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December 11, 2009

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Washington, DC 20555-0001

**BELL BEND NUCLEAR POWER PLANT
RESPONSE TO RAI SET 66
BNP-2009-389 Docket No. 52-039**

References: 1) M. Canova (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend COLA – Request for Information No. 66 (RAI No. 66) – CQVP-2816, e-mail dated November 20, 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 Initial Test Program, as discussed in Chapter 14 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Bell Bend Nuclear Power Plant Combined License Application (COLA).

Enclosure 1 provides our responses to RAI No. 66, Questions 14.02-28, 14.02-29 and 14.02-30.

The only new regulatory commitment contained in this letter is to update the FSAR in a future revision.

If you have any 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 December 11, 2009

Respectfully,


Rocco R. Sgarro

RRS/kw

Enclosure: As stated

D079
NRD

cc: (w/o Enclosures)

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Enclosure 1

Response to NRC Request for Additional Information Set No. 66
Bell Bend Nuclear Power Plant

Question 14.02-28:

Standard Review Plan (NUREG-0800) Section 14.2.II.3.i, paragraph F.i concerning combined license (COL) and operating license applicants, "Review, Evaluation, and Approval of Test Results," states that the COL applicant "should develop procedures that will govern the review, evaluation, and approval of test results for each phase of the test program. Specific procedures should be implemented to ensure notification of responsible organizations, such as design organizations, when test acceptance criteria are not met and specific controls have been established to resolve such problems."

Standard Review Plan Section 14.2.II.3, paragraph F.iv states that the COL applicant "should include provisions to allow design organizations to participate in the resolution of design-related problems that result in, or contribute to, a failure to meet test acceptance criteria."

Consistent with SRP Section 14.2, please describe the provisions for the development of procedures to control the review, evaluation, and approval of test results for each phase of the test program, and for the development of procedures to ensure notification of responsible organizations, such as design organizations, when test acceptance criteria are not met, or justify an alternative. Further, please describe provisions to develop procedures to ensure that specific controls have been established to resolve such problems, or justify an alternative. In addition, clarify what provisions in the application ensure the involvement of design organizations in the resolution of design-related problems that result in, or contribute to, a failure to meet test acceptance criteria.

Response:

The preoperational and startup test review team "TRT" is used to perform this function. The function of the TRT will be controlled by administrative procedure and requirements in accordance with FSAR Section 14.2.4. The engineering (design) organization is a member of the TRT as stated in FSAR Section 14.2.5.2. The intent of the TRT reviews is to ensure that the design bases are adequately verified prior to beginning downstream testing. The functions of the TRT are stated in FSAR Section 14.2.5.2. and will be revised to ensure that affected and responsible organizations (including design) are notified when test acceptance criteria are not met.

COLA Impact:

The BBNPP FSAR will be revised as follows:

14.2.5.2 TEST REVIEW TEAM

The TRT advises on the technical adequacy of the testing program. TRT functions include coordinating organizational responsibility for test procedures and for review, evaluation, and approval recommendation of test results. The TRT chairman is appointed by the {Startup Manager} and the team's minimum membership is:

- TRT Chairman
- AREVA Project Representative
- Architect Engineer Project Representative

- Engineering Department Representative
- Operating Department Representative

TRT members are chosen to provide subject-matter expertise in specific testing phases. Composition of the TRT may be augmented from time to time to obtain necessary additional expertise.

The TRT performs the following startup functions:

- Evaluate adequacy of startup tests prior to performance.
- Reviews completed startup test results and verifies that field revisions did not compromise the intent of the procedure.
- Assures that plant testing documents that the design objectives are met.
- Verify that the test results that do not meet acceptance criteria are entered into the corrective action program and the affected and responsible organizations are notified and have assumed responsibility for resolving the acceptance criteria deficiency. Implementation of corrective actions and retests are performed as required prior to proceeding to the next phase.
- Reviews and approves carryover of prerequisites and Phase I tests to Phases II through IV. Ensures the justification for test deferral requests include a schedule for their performance.
- Maintain records of ITACC reviews and ensure that work is performed as required prior to proceeding to the next testing Phase.
- Issue a formal recommendation to proceed to the next testing Phase.

Question 14.02-29:

Standard Review Plan (NUREG-0800) Section 14.2.II.3 paragraph F.ii concerning combined license (COL) and operating license applicants, "Review, Evaluation, and Approval of Test Results," states that "[b]efore proceeding with testing, the applicant should provide controls relating to

- (1) the methods and schedules for approval of test data for each major phase, and
- (2) the methods used for initial review of individual parts of multiple tests (e.g., hot functional testing)."

The NRC staff requests that the applicant describe the methods and schedules for approval of test data for each major phase of the initial test program, and the methods used for initial review of individual parts of multiple tests, or to justify an alternative.

Response:

The preoperational and startup test review team "TRT" is used to perform this function. The TRT is used to review the startup tests before the tests are performed and to review the completed test results and any revisions after the test is completed. As stated in FSAR 14.2.5.3, test results for each phase of the test program are reviewed and verified to be complete (as required) and satisfactory before the next phase of testing is started.

The 6th paragraph in Section 14.2.5.3 will be revised to clarify that the paragraph applies to individual parts of multiple tests as shown below.

COLA Impact:

The BBNPP FSAR will be revised as follows:

14.2.5.3 TEST EXPECTATIONS

Test results for each phase of the test program are reviewed and verified to be complete (as required) and satisfactory before the next phase of testing is started. Phase I testing on a system is normally not started until all applicable prerequisite tests have been completed, reviewed, and approved. Prior to initial fuel loading and commencement of initial criticality, a comprehensive review of required Phase I tests is conducted by the TRT. This review provides assurance that required plant systems and structures are capable of supporting initial fuel loading and subsequent startup testing.

Phase I testing is completed prior to commencing initial fuel loading. If prerequisite or Phase I tests or portions of such tests cannot be completed prior to commencement of fuel loading, provisions for carryover testing is planned and approved in accordance with site-specific administrative procedures.

When carryover testing is required, the {Startup Manager} approves each test and identifies the portions of each test that are delayed until after fuel loading. Technical justifications for delays are documented together with a schedule (power level) for completing each carryover test. Carryover testing is approved by the TRT as described in section 14.2.5.

Documentation for carryover testing is available for NRC review, as required, prior to commencing fuel loading.

Startup testing phases (Phases II, III, and IV) of the test program are subdivided into the following categories:

- Initial fuel load.
- Precritical tests.
- Initial criticality.
- Low power physics testing.
- Power ascension testing. This testing phase ends with the completion of testing at 100% power.

Each subdivision is a prerequisite which must be completed, reviewed, and approved before tests in the next category are started. Power ascension tests are scheduled and conducted at pre-determined power levels.

Results of tests and individual parts of multiple tests conducted at a given plateau are evaluated prior to proceeding to the next level. In tests involving plant transients for which a realistic transient performance analysis has been performed, test results are compared to results of the realistic analysis rather than results of a similar analysis performed using accident analysis assumptions. For those tests which result in a plant transient for which a realistic plant transient performance analysis has been performed, the test results will be compared to the results of the realistic transient analysis to determine if the model should be revised.

Following completion of testing at 100% of rated power, final test results are reviewed, evaluated, and approved. This is accomplished prior to disbanding the startup organization and normal plant operation.

Question 14.02-30:

Regulatory Guide (RG) 1.68, Section C.8, "Milestones and Power Hold Points," states that "[a]pplicants should establish appropriate hold points at selected milestones throughout the power-ascension test phase to ensure that relevant test results are evaluated and approved by the designated personnel or groups before proceeding with the power-ascension test phase. As a minimum, applicants should establish hold points at approximately 25%, 50%, and 75% power level test conditions for pressurized-water reactors (PWRs)"

Section 14.2.4 of the US EPR FSAR states, in part, that "[i]t is the responsibility of the COL applicant to plan, and subsequently, to conduct the plant startup test program. The initial test program is conducted by the startup test group and is controlled by administrative procedures and requirements. The administrative procedures that govern the test program receive the same level of approval as other administrative procedures. The administrative procedures: . . . Describe the phases of the initial test program and establishes the requirements for progressing from one phase to the next, as well as identifies the requirements for moving beyond selected hold points or milestones within a given phase."

The COL, in Section 14.2.5.3, "Test Expectations," states, in part, that "[p]ower ascension tests are scheduled and conducted at pre-determined power levels." Please identify the hold points for power ascension tests, and the requirements for moving beyond selected hold points or milestones within a given phase, or justify an alternative.

Response:

FSAR Section 14.2.5.3 will be revised to identify the hold points for power ascension tests and the requirements for moving beyond selected hold points. The power ascension plateaus will be established at 5%, 25%, 50%, 75% and $\geq 98\%$ power.

COLA Impact:

The BBNPP FSAR will be revised as follows:

14.2.5.3 Test Expectations

Test results for each phase of the test program are reviewed and verified to be complete (as required) and satisfactory before the next phase of testing is started. Phase I testing on a system is normally not started until all applicable prerequisite tests have been completed, reviewed, and approved. Prior to initial fuel loading and commencement of initial criticality, a comprehensive review of required Phase I tests is conducted by the TRT. This review provides assurance that required plant systems and structures are capable of supporting initial fuel loading and subsequent startup testing.

Phase I testing is completed prior to commencing initial fuel loading. If prerequisite or Phase I tests or portions of such tests cannot be completed prior to commencement of fuel loading, provisions for carryover testing is planned and approved in accordance with site-specific administrative procedures.

When carryover testing is required, the {Startup Manager} approves each test and identifies the portions of each test that are delayed until after fuel loading. Technical justifications for delays are documented together with a schedule (power level) for completing each carryover test. Carryover testing is approved by the TRT as described in section 14.2.5. Documentation for carryover testing is available for NRC review, as required, prior to commencing fuel loading.

Startup testing phases (Phases II, III, and IV) of the test program are subdivided into the following categories:

- Initial fuel load.
- Precritical tests.
- Initial criticality.
- Low power physics testing.
- Power ascension testing. This testing phase ends with the completion of testing at 100% power.

Each subdivision is a prerequisite which must be completed, reviewed, and approved before tests in the next category are started. The TRT membership is increased prior to beginning the low power physics testing phase by adding the {Plant Manager, Engineering Manager, Operations Manager, and Maintenance Manager} to the TRT. Power ascension tests are scheduled and conducted at pre-determined power levels. The power ascension plateaus are as follows:

- 5%
- 25%
- 50%
- 75%
- ≥ 98%

The TRT shall review the tests performed in the plateau and determine if it is acceptable to proceed to the next plateau. If core anomalies or plant stability issues are present the TRT shall assign a responsible organization to develop bases for proceeding to a higher power level that is reviewed, approved, and entered into the plant records by the TRT prior to increasing reactor power. Results of tests and individual parts of multiple tests conducted at a plateau are evaluated prior to proceeding to the next level. In tests involving plant transients for which a realistic transient performance analysis has been performed, test results are compared to results of the realistic analysis rather than results of a similar analysis performed using accident analysis assumptions. For those tests which result in a plant transient for which a realistic plant transient performance analysis has been performed, the test results will be compared to the results of the realistic transient analysis to determine if the model should be revised.

Following completion of testing at 100% of rated power, final test results are reviewed, evaluated, and approved. This is accomplished prior to disbanding the startup organization and normal plant operation.