Progress Energy

Serial: NPD-NRC-2009-025 10CFR52.79
February 19, 2009

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 1 TO RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 004 RELATED TO LONG-TERM ATMOSPHERIC DISPERSION ESTIMATES FOR ROUTINE RELEASES

Reference: Letter from Manny Comar (NRC) to James Scarola (PEC), dated August 13, 2008, "Request for Additional Information Letter No. 004 Related to SRP Section 02.03.05 for the Harris Units 2 and 3 Combined License Application"

Letter from James Scarola (PEC) to U. S. Nuclear Regulatory Commission (NRC), dated September 11, 2008, "Response to Request for Additional Information Letter No. 004 Related to Long-Term Atmospheric Dispersion Estimates for Routine Releases," Serial: NPD-NRC-2008-030

Ladies and Gentlemen:

Progress Energy Carolinas, Inc. (PEC) hereby submits a supplementary response to the Nuclear Regulatory Commission's (NRC) request for additional information provided in the referenced letter.

A revised response to the NRC request is addressed in the enclosure. The enclosure also identifies changes that will be made in a future revision of the Shearon Harris Nuclear Power Plant Units 2 and 3 application.

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

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

Executed on February 19, 2009.

Sincerely,

Garry D. Miller
General Manager
Nuclear Plant Development

Enclosure

Progress Energy Carolinas, Inc.
P.O. Box 1551
Raleigh, NC 27602

D084
NRO

cc : U.S. NRC Director, Office of New Reactors/NRLPO
U.S. NRC Office of Nuclear Reactor Regulation/NRLPO
U.S. NRC Region II, Regional Administrator
U.S. NRC Resident Inspector, SHNPP Unit 1
Mr. Manny Comar, U.S. NRC Project Manager

Shearon Harris Nuclear Power Plant Units 2 and 3
Supplement 1 to Response to NRC Request for Additional Information Letter No. 004
Related to SRP Section 02.03.05 for the Combined License Application,
dated August 13, 2008

NRC RAI #	Progress Energy RAI #	Progress Energy Response
02.03.05-1	H-0035	September 11, 2008; Serial: NPD-NRC-2008-030
02.03.05-2	H-0036	September 11, 2008; Serial: NPD-NRC-2008-030
02.03.05-3	H-0037	September 11, 2008; Serial: NPD-NRC-2008-030
02.03.05-4	H-0415	Revised response enclosed – see following pages

NRC Letter No.: HAR-RAI-LTR-004

NRC Letter Date: August 13, 2008

NRC Review of Final Safety Analysis Report

NRC RAI #: 02.03.05-4

Text of NRC RAI:

In accordance with AP1000, Rev. 16, DCD Tier 2 Section 2.3.6.5 please include a table in FSAR Section 2.3.5 that shows that the maximum annual average site characteristic X/Q value is within the bounds of the corresponding site parameter value.

PGN RAI ID #: H-0415

PGN Response to NRC RAI:

FSAR Table 2.0-201 provides a comparison of the HAR maximum average annual site characteristic X/Q value and the DCD site boundary average annual X/Q. The HAR X/Q is shown to be within the bounds of the DCD value.

The distance to the HAR Exclusion Area Boundary (EAB) is also being revised in the seven southerly sectors (ESE through WSW) from 1245 m to 1600 m as described in the HAR response to NRC RAI # 15.00.03-1 (reference PGN RAI H-0249 in PEC letter dated November 25, 2008; serial NPD-NRC-2008-069) and the X/Q and D/Q values at the revised EAB distance have been recalculated. As a result of this change, the maximum average annual site characteristic X/Q value in FSAR Table 2.0-201 is being revised from 1.78×10^{-6} to 6.00×10^{-6} sec/m^3, which remains bounded by the DCD Site Parameter of 2.0×10^{-5} sec/m^3.

Associated HAR COL Application Revisions:

The following changes will be made to the HAR FSAR in a future revision:

1. Change the HAR maximum average annual site characteristic X/Q value in FSAR Table 2.0-201 (Sheet 8 of 9) from 1.78×10^{-6} sec/m^3 to 6.00×10^{-6} sec/m^3. Change the reference for this value from Table 2.3.4-205 to Table 2.3.5-201.

2. In the last paragraph of FSAR Subsection 2.3.5.2, change the site characteristic maximum annual average dispersion factor from 8.80E-06 to 6.00E-06.

3. Insert the following new text into FSAR Subsection 2.3.5.2 at the end of the subsection:

   "The DCD site boundary average annual X/Q is 2.0×10^{-5} sec/m^3. This bounds the HAR average annual EAB X/Q value. Table 2.0-201 provided a comparison of the HAR site characteristics with the DCD design parameters."

4. On the first sheet of FSAR Tables 2.3.5-201, -202, -203, and -204, revise the EAB distances to 1600 m and the X/Q and D/Q values in the seven southerly sectors (ESE through WSW) as indicated in the tables shown on the following pages.

Attachments/Enclosures:

None.

HAR COL 2.3-5

Table 2.3.5-201 (Sheet 1 of 3)
Long-Term Chi/Q (in sec/m^3) Calculations for Routine Releases for HAR 2 and HAR 3

	Exclusion Area Boundary		Low Population Zone[a]		Nearest Milk Cow		Nearest Milk Goat		Nearest Garden		Nearest Meat Animal	
Downwind Sector	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q
N	1245	2.30E-06	4959	3.10E-07	2973	6.50E-07	7472	1.80E-07	2974	6.50E-07	2974	6.50E-07
NNE	1245	2.80E-06	4925	3.90E-07	4297	4.70E-07	7630	2.10E-07	2668	9.30E-07	2668	9.30E-07
NE	1245	2.60E-06	4876	3.70E-07	7851	1.90E-07	7851	1.90E-07	7851	1.90E-07	7851	1.90E-07
ENE	1245	2.80E-06	4832	4.10E-07	8100	2.00E-07	8100	2.00E-07	8100	2.00E-07	8100	2.00E-07
E	1245	2.10E-06	4887	3.10E-07	8338	1.50E-07	8338	1.50E-07	2994	6.10E-07	2994	6.10E-07
ESE	1600	1.80E-06	4934	4.00E-07	8530	1.90E-07	8530	1.90E-07	7887	2.10E-07	7887	2.10E-07
SE	1600	1.90E-06	4964	4.20E-07	8651	2.00E-07	8651	2.00E-07	7202	2.50E-07	4790	4.40E-07
SSE	1600	2.90E-06	4973	6.60E-07	8686	3.20E-07	8686	3.20E-07	7398	3.90E-07	7398	3.90E-07
S	1600	5.50E-06	4959	1.30E-06	8631	6.20E-07	8631	6.20E-07	8631	6.20E-07	8631	6.20E-07
SSW	1600	6.00E-06	4925	1.40E-06	8492	7.10E-07	8492	7.10E-07	6565	9.80E-07	8492	7.10E-07
SW	1600	4.10E-06	4876	9.60E-07	8287	4.90E-07	8287	4.90E-07	4922	9.50E-07	4922	9.50E-07
WSW	1600	2.30E-06	4832	5.30E-07	8044	2.70E-07	8044	2.70E-07	7242	3.10E-07	7242	3.10E-07
W	1245	2.20E-06	4887	3.40E-07	7798	1.80E-07	7798	1.80E-07	4754	3.50E-07	4754	3.50E-07
WNW	1245	1.70E-06	4934	2.50E-07	7588	1.40E-07	7588	1.40E-07	7588	1.40E-07	7588	1.40E-07
NW	1245	1.50E-06	4964	2.10E-07	7449	1.20E-07	7449	1.20E-07	7449	1.20E-07	7449	1.20E-07
NNW	1245	1.70E-06	4973	2.30E-07	7408	1.30E-07	7408	1.30E-07	2580	5.90E-07	2580	5.90E-07

HAR COL 2.3-5

Table 2.3.5-202 (Sheet 1 of 3)
Long-Term Average D/Q (in m^{-2}) Calculations for Routine Releases for HAR 2 and HAR 3

	Exclusion Area Boundary		Low Population Zone[a]		Nearest Milk Cow		Nearest Milk Goat		Nearest Garden		Nearest Meat Animal	
Downwind Sector	Distance (m)	D/Q	Distance (m)	D/Q	Distance (m)	D/Q	Distance (m)	D/Q	Distance (m)	D/Q	Distance (m)	D/Q
N	1245	5.90E-09	4959	5.40E-10	2973	1.30E-09	7472	2.60E-10	2974	1.30E-09	2974	1.30E-09
NNE	1245	6.40E-09	4925	5.90E-10	4297	7.50E-10	7630	2.70E-10	2668	1.70E-09	2668	1.70E-09
NE	1245	6.10E-09	4876	5.70E-10	7851	2.40E-10	7851	2.40E-10	7851	2.40E-10	7851	2.40E-10
ENE	1245	7.40E-09	4832	7.10E-10	8100	2.80E-10	8100	2.80E-10	8100	2.80E-10	8100	2.80E-10
E	1245	3.80E-09	4887	3.60E-10	8338	1.40E-10	8338	1.40E-10	2994	8.50E-10	2994	8.50E-10
ESE	1600	3.00E-09	4934	4.30E-10	8530	1.60E-10	8530	1.60E-10	7887	1.80E-10	7887	1.80E-10
SE	1600	3.70E-09	4964	5.20E-10	8651	1.90E-10	8651	1.90E-10	7202	2.70E-10	4790	5.50E-10
SSE	1600	4.70E-09	4973	6.50E-10	8686	2.40E-10	8686	2.40E-10	7398	3.20E-10	7398	3.20E-10
S	1600	7.30E-09	4959	1.00E-09	8631	3.80E-10	8631	3.80E-10	8631	3.80E-10	8631	3.80E-10
SSW	1600	7.20E-09	4925	1.00E-09	8492	3.90E-10	8492	3.90E-10	6565	6.10E-10	8492	3.90E-10
SW	1600	5.10E-09	4876	7.40E-10	8287	2.80E-10	8287	2.80E-10	4922	7.20E-10	4922	7.20E-10
WSW	1600	3.40E-09	4832	5.00E-10	8044	2.00E-10	8044	2.00E-10	7242	2.40E-10	7242	2.40E-10
W	1245	3.40E-09	4887	3.10E-10	7798	1.40E-10	7798	1.40E-10	4754	3.30E-10	4754	3.30E-10
WNW	1245	2.80E-09	4934	2.60E-10	7588	1.20E-10	7588	1.20E-10	7588	1.20E-10	7588	1.20E-10
NW	1245	3.00E-09	4964	2.70E-10	7449	1.30E-10	7449	1.30E-10	7449	1.30E-10	7449	1.30E-10
NNW	1245	3.90E-09	4973	3.50E-10	7408	1.70E-10	7408	1.70E-10	2580	1.10E-09	2580	1.10E-09

HAR COL 2.3-5

Table 2.3.5-203 (Sheet 1 of 3)
Long-Term Average Chi/Q (in sec/m^3) Calculations (2.26-Day Decay) for Routine Releases for HAR 2 and HAR 3

	Exclusion Area Boundary		Low Population Zone[a]		Nearest Milk Cow		Nearest Milk Goat		Nearest Garden		Nearest Meat Animal	
Downwind Sector	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q
N	1245	2.30E-06	4959	3.10E-07	2973	6.40E-07	7472	1.70E-07	2974	6.40E-07	2974	6.40E-07
NNE	1245	2.80E-06	4925	3.80E-07	4297	4.60E-07	7630	2.00E-07	2668	9.10E-07	2668	9.10E-07
NE	1245	2.60E-06	4876	3.60E-07	7851	1.80E-07	7851	1.80E-07	7851	1.80E-07	7851	1.80E-07
ENE	1245	2.70E-06	4832	3.90E-07	8100	1.90E-07	8100	1.90E-07	8100	1.90E-07	8100	1.90E-07
E	1245	2.10E-06	4887	3.00E-07	8338	1.50E-07	8338	1.50E-07	2994	6.00E-07	2994	6.00E-07
ESE	1600	1.80E-06	4934	3.80E-07	8530	1.80E-07	8530	1.80E-07	7887	2.00E-07	7887	2.00E-07
SE	1600	1.90E-06	4964	4.00E-07	8651	1.90E-07	8651	1.90E-07	7202	2.40E-07	4790	4.20E-07
SSE	1600	2.90E-06	4973	6.30E-07	8686	3.00E-07	8686	3.00E-07	7398	3.70E-07	7398	3.70E-07
S	1600	5.40E-06	4959	1.20E-06	8631	5.70E-07	8631	5.70E-07	8631	5.70E-07	8631	5.70E-07
SSW	1600	5.90E-06	4925	1.40E-06	8492	6.60E-07	8492	6.60E-07	6565	9.20E-07	8492	6.60E-07
SW	1600	4.00E-06	4876	9.30E-07	8287	4.60E-07	8287	4.60E-07	4922	9.10E-07	4922	9.10E-07
WSW	1600	2.30E-06	4832	5.10E-07	8044	2.50E-07	8044	2.50E-07	7242	2.90E-07	7242	2.90E-07
W	1245	2.20E-06	4887	3.30E-07	7798	1.70E-07	7798	1.70E-07	4754	3.40E-07	4754	3.40E-07
WNW	1245	1.60E-06	4934	2.40E-07	7588	1.30E-07	7588	1.30E-07	7588	1.30E-07	7588	1.30E-07
NW	1245	1.50E-06	4964	2.10E-07	7449	1.20E-07	7449	1.20E-07	7449	1.20E-07	7449	1.20E-07
NNW	1245	1.70E-06	4973	2.30E-07	7408	1.30E-07	7408	1.30E-07	2580	5.80E-07	2580	5.80E-07

HAR COL 2.3-5

Table 2.3.5-204 (Sheet 1 of 3)
Long-Term Average Chi/Q (in sec/m^3) Calculations (Depleted and 8-Day Decayed) for Routine Releases for HAR 2 and HAR 3

	Exclusion Area Boundary		Low Population Zone[a]		Nearest Milk Cow		Nearest Milk Goat		Nearest Garden		Nearest Meat Animal	
Downwind Sector	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q	Distance (m)	Chi/Q
N	1245	2.00E-06	4959	2.50E-07	2973	5.40E-07	7472	1.30E-07	2974	5.40E-07	2974	5.40E-07
NNE	1245	2.50E-06	4925	3.10E-07	4297	3.80E-07	7630	1.60E-07	2668	7.80E-07	2668	7.80E-07
NE	1245	2.30E-06	4876	2.90E-07	7851	1.40E-07	7851	1.40E-07	7851	1.40E-07	7851	1.40E-07
ENE	1245	2.50E-06	4832	3.20E-07	8100	1.50E-07	8100	1.50E-07	8100	1.50E-07	8100	1.50E-07
E	1245	1.90E-06	4887	2.50E-07	8338	1.10E-07	8338	1.10E-07	2994	5.10E-07	2994	5.10E-07
ESE	1600	1.60E-06	4934	3.10E-07	8530	1.40E-07	8530	1.40E-07	7887	1.60E-07	7887	1.60E-07
SE	1600	1.70E-06	4964	3.30E-07	8651	1.50E-07	8651	1.50E-07	7202	1.90E-07	4790	3.40E-07
SSE	1600	2.60E-06	4973	5.20E-07	8686	2.30E-07	8686	2.30E-07	7398	2.90E-07	7398	2.90E-07
S	1600	4.80E-06	4959	9.80E-07	8631	4.40E-07	8631	4.40E-07	8631	4.40E-07	8631	4.40E-07
SSW	1600	5.20E-06	4925	1.10E-06	8492	5.10E-07	8492	5.10E-07	6565	7.40E-07	8492	5.10E-07
SW	1600	3.60E-06	4876	7.60E-07	8287	3.60E-07	8287	3.60E-07	4922	7.50E-07	4922	7.50E-07
WSW	1600	2.00E-06	4832	4.20E-07	8044	2.00E-07	8044	2.00E-07	7242	2.30E-07	7242	2.30E-07
W	1245	2.00E-06	4887	2.70E-07	7798	1.30E-07	7798	1.30E-07	4754	2.80E-07	4754	2.80E-07
WNW	1245	1.50E-06	4934	1.90E-07	7588	1.00E-07	7588	1.00E-07	7588	1.00E-07	7588	1.00E-07
NW	1245	1.30E-06	4964	1.70E-07	7449	9.20E-08	7449	9.20E-08	7449	9.20E-08	7449	9.20E-08
NNW	1245	1.50E-06	4973	1.80E-07	7408	1.00E-07	7408	1.00E-07	2580	4.90E-07	2580	4.90E-07