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October 15, 2009

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

**BELL BEND NUCLEAR POWER PLANT
RESPONSE TO RAI No. 52
BNP-2009-312 Docket No. 52-039**

References: 1) M. Canova (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend COLA – Request for Information No. 52 (RAI No. 52) – CQVP - 3583, email dated September 29, 2009

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. This RAI addresses the Initial Plant Test Program, as discussed in Section 14.2 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Bell Bend Nuclear Power Plant Combined License Application (COLA).

The enclosure provides our responses to RAI No. 52, Questions 14.02-16 through 14.02-19, which include revised COLA content. A Licensing Basis Document Change Request has been initiated to incorporate these changes in a future revision of the COLA. This future revision of the COLA is the only new regulatory commitment.

Should you have questions or need additional information, please contact the undersigned at 570.802.8102.

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

Executed on October 15, 2009

Respectfully,

A handwritten signature in black ink that reads "Rocco R. Sgarro". The signature is written in a cursive style with a large, prominent "R" at the beginning.

Rocco R. Sgarro

RRS/kw

Enclosure: As stated

DD79
LRD

cc: (w/o Enclosures)

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Enclosure 1

Response to NRC Request for Additional Information Set No. 52
Bell Bend Nuclear Power Plant

RAI 52

Question 14.02-16

In RAI 14.02-06, the NRC staff requested that the applicant revise the applicable test abstracts under Section 14.2.14 to include verification of redundancy and electrical independence of affected SSCs or explain why such verification is not necessary.

In response to the staff's RAI, the applicant stated that the US EPR FSAR, Section 14.2.12.12.17, the Integrated Engineered Safety Features/Loss of Power Test, (Test # 153), which is incorporated by reference into the combined license application, includes acceptance criteria that states, "Electrical redundancy, independence, and load group assignments are as designed." This test will ensure the electrical redundancy, independence, and load group assignments of the SSCs covered within the scope of the US EPR and BBNPP site-specific SSCs, including the ESWEMS (BBNPP FSAR 14.2.14.1), and ESWEMS Pumphouse HVAC System (BBNPP FSAR 14.2.14.6).

The Raw Water Supply System (BBNPP FSAR Section 14.2.14.8), Essential Service Water Blowdown System (BBNPP FSAR Section 14.2.14.2), Essential Service Water Chemical Treatment System (BBNPP FSAR Section 14.2.14.3), Fire Water Supply (BBNPP FSAR Section 14.2.14.4), the Circulating Water Supply System (BBNPP FSAR Section 14.2.14.5), Cooling Tower Acceptance (BBNPP FSAR Section 14.2.14.7), Plant Laboratory Equipment (BBNPP FSAR Section 14.2.14.9), and Portable Personnel Monitors and Radiation Survey Instruments (BBNPP FSAR Section 14.2.14.10) are not safety related and therefore are not included in the redundancy and electrical independence verifications. The applicant stated that the FSAR would not be revised.

However, AREVA's response to the staff's request in RAI14.02-33 and Revision 1 of the U.S. EPR FSAR consisted of a different approach. AREVA instead revised the test abstracts in the US EPR FSAR, Chapter 14.2, to include electrical independence and redundancy. Rather than relying solely on Test #153 to verify the electrical independence and redundancy of all SSCs powered by safety-related power supplies, AREVA revised the test abstracts containing SSCs powered by safety-related power supplies (test abstracts #001, #003, #004, #012, #014 through #022, #027, #031, #036, #037, #046, #048, #049, #052, #059, #061, #062, #063, #067, #071, #076 through #079, #081 through #086, #088, #100, #104, #105, #106, #110, #112, #115, #116, #117, #121, #126, #130, #140, #141, #142, #145, #146, #147, #138, #148 through #153, and #174). The revisions included a statement in the test objectives, ("Verify electrical independence and redundancy of safety-related power supplies,") a statement in the test methods, ("Verify electrical independence and redundancy of power supplies for safety-related functions,") and a statement in the acceptance criteria, ("Safety-related components meet electrical independence and redundancy requirements.") to indicate that the test must include verification of electrical independence and redundancy.

Consistent with the US EPR FSAR approach, the staff requests that the applicant revise the test abstracts in BBNPP FSAR Section 14.2.14.1, 14.2.14.6, and any other section that includes the testing of SSCs that are powered by safety related power supplies, to include provisions in the objectives, test methods, and acceptance criteria for the verification of redundancy and electrical independence of affected SSC's or to comply with the requirements of 10 CFR Part 52 concerning departures from incorporated standardized designs.

Response

Test abstracts for the Essential Service Water Emergency Makeup System (ESWEMS) (BBNPP FSAR Section 14.2.14.1) and the ESWEMS Pumphouse HVAC (BBNPP FSAR Section 14.2.14.6), will be revised as shown below.

The Essential Service Water Blowdown System (BBNPP FSAR Section 14.2.14.2) and Essential Service Water Chemical Treatment System (BBNPP FSAR Section 14.2.14.3) are not safety-related systems. The Motor Operated Valves (MOVs) which isolate the safety-related Essential Service Water System (ESWS) from the non-safety-related Essential Service Water Blowdown System are part of the ESWS and not the Blowdown System. Testing of these MOVs is addressed in the U.S. EPR FSAR Section 14.2.12.5.7, "Essential Service Water System (Test #048)". It is therefore inappropriate to revise BBNPP FSAR Section 14.2.14.2 as requested in the NRC question above. Not incorporating the recommended changes to FSAR Section 14.2.14.2 does not result in any inconsistency between the BBNPP FSAR and U.S. EPR FSAR.

The MOVs that isolate the non-safety-related Essential Service Water Chemical Treatment System from the non-safety-related Essential Service Water normal makeup system are also non-safety-related. The Essential Service Water Chemical Treatment System is not subject to electrical independence and redundancy testing requirements, and it is inappropriate to revise BBNPP FSAR Section 14.2.14.3 as requested in the NRC question above. Not incorporating the recommended changes to FSAR Section 14.2.14.3 does not result in any inconsistency between the BBNPP FSAR and U.S. EPR FSAR.

Because there are no safety-related MOVs/Solenoid Operated Valves (SOVs)/Air Operated Valves (AOVs) in the Essential Service Water Chemical Treatment System, Test Method Step 3b, Data Required Step 4c, and Acceptance Criteria Step 5b will be deleted from FSAR Section 14.2.14.3. Acceptance Criteria Steps 5d, 5e, and 5g, are appropriate steps to be taken for initial MOV/SOV/AOV testing, regardless of their safety classification; these steps will remain.

COLA Impact

BBNPP FSAR Section 14.2.14.1 will be revised to delete "safety related blowdown" and add "ESW system" in Step 2b.

BBNPP FSAR Sections 14.2.14.1 and 14.2.14.6 will be revised to include the following statement in the test objectives:

"Verify electrical independence and redundancy of safety-related power supplies."

BBNPP FSAR Sections 14.2.14.1 and 14.2.14.6 will be revised to include the following statement in the test method:

"Verify electrical independence and redundancy of power supplies for safety-related functions."

BBNPP FSAR Sections 14.2.14.1 and 14.2.14.6 will be revised to include the following statement in the acceptance criteria:

"Safety-related components meet electrical independence and redundancy requirements."

Test Method Step 3b and Acceptance Criteria step 5b will be deleted from FSAR Section 14.2.14.2.

As described above, Test Method Step 3b, Data Required Step 4c and Acceptance Criteria Step 5b will be deleted from FSAR Section 14.2.14.3.

The subsections of the BBNPP COLA, Part 2 FSAR, Section 14.2.14 identified in the COLA Impact statements above will be revised in a future revision of the COLA. The changes that will be made are shown below and include information provided previously for RAI 14. The RAI 14 changes are shown to clarify the integration of RAI 52 changes to FSAR Section 14.2.14.

14.2.14.1 (Essential Service Water Emergency Makeup System (ESWEMS))

1. OBJECTIVES

c. Verify electrical independence and redundancy of safety-related power supplies.

2. PREREQUISITES

b. Construction activities on the ESW blowdown lines from the ~~safety-related blowdown~~ ESW system isolation MOVs to the Waste Water Retention Basin have been completed, and the lines are isolable from the ESWS and functional.

3. TEST METHOD

i. Verify electrical independence and redundancy of power supplies for safety-related functions.

5. ACCEPTANCE CRITERIA

- a. Each ESWEMS division can be operated, as designed, from the main control room and the remote shutdown panel.
- b. The safety-related automatic valves (MOVs, SOVs, AOVs) respond to the designated accident signal as designed.
- c. The valve position indications properly indicate actual valve position.
- d. The position response of valves to loss of motive power is correct.
- e. The discharge strainers perform as designed.
- f. The alarms, interlocks, display instrumentation, and status lights function as designed.
- g. The head versus flow characteristics for each ESWEMS pump at design conditions has been met.
- h. The valves meet performance data where required.
- i. The ESWEMS operates per design and as described in Section 9.2.5.
- j. Safety-related components meet electrical independence and redundancy requirements.

Inserted by
RAI 14

Inserted by
RAI 52

14.2.14.2 Essential Service Water Blowdown System

3. TEST METHOD

- ~~b. Verify that each ESW blowdown system divisions MOVs close automatically in response to an emergency signal.~~

Inserted by RAI 14.
Removed by RAI 52.

5. ACCEPTANCE CRITERIA

- ~~b. Each ESW Blowdown system division MOVs close automatically in response to an emergency signal.~~

14.2.14.3 Essential Service Water Chemical Treatment System

3. TEST METHOD

- ~~b. Verify safety related automatic valves (MOVs, SOVs, AOVs) respond as designed to accident signal.~~

4. DATA REQUIRED

- ~~c. Valve performance parameters (e.g., stroke time, developed thrust) for baseline diagnostic testing data.~~

5. ACCEPTANCE CRITERIA

- ~~b. The safety related automatic valves (MOVs, SOVs, AOVs) respond to designated accident signal.~~

Inserted by RAI 14.
Removed by RAI 52.

14.2.14.6 ESWEMS Pumphouse HVAC System

1. OBJECTIVES

Inserted
by RAI 52

- c. Verify electrical independence and redundancy of safety-related power supplies.

3. TEST METHOD

Inserted
by RAI 52

- g. Verify electrical independence and redundancy of power supplies for safety-related functions.

5. ACCEPTANCE CRITERIA

Inserted
by RAI 14

- g. The ESWEMS Pumphouse HVAC System operates per design requirements and as described in Section 9.4.15.

Inserted
by RAI 52

- h. Safety-related components meet electrical independence and redundancy requirements.

RAI 52

Question 14.02-17

In RAI14.02-7 the staff requested that the applicant revise the acceptance criteria section of the test abstracts to include sufficient detail (explicit values, prescribed limits, or measurable parameters) to establish the functional adequacy of the SSCs.

In its response, dated July 2, 2009, the applicant proposed to revise the acceptance criteria section of the test abstracts to include sufficient detail to establish the functional adequacy of the SSCs. The applicant provided FSAR mark-ups for the acceptance criteria sections of sections 14.2.14.1-6; however, the applicant removed the references to the chapters describing the design of the SSCs.

Therefore, the staff requests that the applicant reinstate the references to the chapters describing the design of the SSCs in the acceptance criteria sections of the test abstracts in subsection 14.2.14.

Response

As a result of the response to NRC RAI 14, in BBNPP FSAR Section 14.2.14.1, the reference to the chapter describing the design of the SSCs was moved from item "a." to item "i.;" in BBNPP FSAR Section 14.2.14.3, the reference to the chapter describing the design of the SSCs was moved from item "a." to item "h.;" and, in BBNPP FSAR Section 14.2.14.6, the reference to the chapter describing the design of the SSCs was moved from item "a." to item "g." The reference to the chapter describing the design of FSAR Section 14.2.14.4 "Fire Water Supply," was inadvertently deleted and will be reinserted. As a result of the response to NRC RAI 9, the reference to the chapter describing the design of FSAR Section 14.2.14.5 "Circulating Water Supply System," was moved from item "a." to item "j."

COLA Impact

BBNPP FSAR Section 14.2.14.4 will be updated in a future revision of the COLA to insert the reference to the chapter describing the design of the Fire Water Supply, as shown:

5. Acceptance Criteria

- m. The Fire Water Supply system operates per design requirements and as described in Section 9.5.1.

RAI 52

Question 14.02-18

In RAI No. 14, Question 14.02-10, the staff requested that the applicant amend Section 14.2.14 of the Bell Bend Nuclear Power Plant FSAR to include the testing of personnel monitors and radiation survey equipment. In its response to the staff's RAI, dated July 2, 2009, the applicant proposed to add a new FSAR Section 14.2.14.10, "Portable Personnel Monitors and Radiation Survey Instruments," to include a test abstract for portable personnel monitors and radiation survey equipment.

The staff has reviewed proposed Section 14.2.14.10 of the BBNPP FSAR, provided in the July 2, 2009 RAI response, and requests that the applicant revise the proposed section to address the following issues:

- 1) The use of the word "portable" in front of "personnel monitors" is confusing since this test includes Radiologically Controlled Area (RCA) and security building exit contamination monitors, which are usually installed in the facility in some way. Please delete this word to minimize potential confusion.
- 2) Additionally, RCA egress personnel contamination monitors should have a backup power capability to ensure functionality of the monitors during loss of power events.

Provide an additional step to verify back up power function, or justify why such a step is not required.

Response

- 1) The word "Portable" will be deleted from Section 14.2.14.10 of the BBNPP FSAR.
- 2) In the event of the failure of personnel monitors due to loss-of-power, battery powered, personnel friskers will be used to monitor personnel for radioactive contamination.

COLA Impact

FSAR Section 14.2.14.10 will be updated as follows in a future revision of the COLA:

14.2.14.10 ~~Portable~~ Personnel Monitors and Radiation Survey Instruments

1. OBJECTIVES
 - a. To demonstrate the ability of the ~~Portable~~ Personnel Monitors and Radiation Survey Instruments to monitor radiation levels.
 - b. Provide local and remote indications, if applicable, to alert personnel of potential releases.
2. PREREQUISITES

~~Portable~~ Personnel Monitor and Radiation Survey Instrument testing shall be completed during the preoperational testing phase. The following prerequisites shall be met:

- a. Construction activities on the ~~Portable~~ Personnel Monitors and Radiation Survey Instruments have been completed.
 - b. Area ventilation systems in the area where the ~~Portable~~ Personnel Monitors and Radiation Survey Instruments are installed are functional.
 - c. Plant ventilation systems in the areas where plant personnel are working are complete and functional.
 - d. The plant access control has been established (doors and access points installed and wall, ceiling, and floor penetrations in their design condition). This prerequisite ensures that personnel exit routes that do not pass through the ~~Portable~~ Personnel Monitors and Radiation Survey Instruments have been eliminated.
 - e. Test instrumentation available and calibrated.
 - f. Support systems (120 volt AC, purge gas, etc.) are available.
3. TEST METHOD
- a. Verify alarms, displays, indications and status lights both locally and in the plant access control area are functional.
 - b. Verify that background levels have been established.
 - c. Verify that alarms and displays are capable of detecting activity levels that are above the acceptance levels.
4. DATA REQUIRED
- a. Background level settings.
 - b. Setpoints at which alarms and status light displays occur.
5. ACCEPTANCE CRITERIA
- a. Alarms, displays, and status lights indicate locally and in the plant access control area.
 - b. The background radiation level from radon and other sources doesn't reduce the ability to detect radiation releases.
 - c. The ~~Portable~~ Personnel Monitors and Radiation Survey Instruments are capable of detecting test sources.

RAI 52

Question 14.02-19

In RAI 14.02-5, the staff requested that the applicant include site-specific preoperational tests for laboratory equipment in BBNPP FSAR Section 14.2.14. In its response to this RAI, the applicant added a test for laboratory equipment in Section 14.2.14.9, "Plant Laboratory Equipment," of the BBNPP FSAR. For completeness and accuracy, the staff requests that the applicant revise Section 14.2.14.10 Item 4.c to read, "Completed vendor specified laboratory equipment startup and calibration procedures."

Response

The words "and calibration" will be added to FSAR Section 14.2.14.9, Item 4.c.

COLA Impact

FSAR Section 14.2.14 will be updated as follows in a future COLA revision:

14.2.14.9 Plant Laboratory Equipment

4. DATA REQUIRED
 - a. Inspection report from verification of laboratory equipment drains.
 - b. Inspection report from verification of ventilation hood flow and routing.
 - c. Completed vendor specified laboratory equipment startup and calibration procedures.