



Serial: NPD-NRC-2011-014
March 1, 2011

10 CFR 52.79

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
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 077 RELATED TO
RADIATION PROTECTION**

Reference: Letter from Donald Habib (NRC) to John Elnitsky (PEC), dated January 21, 2011,
"Request for Additional Information Letter No. 077 Related to SRP Section
12.3-13.4, Radiation Protection Design Features for the Shearon Harris Units 2 and
3 Combined License Application"

Ladies and Gentlemen:

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

A response to each 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 (727) 820-4481.

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

Executed on March 1, 2011.

Sincerely,

John Elnitsky
Vice President
New Generation Programs & Projects

Enclosure

cc : U.S. NRC Region II, Regional Administrator
U.S. NRC Resident Inspector, SHNPP Unit 1
Mr. Brian Hughes, U.S. NRC Project Manager

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**Shearon Harris Nuclear Power Plant Units 2 and 3
Request for Additional Information Letter No. 077 Related to SRP Section 12.3-13.4,
Radiation Protection Design Features for the Combined License Application,
dated January 21, 2011**

NRC RAI #

12.03-12.04-2

Progress Energy RAI #

H-0653

Progress Energy Response

Response enclosed – see following pages

NRC Letter No.: HAR-RAI-LTR-077

NRC Letter Date: January 21, 2011

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.03-12.04-2

Text of NRC RAI:

Harris Supplement 11.2-2, in FSAR Subsection 11.2.1.2.4 of the Shearon Harris COL application, states that the "HAR site WLS effluent discharge release point is where the WLS effluent discharge pipe connects to the cooling tower blowdown pipe." This description of the WLS discharge point is inconsistent with the NRC guidance of RGs 1.143 and 1.206 and SRP Section 11.2. The NRC guidance states that an applicant should define the boundary of the WLS beginning at the interface from plant systems provided for the collection of process streams and radioactive liquid wastes to the point of controlled discharge to the environment (as would be defined in an Offsite Dose Calculation Manual (ODCM)), or at the point of recycling to the primary or secondary water system storage tanks for liquids and liquid wastes produced during normal operation and anticipated operational occurrences. The description provided in Subsection 11.2.1.2.4 of the Shearon Harris FSAR appears to exclude a segment of the discharge path, i.e., the discharge pipe from the cooling tower blowdown to the point of release into the environment beyond the owner-controlled area or EAB. For the HAR site, the effluent discharge release point would be the point at which the HAR blowdown pipeline enters the Harris Reservoir. Therefore:

- 1) Verify that the WLS effluent discharge release point is the point of controlled discharge to the environment beyond the owner-controlled area or EAB (i.e., at the point where the WLS effluent discharge pipe enters the Harris Reservoir). Include a description of the location of the effluent discharge release point in FSAR Subsection 11.2.1.2.4 of the Shearon Harris COL FSAR.

FSAR Subsection 11.2.1.2.4 of the Shearon Harris COL application provides a brief description of the configuration of the radwaste discharge piping between the auxiliary building and the radwaste building and between the radwaste building and the point where the WLS effluent discharge pipe connects to the cooling tower blowdown pipe. This section states that the exterior piping is designed to preclude inadvertent or unidentified releases to the environment. Further, this section states that no valves, vacuum breakers, or other fittings will be incorporated outside the buildings, thereby greatly reducing the potential for undetected leakage from this discharge piping to the environment at a non-licensed release point. The staff finds that the design features associated with this piping are in accordance with the guidance contained in RG 4.21, "Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning," and comply with the requirements of 10 CFR 20.1406.

No description, however, appears to be included in this FSAR section for the design features associated with the portion of discharge piping running between the cooling tower blowdown pipe and the point where the WLS effluent discharge pipe enters the Harris Reservoir. Provide a description of the design features associated with this segment of the WLS effluent discharge

pipe which serve to reduce the potential for undetected leakage to the environment. As part of this description, address the following:

- 2) Provide a description of the piping material which will be used for this portion of the discharge piping and describe whether this piping segment will be run above ground or underground.
- 3) State the length of this portion of the discharge piping between the cooling tower blowdown pipe and the point where the WLS effluent discharge pipe enters the Harris Reservoir.
- 4) Verify that this length of discharge piping will contain no valves, vacuum breakers, or other fittings that could contribute to leakage from this piping. Describe any other design features associated with this piping that are incorporated to minimize contamination of the environment, in accordance with 10 CFR 20.1406 and the guidance contained in RG 4.21.
- 5) Describe how this length of pipe will be monitored for leakage (e.g., visual inspections, use of monitoring wells, leak detection equipment) as part of the Groundwater Monitoring Program described in NEI 08-08A.

Include a description of the design features described in your response to the above in the appropriate section of the Shearon Harris COL FSAR.

PGN RAI ID #: H-0653

PGN Response to NRC RAI:

1. The discharge line of the Liquid Radwaste System (WLS) is connected to the HAR Circulating Water System (CWS) blowdown pipeline as indicated in FSAR Figure 10.4-201. The final design for the blowdown pipeline is not yet complete. However, the discharge point for the blowdown pipeline is in Harris Reservoir near the main dam downstream of the Harris Lake makeup discharge.
2. The final design of the WLS pipe from the radwaste building to the CWS blowdown pipeline has not been completed. This portion of the pipe will be run underground. The WLS line will be monitored for leakage to comply with 10 CFR 20.1406. The CWS blowdown pipeline final design is not complete but the plan is for the pipe to be high density polyethylene single-walled pipe. The pipe will be buried from the cooling towers to the point where the pipe enters Harris Reservoir except where the pipe crosses over HNP Unit 1 emergency service water intake channel.
3. The final design of the CWS blowdown pipe is not complete, however; the length of the CWS blowdown pipeline from the cooling towers to the point where it enters Harris Reservoir is approximately 1.5 miles.
4. Where the WLS pipe is routed outside the radwaste building to the where it connects to the blowdown pipeline, there are no valves, vacuum breakers, or other fittings. There are no

valves, vacuum breakers, or other fittings in the CWS blowdown pipeline between the point where the WLS pipe connects and the discharge to the Harris Reservoir.

5. Monitoring for leakage of the CWS blowdown line will be evaluated and implemented, if necessary, as part of the Unit 2 and 3 Groundwater Monitoring Program described in NEI 08-08A.

Associated HAR COL Application Revisions:

The following change will be made to the HAR FSAR in a future amendment:

1. FSAR Subsection 11.2.1.2.4, second paragraph will be revised from:

"The HAR site WLS effluent discharge release point is where the WLS effluent discharge pipe connects to the cooling tower blowdown pipe."

To read:

"The Liquid Radwaste System (WLS) discharge piping from the Units 2 and 3 Radwaste Building is connected to the Circulating Water System (CWS) blowdown pipeline within the Exclusion Area Boundary for dilution to meet the release limits of 10 CFR 20 Appendix B, Table II, Column 2. Dilution at this point is supplied primarily from the circulating water blowdown flow. Where the WLS pipe is routed outside the radwaste building to where it connects to the blowdown pipeline, there are no valves, vacuum breakers, or other fittings. The WLS discharge piping is monitored for leakage to comply with 10 CFR 20.1406.

The CWS blowdown line is a high density polyethylene single-walled pipe. There are no valves, vacuum breakers, or other fittings in the CWS blowdown pipeline between the point where the WLS connects and the effluent discharge point in the Harris Reservoir. The pipe is buried from the cooling towers to the point where the pipe enters Harris Reservoir except where the pipe crosses over HNP Unit 1 emergency service water intake channel. Monitoring for leakage of the CWS blowdown line downstream of the WLS connection is per NEI 08-08A (Reference 201) as described in Appendix 12AA.

2. Add the following subsection to the end of FSAR Section 11.2:

REFERENCES

NEI 08-08A, Generic FSAR Template Guidance for Life Cycle Minimization of Contamination, Revision 0, October 2009 (ML093220445)

Attachments/Enclosures:

None.