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June 17, 2011

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

**BELL BEND NUCLEAR POWER PLANT
RESPONSE TO REQUEST FOR ADDITIONAL
INFORMATION No. 100, FSAR CHAPTERS 9 AND 11
BNP-2011-123 Docket No. 52-039**

Reference: 1) M. Canova (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend COLA -
FINAL Request for Information No. 100 (RAI No. 100) – CHPB 5414, 5418,
5419, dated May 26, 2011

The purpose of this letter is to respond to the request for additional information (RAI) identified in the referenced NRC correspondence to PPL Bell Bend, LLC (PPL). This RAI addresses the Solid Waste Management System and Process and Effluent Radiological Monitoring Instrumentation and Sampling Systems; as discussed in Chapters 11.4, 9.5.1, 9B and 11.5 of the Final Safety Analysis Report (FSAR) and submitted in Part 2 of the Bell Bend Nuclear Power Plant (BBNPP) Combined License Application (COLA).

The Enclosure provides the response to RAI No. 100 Questions 11.04-1, 11.05-1 and 11.05-2, which includes revised COLA content. PPL will update the BBNPP COLA in a future revision. The only new regulatory commitment in this letter is to update the BBNPP COLA at a future date.

If you have any questions, please contact the undersigned at 570.802.8102.

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

Executed on June 17, 2011

Respectfully,

A handwritten signature in black ink that reads "Rocco R. Sgarro".

Rocco R. Sgarro

RRS/kw

Enclosure: As stated

D102
HRO

cc: (w/ Enclosure)

Mr. Michael Canova
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(w/o Enclosure)

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Enclosure

Response to Request for Additional Information No. 100
Bell Bend Nuclear Power Plant

Question 11.04-1:

BBNPP FSAR Tier 2, Rev. 2, Section 11.4 endorses the corresponding sections of the U.S. EPR FSAR Section 11.4 as it relates to the management of radioactive wastes in plant buildings. A parallel review of U.S. EPR FSAR Sections 9.5.1 and 9A.1 on fire protection analysis (FPA) involving radioactive materials indicates that fires could occur over the life of a nuclear power plant and should be treated as anticipated operational occurrences. U.S. EPR FSAR Sections 9.5.1 and 9A.1 and Table 9A-2 address the need to conduct a fire protection analysis given the presence of radioactive materials in the plant. The results of such analyses would be used to identify measures such that fires would not result in unacceptable radiological releases and radiological consequences to the public under the criteria of 10 CFR Part 20, as noted in RG 1.189. A review U.S. EPR FSAR Rev. 2, Table 9A-2 (footnote 15) indicates that such analyses would identify the potential presence of radioactive materials as a source of combustible materials, assess the potential for fires and possible radiological effects from a fire, and evaluate the need for additional in-depth fire protection features to mitigate the consequences of a fire.

However, BBNPP FSAR Tier 2, Sections 9B.1.2, 9B2.3, Table 9.5-1, and 11.4 do not present a FPA for areas of the plant where radioactive materials, such as dry active wastes, spent ion-exchange resins, and spent charcoals will be processed and stored while awaiting shipment. Accordingly, the applicant is requested to:

- a. present this information for all areas of the plant where combustible radioactive materials will be processed and stored,
- b. describe radiological releases in the event of a fire involving radioactive materials, including the initial source terms, types of releases, release paths from within buildings to the outside via building ventilation systems, credit, if any, for filtration and retention of radioactivity within buildings in mitigating releases, and radionuclide distributions and concentration at assumed dose receptors located in unrestricted areas, and
- c. assess the radiological consequences to the public under the criteria of 10 CFR Part 20.1301 and 20.1302 and Part 20, Appendix B ECLs for airborne releases.

Response:

The BBNPP COLA does not identify any site-specific locations where radioactive materials will be processed or stored. Therefore, the site-specific Fire Protection Analysis in the BBNPP FSAR does not need to address the items identified in this RAI question.

The locations for processing and storage of radioactive materials are identified in the U.S. EPR FSAR. The fire areas that may contain radioactive material can be identified by reviewing U.S. EPR FSAR Revision 2, Table 9A-2, Radiological Effects (Note 15) designations. These identified fire areas are included in the scope of the U.S. EPR design certification and its respective Fire Hazards Analysis (FHA) and are outside the scope of the BBNPP COLA.

Should BBNPP consider alternative locations for storing radioactive material at a later date, any changes considered will be processed through the 10 CFR 50.59, "Changes,

tests and experiments” review and evaluation process and will consider all relevant aspects of regulations.

Additionally, COL Item 9.5-17 identifies that the COL Applicant that references the U.S. EPR design certification will evaluate differences between the as-designed and as-built plant configuration to confirm that the Fire Protection Analysis remains bounding. This COL Item is addressed in BBNPP FSAR 9.5.1.3 and commits BBNPP to confirm that the Fire Protection Analysis remains bounding and to identify any deviations from the U.S. EPR FSAR, prior to fuel load.

COLA Impact:

The BBNPP COLA will not be changed as a result of this response.

Question 11.05-1:

BBNPP FSAR Section 11.5.2 endorses the use of NEI ODCM Template 07-09A (Revision 0, March 2009) to meet COL Information Item 11.5-1 until a plant and site-specific ODCM is prepared, before fuel load, under the requirements of a license condition described in BBNPP FSAR Section 13.4, Table 13.4-1. The staff has reviewed NEI ODCM Template 07-09A and found it acceptable (ML091050234). The development of the site specific ODCM and implementing procedures should meet the provisions of GL 89-01 (Supplement No. 1), Radiological Assessment Branch Technical Position (Revision 1, November 1979) included as Appendix A in NUREG-1301, as ODCM guidance for PWRs, and the guidance of NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978. The staff finds this approach acceptable, given the inclusion of COL Information Item 11.5-1 in U.S. EPR FSAR Tier 2, Revision 1, Sections 1.8.1 and 11.5.2, and its implementation in BBNPP FSAR Tier 2, Revision 2, and Section 13.4.

However, BBNPP FSAR Section 11.5.2 does not address unique site-specific conditions that are not covered in the NEI ODCM Template 07-09A. The BBNPP FSAR does not address how sampling provisions for in-process and effluent streams described in U.S. EPR FSAR Section 11.5, Table 11.5-1 and Figure 11.5-1 will be evaluated and implemented to reflect site-specific conditions in demonstrating compliance with Part 20.1301 and 20.1302, Part 20 Appendix B ECLs, and Part 50 Appendix I design objectives. Similarly, the applicant has not addressed how operational ranges, sensitivity levels, and lower limits of detection for radiation monitoring equipment will be established for all radiation monitoring instrumentation described in U.S. EPR FSAR Section 11.5, Table 11.5-1 and Figure 11.5-1. The applicant is requested to present this information for all radiation monitoring equipment that will be installed at the BBNPP plant, and identify associated departures, if any, for specific in-process and effluent streams.

Response:

The BBNPP FSAR will be revised to incorporate recently added COL Items from the U.S. EPR FSAR. These new COL Items include the identification of PERMSS operational ranges, sensitivity levels, lower limits of detection for site specific conditions, and operating conditions for those radiation monitors that are not addressed by the ODCM. The BBNPP FSAR will be revised as shown below.

COLA Impact:

The BBNPP COLA will be revised as follows:

11.5 PROCESS AND EFFLUENT RADIOLOGICAL MONITORING AND SAMPLING SYSTEMS

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

11.5.1 DESIGN BASIS

No departures or supplements.

The U.S. EPR FSAR includes the following COL Item in Section 11.5.1:

A COL applicant that references the U.S. EPR design certification and that chooses to install and operate skid-mounted radiation monitoring and sampling systems connected to permanently installed radioactive process and waste management systems will include plant-specific information describing how design features and implementation of operating procedures for the PERMSS will address the requirements of 10 CFR Part 20.1406(b) and guidance of SRP Section 11.5, Regulatory Guides 4.21 and 1.143, IE Bulletin 80-10, ANSI/HPS-13.1-1999 and ANSI N42.18-2004, and NEI 08-08.

The COL Item is addressed as follows:

Should {BBNPP} choose to install and operate mobile skid-mounted radiation monitoring and sampling systems connect to the permanently installed radioactive process and waste management systems, then this section of the FSAR will be revised to include plant and site-specific information describing how design features and implementation of operating procedures for the PERMSS address the requirements of 10 CFR Part 20.1406(b) and guidance of SRP Section 11.5, Regulatory Guides 4.21 and 1.143, IE Bulletin 80-10, ANSI/HPS-13.1-1999 and ANSI N42.18-2004, and NEI 08-08.

11.5.1.1 Design Objective

No departures or supplements.

11.5.1.2 Design Criteria

No departures or supplements.

11.5.2 SYSTEM DESCRIPTION

The U.S. EPR FSAR includes the following COL Item in Section 11.5.2:

A COL applicant that references the U.S. EPR design certification will fully describe, at the functional level, elements of the process and effluent monitoring and sampling programs required by 10 CFR 50 Appendix I, and 10 CFR 52.79 (a)(16). This program description, Offsite Dose Calculation Manual (ODCM), will specify how a licensee controls, monitors, and performs radiological evaluations of releases. The program will also document and report radiological effluents discharged to the environment.

This COL Item is addressed as follows:

{BBNPP} will adopt NEI 07-09A, "Generic FSAR Template Guidance for Offsite Dose Calculation Manual (ODCM) Program Description," (NEI, 2009b). The milestone for development and implementation of the ODCM is addressed in Table 13.4-1.

The U.S. EPR FSAR includes the following COL Item in Section 11.5.2:

A COL applicant that references the U.S.EPR design certification is responsible for deriving PERMSS subsystem's lower limits of detection or detection sensitivities, and set-points (alarms and process termination/diversion) for liquid and gaseous process radiation monitoring equipment not covered by the ODCM based on plant and site specific conditions and operating characteristics of each installed radiation monitoring subsystem.

The COL Item is addressed as follows:

{BBNPP} will develop PERMSS subsystem's LLDs or detection sensitivities, and set-points (alarms and process termination/diversion) for liquid and gaseous process radiation monitoring equipment not covered by the ODCM based on plant and site specific conditions and operating characteristics of each installed radiation monitoring subsystem.

The U.S. EPR FSAR includes the following COL Item in Section 11.5.2:

A COL applicant that references the U.S. EPR design certification is responsible for developing a plant-specific process and effluent radiological sampling and analysis plan for systems not covered by the ODCM, including provisions describing sampling and analytical frequencies, and radiological analyses for the expected types of liquid and gaseous samples and waste media generated by the LWMS, GWMS, and SWMS.

The COL Item is addressed as follows:

{BBNPP} will develop a plant-specific process and effluent radiological sampling and analysis plan for systems not covered by the ODCM, including provisions describing sampling and analytical frequencies, and radiological analyses for the expected types of liquid and gaseous samples and waste media generated by the LWMS, GWMS, and SWMS.

11.5.3 EFFLUENT MONITORING AND SAMPLING

No departures or supplements.

11.5.4 PROCESS MONITORING AND SAMPLING

No departures or supplements.

11.5.5 REFERENCES

{**CFR, 2008a.** Domestic Licensing of Production and Utilization Facilities, Title 10, Code of Federal Regulations, Part 50, U.S. Nuclear Regulatory Commission, 2008.

CFR, 2008b. Contents of Applications; Technical Information in Final Safety Analysis Report, Title 10, Code of Federal Regulations, Part 52.79, U.S. Nuclear Regulatory Commission, 2008.

~~**NEI, 2009a.** NEI 07-10A, Generic FSAR Template Guidance for Process Control Program (PCP), Revision 0, Nuclear Energy Institute, March 2009.~~

NEI, 2009b. NEI 07-09A, Generic FSAR Template Guidance for Offsite Dose Calculation Manual (ODCM) Program Description, Revision 0, Nuclear Energy Institute, March 2009.}

Question 11.05-2:

BBNPP FSAR Tier 2, Rev. 2, Section 11.5.2 endorses the use of NEI ODCM Template 07-09A (Revision 0, March 2009) to meet COL Information Item 11.5-1 until a plant and site-specific ODCM is prepared, before fuel load, under the requirements of a license condition described in BBNPP FSAR Section 13.4, Table 13.4-1. The staff has reviewed NEI Offsite Dose Calculation Manual (ODCM) Template 07-09A and found it acceptable (ML091050234). The development of the site specific ODCM and implementing procedures should meet the provisions of GL 89-01 (Supplement No. 1), Radiological Assessment Branch Technical Position (Revision 1, November 1979) included as Appendix A in NUREG-1301, as ODCM guidance for PWRs, and the guidance of NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978. The staff finds this approach acceptable, given the inclusion of COL Information Item 11.5-1 in U.S. EPR FSAR Tier 2, Revision 1, Sections 1.8.1 and 11.5.2, and its implementation in BBNPP FSAR Tier 2, Revision 2, and Section 13.4.

However, BBNPP FSAR Tier 2, Section 11.5.2 does not address unique site-specific conditions that are not covered in the NEI ODCM Template 07-09A. The BBNPP FSAR does not consider how the ODCM will control liquid and gaseous effluent releases and doses to members of the public given that two licensees (SSES 1&2 and Bell Bend) will be contributing to and competing for a single dose allocation to members of the public under Parts 20.1301 and 20.1302; Part 20.1301(e) in complying with 40 CFR Part 190; and identify whether this may also apply for assessing the unity-rule in meeting liquid and gaseous effluent concentration limits of Part 20 (App. B, Table 2, Col. 1 and 2). Accordingly, the applicant is requested to:

1. Describe in BBNPP FSAR Tier 2, Section 11.5.2 the administrative program and procedures that will be used to coordinate all liquid and gaseous effluent releases and dose allocations to members of the public between SSES 1&2 and Bell Bend in complying with NRC regulations.
2. If PPL Bell Bend LLC has already made specific arrangements with SSES on this matter, the applicant is requested to describe in BBNPP FSAR Tier 2, Section 11.5.2 the type and duration of such arrangements, the scope of the arrangements made in coordinating the responsibility to control liquid and gaseous effluent releases and doses to members of the public and how the arrangements will be implemented in BBNPP administrative programs and procedures in FSAR Tier 2, Sections 13.1 and 13.5.
3. Confirm that these provisions will be included in the development of the BBNPP site-specific ODCM, given the operational program implementation and milestones described in FSAR Tier 2, Section 13.4.
4. Include this additional responsibility in the job functional descriptions of the Radiation Protection Supervisor and/or Chemistry Supervisor in BBNPP FSAR Tier 2, Section 13.1.2.2.

Response:

Item 1: Section 11.5.2 of the BBNPP FSAR will be revised as shown below to briefly describe the program that will be put in place once the effluent release and monitoring

programs are developed at BBNPP and revisions to the SSES Units 1 and 2 effluent monitoring programs become necessary.

Item 2: PPL Bell Bend, LLC has not yet made specific arrangements with PPL Susquehanna, LLC for coordination and control of liquid and gaseous effluent releases. Development of this process, as described in the FSAR update provided in response to Item 1, will occur as the radiological monitoring and control programs identified in Item 9 of FSAR Table 13.4-1 "Operational Programs Required by NRC Regulations and Program Implementation" are implemented. Implementation of these operational programs prior to initial fuel load is identified as License Condition 3, Operational Program Implementation, in Combined License Application (COLA) Part 10 "Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and ITAAC Closure."

Item 3: See response to Item 2 above.

Item 4: FSAR Section 13.1.2.2.1.8 will be revised as shown below to clearly state that the Management Position Responsible for Radiation Protection is responsible for the Radiological Effluent Technical Specifications/Standard Radiological Effluent Controls program, the Offsite Dose Calculation Manual, the Radiological Environmental Monitoring Program and the Process Control Program.

COLA Impact:

Section 11.5.2 of the BBNPP FSAR will be revised as shown below:

11.5.2 System Description

The U.S. EPR FSAR includes the following COL Item in Section 11.5.2:

A COL applicant that references the U.S. EPR will fully describe, at the functional level, elements of the process and effluent monitoring and sampling programs required by 10 CFR Part 50, Appendix I and 10 CFR 52.79(a)(16). This program description, Offsite Dose Calculation Manual (ODCM), will specify how a licensee controls, monitors, and performs radiological evaluations of releases. The program will also document and report radiological effluents discharged to the environment.

This COL Item is addressed as follows:

{BBNPP} will adopt NEI 07-09A, "Generic FSAR Template Guidance for Offsite Dose Calculation Manual (ODCM) Program Description," (NEI, 2009). The milestone for development and implementation of the ODCM is addressed in Table 13.4-1.

{Additionally, a notification process that shares release and release rates information between PPL Bell Bend, LLC and PPL Susquehanna, LLC will be established between the two licensees to ensure the site dose and dose rate limits will not be exceeded. The notification requirements and cross-company information exchange and tracking will be incorporated into the respective licensees' implementing procedures. This process will ensure that each organization is aware of the overall site releases for normal as well as Anticipated Operational Occurrences and each plant will have the ability to ensure that site wide releases will not exceed the applicable limits of 40 CFR 190 and 10 CFR 20. This notification process will be described in the BBNPP ODCM and will be implemented in accordance with the implementation milestones for the ODCM as described in Table 13.4-1}

Section 13.1.2.2.1.8 of the BBNPP FSAR will be revised as shown below:

13.1.2.2.1.8 Management Position Responsible for Radiation Protection

This position reports to the Management Position Responsible for Direction of Plant operations and is responsible for the radiation protection function.

The radiation protection responsibilities include scheduling and conduction radiological surveys, ALARA program, contamination sample collection, determining contamination levels, assigning work restrictions through radiation work permits, administering the personnel monitoring program, and maintaining required records in accordance with federal and state records. These radiation protection responsibilities include the Radiological Effluent Technical Specifications/Standard Radiological Effluent Controls program, the Offsite Dose Calculation Manual, the Radiological Environmental Monitoring Program and the Process Control Program as well as all the implementing procedures for each of these programs.