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September 03, 2009

ATTN: Document Control Desk
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Washington, DC 20555-0001

**BELL BEND NUCLEAR POWER PLANT
RESPONSE TO RAI SET No. 42
BNP-2009-250 Docket No. 52-039**

References: 1) M. Canova (NRC) to R. Sgarro (PPL Bell Bend, LLC), Bell Bend COLA – Request for Information No. 42 (RAI No. 42) – SPLA-3106, e-mail dated August 11, 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 Probabilistic Risk Assessment and Severe Accident Evaluation, as discussed in Section 19.1.4.1 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 response to RAI No. 42, Question 19-20.

Our response to Question 19-20 does not include any new regulatory commitments.

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 September 03, 2009

Respectfully,

A handwritten signature in black ink that reads "Rocco R. Sgarro". The signature is written in a cursive, flowing style.

Rocco R. Sgarro

RRS/kw

Enclosure: As stated

DO79
NRD

cc: (w/o Enclosures)

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Enclosure 1

Response to NRC Request for Additional Information Set No. 42
Bell Bend Nuclear Power Plant

Question 19-20:

(Follow-up to Question 19-2) The applicant's response to Question 19-2 (RAI 4; response dated June 5, 2009) provides additional information on the derivation of the failure frequency and probability for the circulating water system (CWS) and normal heat sink (NHS), represented by the undeveloped event "SUP UHS NS." Based on the response, the undeveloped event has a failure frequency of $1E-2$ per year and a failure probability of $2.8E-5$ over a 24-hour mission time. Final Safety Analysis Report (FSAR) Section 10.4.5.2.1 indicates that the CWS has four 25-percent trains. The failure data provided in NUREG/CR-6928 indicates that the probability of a motor-driven pump failing to run over a 24-hour mission time may be as high as $1E-4$. Therefore, the staff needs additional information to justify that the "SUP UHS NS" failure probability bounds all failures of the CWS and NHS.

- a. Provide additional information regarding major assumptions about the system design, the number of failed trains that will cause an initiating event or failure of the mitigating function, and associated failure probabilities
- b. Demonstrate that the failure probabilities of the plant-specific CWS and NHS are appropriately represented by the undeveloped event "SUP UHS NS."

Response:

As described in the response to RAI No. 4, Question 19-2, the undeveloped event "SUP UHS NS" failure frequency of $1E-02$ per year is based on generic industry data from NUREG/CR-6928 and NUREG/CR-5750. This data provides the contribution of "problems related to the circulating water system: Loss of Non-Safety-Related Cooling Water" to the Total Loss of Condenser Heat Sink initiating event.

The motor-driven pump failure to run probability stated in the question is not inconsistent with the failure probability for "SUP UHS NS" used in the Bell Bend PRA. This is because a loss of one CWS pump does not necessarily result in an initiating event, especially during the non-summer months. Also, a loss of one CWS pump does not prevent the CWS from being able to remove post-trip heat loads.

Additional information, including system design, success criteria for initiating events and mitigating functions, and more detailed failure probabilities than those provided in response to RAI Set 4, Question 19-2 are not available at this time. The CWS pumps are significantly different from any of the motor-driven pump types included in NUREG/CR-6928, Table A.2.27.5. FSAR Section 10.4.5 states that the capacity of each CWS pump is approximately 180,000 gpm, and driven by a motor rated at approximately 9,000 horsepower. Also, data for the advanced plants are not yet available. The failure probability used for "SUP UHS NS" is generic and therefore assumed to be applicable to Bell Bend.

As stated in the response to RAI Set 4, Question 19-2, the Fussell-Vesely of the "SUP UHS NS" undeveloped event is $1.6E-05$. This shows that the CDF is not sensitive to reasonable changes in the basic event "SUP UHS NS" failure probability.

COLA Impact:

The COLA will not be revised in response to this RAI question.