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November 13, 2009

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

BELL BEND NUCLEAR POWER PLANT
RESPONSE TO RAI Nos. 53 and 57
BNP-2009-361 Docket No. 52-039

References: 1) M. Canova (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend COLA – Request for Information No. 53 (RAI No. 53) – SPCV-3623, email dated October 15, 2009

2) M. Canova (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend COLA – Request for Information No. 57 (RAI No. 57) – SPCV-3624, email dated October 15, 2009

The purpose of this letter is to respond to the requests for additional information (RAI) identified in the referenced NRC correspondences to PPL Bell Bend, LLC. These RAIs address the Control Room Habitability System, as discussed in Section 6.4 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. 53, Question 06.04-2; and RAI No. 57, Question 06.04-3, 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.

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 November 13, 2009

Respectfully,

Rocco R. Sgarro

RRS/kw

Enclosure: As stated

D079
NRO

cc: (w/o Enclosures)

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Enclosure 1

Response to NRC Request for Additional Information No. 53, Question 06.04-2
and RAI No. 57, Question 06.04-3
Bell Bend Nuclear Power Plant

RAI 53

Question 06.04-2

Remove the information on doses to the Susquehanna Steam Electric Station (SSES) control room operators from the Bell Bend Nuclear Power Plant (BBNPP) FSAR. Chapter 6.4 of the BBNPP should be devoted solely to the habitability of the BBNPP control room.

Response

The Susquehanna Steam Electric Station (SSES) control room operator dose for a LOCA at the Bell Bend Nuclear Power Plant (BBNPP) will be removed from the BBNPP COLA.

COLA Impact

BBNPP COLA FSAR Section 6.4.4 will be revised as follows in a future revision of the COLA:

(Note the markup includes changes made in response to RAI 57.)

6.4.4 DESIGN EVALUATIONS

The U.S. EPR FSAR includes the following COL Item in Section 6.4.4:

> A COL applicant that references the U.S. EPR design certification will confirm that the radiation exposure of MCR occupants resulting from a DBA at a nearby unit on a multiunit site is bounded by the radiation exposure from the postulated design basis accidents analyzed for the U.S. EPR; or confirm that the limits of GDC 19 are met.

This COL Item is addressed as follows:

~~The main control room dose to Susquehanna Unit 1 or 2 from a Bell Bend LOCA is less than 1.0 rem TEDE. This dose is well below the regulatory dose acceptance criterion of 5 rem TEDE. The Bell Bend Nuclear Power Plant Main Control Room (MCR) is better designed and equipped for radiological exposure control. Therefore, a~~ A LOCA in Susquehanna Unit 1 or 2, ~~which already~~ meets the acceptance criteria for the Susquehanna Unit 1/2 control room, and will also meet the acceptance criteria for the Bell Bend Nuclear Power Plant Main Control Room (MCR) as summarized below. The Bell Bend Nuclear Power Plant MCR is equipped with safety-related radiation monitors in the HVAC intake ducts and would isolate in a timely manner. The Bell Bend Nuclear Power Plant MCR HVAC emergency filtration system design basis accident configuration is described in U.S. FSAR 15.0.3.

The analysis performed to demonstrate the doses to the Bell Bend Nuclear Power Plant operators will be below the regulatory limits for a LOCA in Susquehanna Unit 1 or 2 is as follows:

- Confirm that the Susquehanna Unit 1/2 MCR operator dose is within regulatory limits for a LOCA in Susquehanna Unit 1 or 2.

- Calculate the distance factor reducing the dose for the adjacent unit (e.g., Bell Bend Nuclear Power Plant MCR dose for a LOCA in Susquehanna Unit 1 or 2 as compared to that for the Susquehanna Unit 1/2 MCR); in this case, approximately one order of magnitude.
- Compare the operator protection afforded by the Bell Bend Nuclear Power Plant MCR design to that of the Susquehanna Unit 1/2 MCR design for an accident at the adjacent unit; in this case, the Bell Bend Nuclear Power Plant MCR design affords approximately a factor of two improved protection as compared to the Susquehanna Unit 1/2 MCR design.

Since the Susquehanna Unit 1/2 MCR operator dose is within the regulatory limit and the corresponding Bell Bend Nuclear Power Plant MCR dose will be less both because of distance and because of the design of the Bell Bend Nuclear Power Plant MCR, these three points demonstrate that doses to the Bell Bend Nuclear Power Plant operators will be below the regulatory limits for an accident at Susquehanna Unit 1 or Unit 2.

RAI 57

Question 06.04-3

10 CFR Part 50 App. A, General Design Criteria (GDC) 19 requires that control rooms be maintained in safe condition under accident conditions, including loss of coolant accidents (LOCAs). This requirement applies to nearby units at a multi-unit site. In the case of the BBNPP, it needs to be established that a LOCA at Unit 1 and Unit 2 will not result in unsafe conditions in the BBNPP control room.

Provide a summary of the analysis that was performed to demonstrate the doses to the BBNPP operators will be below the regulatory limits for an accident at SSES. If the analyses conducted for the SSES control room are to be relied on, a summary should be provided in the BBNPP FSAR. Identify the differences between the BBNPP and the Units 1 and 2 control room designs and accident source term with respect to protection against radiation exposure. Explain what makes the BBNPP control room better designed and equipped for radiological exposure control and explain why the SSES results can be compared to BBNPP.

Response

As stated in Section 6.4.4 of the BBNPP COLA FSAR, a LOCA in SSES Unit 1 or 2, which already meets the acceptance criteria for the applicable control room, will also meet the acceptance criteria for the BBNPP Main Control Room (MCR). There are three parts to the demonstration of this assertion.

Knowing that the SSES MCR operator dose for a LOCA at SSES Unit 1 or Unit 2 is less than the regulatory limit (and that the LOCA is the limiting design basis accident for the SSES MCR) is the first part of the demonstration. The second part is quantifying the MCR dose reduction for a LOCA at a one unit (BBNPP or SSES) to that for a LOCA at the adjacent unit (the distance factor). This quantification has been done by calculating the BBNPP LOCA dose for a hypothetical relocation of the BBNPP MCR from BBNPP to the SSES MCR location. The calculated dose reduction for this hypothetical case is more than one order of magnitude. The third and final part is to compare the performance of the SSES and BBNPP MCR designs. To make this comparison, the SSES MCR dose is calculated for a LOCA at BBNPP; and this dose result is compared to that for a BBNPP LOCA with the BBNPP MCR hypothetically relocated to the SSES MCR location (the calculation performed in the second part).

In the last part, the BBNPP MCR design has been determined to be about a factor of two more protective than the SSES MCR design for an accident at the adjacent unit. The robustness of the BBNPP MCR design can be attributed to the low unfiltered air in-leakage. As mentioned in Section 6.4.4, an important feature of the BBNPP MCR is the existence of safety-related radiation monitors in the HVAC intake ducts that would isolate the BBNPP MCR in a timely manner.

To summarize, the analysis performed to demonstrate the doses to the BBNPP operators will be below the regulatory limits for an accident at SSES is as follows:

- Confirm that the SSES MCR operator dose is within regulatory limits for the SSES Unit 1 or Unit 2 LOCA.

- Calculate the distance factor reducing the dose for the adjacent unit (e.g., BBNPP MCR dose for a SSES Unit 1 or Unit 2 LOCA as compared to that for the SSES MCR); in this case, approximately one order of magnitude.
- Compare the operator protection afforded by the BBNPP MCR design to that of the SSES MCR design for an accident at the adjacent unit; in this case, the BBNPP MCR design affords approximately a factor of two improved protection as compared to the SSES MCR design.

Since the SSES MCR operator dose is within the regulatory limit and the corresponding BBNPP MCR dose will be less both because of distance and because of the design of the BBNPP MCR, these three points demonstrate that doses to the BBNPP operators will be below the regulatory limits for an accident at SSES.

COLA Impact

BBNPP COLA FSAR Section 6.4.4 will be revised as follows in a future revision of the COLA:

(Note the markup includes changes made in response to RAI 53.)

6.4.4 DESIGN EVALUATIONS

The U.S. EPR FSAR includes the following COL Item in Section 6.4.4:

> A COL applicant that references the U.S. EPR design certification will confirm that the radiation exposure of MCR occupants resulting from a DBA at a nearby unit on a multiunit site is bounded by the radiation exposure from the postulated design basis accidents analyzed for the U.S. EPR; or confirm that the limits of GDC 19 are met.

This COL Item is addressed as follows:

~~The main control room dose to Susquehanna Unit 1 or 2 from a Bell Bend LOCA is less than 1.0 rem TEDE. This dose is well below the regulatory dose acceptance criterion of 5 rem TEDE. The Bell Bend Nuclear Power Plant Main Control Room (MCR) is better designed and equipped for radiological exposure control. Therefore, a~~ A LOCA in Susquehanna Unit 1 or 2, ~~which already~~ meets the acceptance criteria for the Susquehanna Unit 1/2 control room, and will also meet the acceptance criteria for the Bell Bend Nuclear Power Plant Main Control Room (MCR) as summarized below. The Bell Bend Nuclear Power Plant MCR is equipped with safety-related radiation monitors in the HVAC intake ducts and would isolate in a timely manner. The Bell Bend Nuclear Power Plant MCR HVAC emergency filtration system design basis accident configuration is described in U.S. FSAR 15.0.3.

The analysis performed to demonstrate the doses to the Bell Bend Nuclear Power Plant operators will be below the regulatory limits for a LOCA in Susquehanna Unit 1 or 2 is as follows:

- Confirm that the Susquehanna Unit 1/2 MCR operator dose is within regulatory limits for a LOCA in Susquehanna Unit 1 or 2.
- Calculate the distance factor reducing the dose for the adjacent unit (e.g., Bell Bend Nuclear Power Plant MCR dose for a LOCA in Susquehanna

Unit 1 or 2 as compared to that for the Susquehanna Unit 1/2 MCR); in this case, approximately one order of magnitude.

- Compare the operator protection afforded by the Bell Bend Nuclear Power Plant MCR design to that of the Susquehanna Unit 1/2 MCR design for an accident at the adjacent unit; in this case, the Bell Bend Nuclear Power Plant MCR design affords approximately a factor of two improved protection as compared to the Susquehanna Unit 1/2 MCR design.

Since the Susquehanna Unit 1/2 MCR operator dose is within the regulatory limit and the corresponding Bell Bend Nuclear Power Plant MCR dose will be less both because of distance and because of the design of the Bell Bend Nuclear Power Plant MCR, these three points demonstrate that doses to the Bell Bend Nuclear Power Plant operators will be below the regulatory limits for an accident at Susquehanna Unit 1 or Unit 2.