



Serial: NPD-NRC-2009-030
February 20, 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 1 TO RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION LETTER
NO. 031 RELATED TO CONTROL ROOM HABITABILITY SYSTEM**

Reference: Letter from Ravindra G. Joshi (NRC) to James Scarola (PEC), dated October 15, 2008, "Request for Additional Information Letter No. 031 Related to SRP Section 6.4 for the Harris Units 2 and 3 Combined License Application".

Letter from Garry D. Miller (PEC) to U. S. Nuclear Regulatory Commission (NRC), dated November 17, 2008, "Response to Request for Additional Information Letter No. 031 Related to Control Room Habitability System," Serial: NPD-NRC-2008-068

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 20, 2009.

Sincerely,

Garry D. Miller
General Manager
Nuclear Plant Development

Enclosure

D084
A102

NRC

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. 031
Related to SRP Section 6.4 for the Combined License Application,
dated October 15, 2008**

<u>NRC RAI #</u>	<u>Progress Energy RAI #</u>	<u>Progress Energy Response</u>
06.04-3	H-0387	Revised response enclosed – see following pages

NRC Letter No.: HAR-RAI-LTR-031

NRC Letter Date: October 15, 2008

NRC Review of Final Safety Analysis Report

NRC RAI #: 06.04-3

Text of NRC RAI:

- a. DCD COL Item 6.4-1, "Local Hazardous Gas Services and Monitoring", states, "Combined License applicant's referencing the AP1000 certified design are responsible for the amount and location of possible sources of hazardous chemicals in or near the plant and for seismic Category I Class 1E hazardous chemical monitoring as required." Harris FSAR section 6.4.4.2, "Toxic Chemical Habitability Analysis", does not address COL Item 6.4-1 in detail; instead it refers to FSAR section 2.2.3 for the toxic chemical habitability analysis. Section 2.2.3 refers to Sections 2.2.1 and 2.2.2 for toxic chemical data. Section 2.2.2.2 states that materials stored on-site at HNP are described in section 6.4 of the Unit 1 FSAR. Chemicals stored on-site for HAR are described in DCD Table 6.4-1. Based on the above, the applicant has not addressed COL item 6.4-1 adequately.

Of the Westinghouse AP1000 suggested chemicals listed in DCD Table 6.4-1 and other site specific chemicals, provide the details of the amounts used and the locations considered in addressing the potential control room habitability impacts.

Provide the details of the site specific hazardous chemicals that are stored within 0.3 miles of the control room in a quantity greater than 100 lbs. In the response, address how Control Room Habitability was evaluated.

- b. The capability of the control room habitability systems to maintain a suitable environment for prolonged occupancy throughout the toxic gas release, as well as the other events in Chapter 15 is based on the AP1000 assumption of a maximum of 11 operators in the control room. Do plant procedures specify the maximum number of operators allowed in the control room when the habitability systems are intended to protect the control room occupants?

During a postulated toxic gas emergency, the control room operators have the option of manually actuating the emergency habitability system as described in the AP1000 DCD. What guidance does Harris provide to the Operators, during a postulated hazardous chemical release scenario, to exercise this option or other protective measures?

Since it appears no chemical detection instruments are available, the operators will rely on using their sense of smell to detect hazardous chemicals. Please specify what actions will occur if a postulated hazardous chemical concentration in the control room is at or above the odor detection threshold. What response is expected by the Operators? Explain how this response assures protection for the operator against postulated chemical releases.

PGN RAI ID #: H-0387

PGN Response to NRC RAI:

- a. The Westinghouse DCD evaluated chemicals, along with quantity and location, are identified in the proposed COL Application Revisions shown below with an LMA of STD SUP 6.4-1. As indicated in DCD Subsection 6.4.4, the analysis of these sources was in accordance with Regulatory Guide 1.78 and the methodology in NUREG-0570, and the analysis showed that "these sources do not represent a toxic hazard to control room personnel." The STD SUP items are supported by the NRC's AP1000 FSER (NUREG-1793) Subsection 6.4 which indicated "The staff performed an independent evaluation. On the basis of the data Westinghouse furnished regarding quantity, sizes, and locations, the staff concludes that these onsite chemicals meet the guidelines of RG 1.78, Revision 1." The hazards identified in the DCD have been evaluated in a standard manner (as discussed in the DCD) and these evaluations are relied upon to support the hazard information in the COLA. The discussion of these hazards identified in the DCD is incorporated by reference into the COLA. (Note that DCD Table 6.4-1 has recently been identified as to be revised by Westinghouse to include the line item for hydrogen in the liquid state which is reflected in the attached proposed Application Revision. See WEC letter DCP/NRC2345 dated January 19, 2009.)

As part of the evolving design details, Westinghouse has modified the specified quantities and/or locations for some of the chemicals in the original MCR chemical hazards calculation. The specific DCD Table 6.4-1 volume or location changes for the chemicals evaluated in the original chemical hazards calculation have been assessed using the same calculation methodologies and results and were found to be satisfactory in protecting the MCR from these hazards. These revisions are included in the proposed COL Application Revisions shown below with an LMA of STD COL 6.4-1 and include increases in the quantities of CO₂, Nitrogen and algicide.

The onsite chemicals list of DCD Table 6.4-1 envelops the chemicals in use at Harris Unit 1. Based on their site location relative to the HAR Units 2 and 3 Control Room, the potential impact of these chemicals on control room habitability is bounded by the DCD evaluations. COLA Section 2.2.3.1.3, Toxic Chemicals, currently states "There are no site-specific sources of airborne hazardous materials stored on the Harris site in sufficient quantity to affect Control Room habitability." In summary, the on-site quantities of chemicals listed in DCD Table 6.4-1 which are stored within 0.3 miles of the control room in a quantity greater than 100 lbs have been evaluated and determined to not represent a hazard to control room habitability.

Future HAR changes to new COLA FSAR Table 6.4-201 will be made in accordance with the applicable requirements. Such changes may involve providing details regarding onsite locations and quantities for those chemicals listed in DCD Table 6.4-1 or for newly identified chemicals. An analysis will be performed in accordance with RG 1.78 and the methodology in NUREG-0570 in the event there are non-conservative, plant specific deviations from DCD Table 6.4-1 or for new chemicals with a quantity greater than 100 lbs and that are stored within 0.3 miles of the control room.

- b. To support FSAR Chapter 15 accident scenarios respirators and protective clothing are available in the control room for 11 persons. This equipment may be used by Operations

personnel as required to protect the health and safety of the public in shutting down the reactor and maintaining it in a safe shutdown condition during any emergency scenario. Operating procedures specify removal of non-essential personnel from the control room upon declaration of a radiological event.

HAR COL 9.4-1b states, 'Section 6.4 does not identify any toxic emergencies that require the main control room/technical support center area HVAC to enter recirculation mode.' DCD section 9.4.1.2.2, Component Description, describes the components of the Main Control Room/Control Support Area HVAC Subsystem of the Nuclear Island Nonradioactive Ventilation System (VBS), which includes particulate monitors and supplemental air filtration units using both charcoal adsorbers and NEPA filters. DCD sections 9.4.1.2.1.1 and 9.4.1.2.3.1 define how the Main Control Room/Control Support Area HVAC Subsystem of the VBS can be used to deal with smoke and other airborne contaminants and maintain the air quality within the Main Control Room. Operators would use the VBS system to mitigate adverse effects during a postulated toxic gas emergency prior to actuation of the Main Control Room Emergency Habitability System (VES).

FSAR Chapter 15 does not identify an accident scenario involving control room habitability following postulated toxic gas emergency. Neither the Harris plant nor the AP-1000 standard plant utilize quantities of chemicals, such as Chlorine, that can be considered to be Immediately Dangerous to Life and Health based on NUREG-0570 evaluation methodologies.

Associated HAR COL Application Revisions:

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

1. COLA Part 2, FSAR Chapter 2, Subsection 2.2.3.1.3, 2nd paragraph, 2nd line will be revised from:

There are no site-specific sources of airborne hazardous materials stored on the Harris site in sufficient quantity to affect Control Room habitability.

To read:

There are no toxic gas release event hazards identified for the Harris site from hazardous chemicals that are outside the scope of the DCD identified in Table 6.4-201.

2. COLA Part 2, FSAR Chapter 6, Subsection 6.4.4 will be revised to add the following information with LMAs STD SUP 6.4-1 and / or STD COL 6.4-1

Insert the following sentence at the end of Subsection 6.4.4.2:

Table 6.4-201 provides additional details regarding the evaluated onsite chemicals.

3. COLA Part 2, FSAR Chapter 6, a new Table 6.4-201 (including LMAs) will be added as shown on the following page.

{Note that the DCD evaluated hazards are identified in FSAR Table 6.4-201 as standard supplemental (STD SUP) material. Revisions to the amounts and distances evaluated by WEC since the time of the DCD material approval are identified as standard COL information item (STD COL) material. Any additional site specific chemicals used, along with quantities and locations stored onsite will also be identified in the new FSAR Table 6.4-201 as site specific COL information item (HAR COL) material. This note is for reviewer information only and is not a part of the COLA change.}

Table 6.4-201
Onsite Chemicals⁽¹⁾

	Material	State	Quantity	Distance to MCR Intake	Location
STD SUP 6.4-1	Hydrogen	Gas	500 ft ³	375 ft	Gas storage
STD SUP 6.4-1	Hydrogen	Liquid	2000 gal	375 ft	Gas storage
STD COL 6.4-1	Nitrogen	Liquid	1500 gal	328 ft	Gas storage
STD COL 6.4-1	CO2	Liquid	6 tons	328 ft	Gas storage
STD SUP 6.4-1	Oxygen Scavenger [Hydrazine]	Liquid	1600 gal	245 ft	Turbine building
STD SUP 6.4-1	pH Addition [Morpholine]	Liquid	1600 gal	245 ft	Turbine building
STD SUP 6.4-1	Sulfuric Acid	Liquid	20,000 gal	328 ft	Turbine building
STD SUP 6.4-1	Sodium Hydroxide	Liquid	20,000 gal	328 ft	Turbine building
STD SUP 6.4-1	Fuel Oil	Liquid	200,000 gal	328 ft	DG fuel oil storage tank; DG building; Annex building
STD SUP 6.4-1	Corrosion Inhibitor [Sodium Molybdate (molybdic acid, disodium salt)]	Liquid	5000 gal	328 ft	Turbine building
STD SUP 6.4-1	Scale Inhibitor [Sodium Hexametaphosphate]	Liquid	5000 gal	328 ft	Turbine building
STD SUP 6.4-1	Biocide/Disinfectant [Sodium hypochlorite]	Liquid	10,000 gal	378 ft	Turbine building
STD COL 6.4-1	Algicide [Ammonium comp polyethoxylate]	Liquid	800 gal	378 ft	Turbine building

Notes: (1). This table supplements DCD Table 6.4-1. Volumes are by container content per unit.

Attachments/Enclosures:

None.