reference 2.7-008).

The North Carolina Department of Environment and Natural Resources (NCDENR) operates a network of ambient air quality monitoring stations throughout the State. The NCDENR separates the State into seven regions. The HAR site is located in the Raleigh region, which includes a network of monitoring locations. Several of the monitoring stations are located within Wake County. These stations monitor for various NAAQS criteria pollutants (i.e., ozone, PM2.5, particulate matter of 10 µm and smaller [PM10], sulfur dioxide [SO2], and CO) (Reference 2.7-008 and Reference 2.7-009). Although Wake County is currently designated by USEPA and NCDENR as a maintenance area for ozone and CO, the operation of the HNP facility (including the proposed units) is not expected to result in a significant change in air quality in the county as a result of the construction or operation of the proposed units 2 and 3. Because the construction-related emissions of NOx (an ozone forming pollutant) CO are expected to exceed the thresholds in 40 CFR 51, Subpart W (Determining Conformity of General Federal Actions to State or Federal Implementation Plans), a conformity determination will be required prior to construction of the proposed facilities.”

ER Table 2.7-3 (Sheet 2 of 2) will be revised to remove Wake County from the list of nonattainment areas for the 8-hour ozone and for the CO standard.

The third paragraph of FSAR Subsection 2.3.1.2.6 “Inversions and High Air Pollution Potential” will be revised to reflect the re-designation of Wake County from “nonattainment area” to “maintenance area” for ozone and CO.

**Attachments/Enclosures:**

Attachment 001-Technical Memorandum 338884-TMEM-100, Rev 1.

List of Attachments:

1. NRC RAI # 2.7-2 (PGN RAI ID # H-0478):

Attachment 001-Technical Memorandum 338884-TMEM-100, Rev 1 [218 pages]