BellBendCOLPEm Resource

From: Canova, Michael
Sent: Tuesday, June 23, 2009 10:10 AM
To: Sgarro, Rocco R; BBNPP@pplweb.com; jennifer.mcqueeney@unistarnuclear.com; Katie.Thurstin@unistarnuclear.com
Cc: BellBendCOL Resource; Vrahoretis, Susan; Colaccino, Joseph; Phan, Hanh; Mrowca, Lynn
Subject: RE: Bell Bend COLA - Draft Request for Information No. 31 (RAI No. 31)- SPLA - 2622
Attachments: Letter 31 - RAI 2622 SPLA.doc

Attached is DRAFT RAI No. 31 for the Bell Bend COL Application. You have ten working days to review this request and to decide whether you need a conference call to discuss it. Please notify my of your decision in this regard.

After the call, or after ten days, the RAI will be finalized and sent to you. You will then have 30 days to respond. These durations are factored into your review schedule. If additional time is required to respond, please inform me of your proposed schedule to respond at your earliest opportunity.

If you have any questions, please contact me.

Michael A. Canova
Project Manager - Bell Bend COL Application
Docket 52-039
EPR Project Branch
Division of New Reactor Licensing
Office of New Reactors
301-415-0737

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Request for Additional Information No. 31 Revision 0

DRAFT

6/22/2009

Bell Bend
PPL Bell Bend LLC.
Docket No. 52-039
SRP Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation
Application Section: 19

QUESTIONS for PRA Licensing, Operations Support and Maintenance Branch 1 (AP1000/EPR Projects) (SPLA)

19-8

BBNPP Final Safety Analysis Report (FSAR) Section 19.1.2.4.1, Page 19-5, Item 1, states that "If the cumulative effect of pending changes is judged to either increase core damage frequency (CDF) to 1.0E-06 per year or greater, or increase large release frequency (LRF) to 1.0E-07 per year or greater, then a PRA model revision will be made in a timely manner, regardless of the next routine update-cycle schedule."

As mentioned in the American Society of Mechanical Engineers (ASME) RA-Sc 2007 PRA Standard, "The PRA shall be maintained and upgraded, such that its representation of the as-built, as-operated plant is sufficient to support the applications for which it is being used." The probability risk assessment (PRA) should be updated as frequently as necessary to ensure that the PRA remains an accurate representation of the plant risk. Thus, it would not be a good practice to accumulate a backlog of pending changes such that the effect is estimated to increase the CDF to 1.0E-6/yr, which is nearly twice that of the estimated baseline EPR CDF, and/or to increase the LRF to 1.0E-7/yr, which is almost 4 times greater than the baseline EPR LRF.

Please justify setting the targeted cumulative effect to 1E-6/yr CDF and 1E-7/yr LRF, and make appropriate changes to the BBNPP FSAR.
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19-9

The risks posed by external events should be assessed from a probabilistic risk assessment (PRA) perspective and should be screened against the NUREG-0800 Standard Review Plan (SRP) Chapter 19 screening criteria. The Regulatory Guide 1.200 Revision 2, dated March 2009, Table 2 on Page 10 states that "It is recognized that for those new reactor designs with substantially lower risk profiles (e.g., internal events CDF below 1E-6/yr) that the quantitative screening value should be adjusted according to the corresponding baseline risk value."

With the baseline U.S. EPR internal events core damage frequency (CDF) and large release frequency (LRF) known to be 5E-7/yr and 3E-8/yr, it is not practical to screen out the external events using the quantitative screening criteria that are higher than the

baseline risk values. Furthermore, the staff notes that the American National Standards Institute (ANSI), American Nuclear Society (ANS) ANSI/ANS-58.21-2007 allows external hazard screening, however, the screening criteria described therein are for the current generation of operating plants.

The COL application should take into consideration the baseline risk values of the EPR design and please revise the external events evaluation using an appropriate PRA screening value, or justify an alternative from a PRA perspective.

19-10

BBNPP FSAR Section 19.1.5.2 states that "The flooding frequency from site-specific systems, such as the Circulating Water System, the Closed Cooling Water System and the Auxiliary Cooling Water System, was not derived using design information. Instead the U.S. EPR FSAR internal flooding frequency for the turbine building is based on a conservative generic frequency, which is judged to include contributions from all of these site-specific systems."

Please provide justification for the position that the generic frequency for flooding of the turbine building of the U.S. EPR FSAR remains bounding for the BBNPP site-specific frequency of flooding of the turbine building.

19-11

Section 19.1.5.1.2.4 of the BBNPP FSAR states that "The BBNPP horizontal Ground Motion Response Spectra GMRS is above the envelope of the European Utility Requirements (EUR) ground motions for frequencies greater than about 21 Hz. In the vertical direction, the BBNPP final GMRS exceeds the EUR design envelope for frequencies greater than about 23 Hz…. Based on a similar evaluation of these low-frequency and high-frequency exceedances performed for the BBNPP site, it is expected that the BBNPP specific seismic margin evaluation for the U.S. EPR will demonstrate compliance with the requirement of plant HCLPF at least as great as 1.67 times the CSDRS."

Please provide additional information demonstrating how the evaluation mentioned in the statement above was made and also describe how the BBNPP GMRS exceedances are justified.

19-12

With regard to the high winds and tornado quantitative evaluation, Section 19.1.5.4.1 of the BBNPP FSAR indicated that the BBNPP FSAR Level 1 PRA Loss off Offsite Power event tree model is used to evaluate the conditional core damage probability. Please provide additional detailed information describing the treatment of offsite and onsite power recovery, and also describe how the BBNPP site-specific tornado strike frequency of 8.7E-5/yr was derived, using the NUREG/CR-4461 information.

19-13

Please provide additional details, including the crash frequency, conditional core damage probability, dominant sequences/cut-sets, and key assumptions associated with the calculated core damage frequency of a 9.9E-8/yr airplane crash into BBNPP, in Section 19.1.5.4.4 of the FSAR, so that the staff can determine whether the aircraft crash can be screened from the probabilistic risk assessment. Additionally, provide the large release frequency associated with the airplane crash scenario and the rationale used to determine the release frequency.

19-14

Section 19.1.5.4.5 of the FSAR, “Highway Hazards,” states that “Hazards on all other roads are bounded by the hazards from facilities.” Please provide additional information specifying which roads, hazards, facilities and bounding values have been taken into consideration in order to reach this conclusion. Also clarify whether other highways/roads (Routes 339, 93, 3036, and 239) have been evaluated, and identify, in detail, the approach used to screen out the hazards and the rationale supporting that approach.

19-15

For each identified pipeline in Section 19.1.5.4.5 of the FSAR, “Pipeline Hazards,” Please provide additional detailed information indicating the approach used to screen out the hazards, and the rationale supporting use of that approach. If the quantitative risk assessment was used, describe how the exposure frequency was calculated.

19-16

Section 19.1.5.4.5 of the FSAR, “Railroad Hazards,” states that “In each case, either the largest minimum separation distance is found to be less than the actual distance, or the analysis shows that more than 2 minutes elapses between the time of hazard detection and reaching the IDLH, or a quantitative risk assessment was used to show that the rate of exposure to a peak positive incident overpressure in excess of 1 psi (6.89 kPa) was less than 1.0E-07 per year when based on realistic assumptions.” Please provide additional detailed information describing which specific approach was used for screening, identify the approach (es), and provide the rationale(s) supporting each approach used

19-17

For Section 19.1.5.4.5 of the FSAR, “Nearby Facilities Hazards”, please provide additional detailed information identifying the approach (es) used for screening out the

Susquehanna Steam Electric Station, Heller's Gas, and Deluxe Building Systems, and provide the rationale(s) supporting each approach used.

19-18

Please provide additional detailed information regarding the basis used for screening "High Summer Temperature" hazards in Table 19.1-1 of the FSAR. Please verify that all safety-related components and other components modeled in the PRA, including HVAC systems, are designed to withstand the maximum air temperature during summer. Additionally, revise Table 19.1-1 to clearly document the rationale supporting the basis used for screening these factors.

19-19

Please provide additional detailed information regarding the basis for screening "Low Winter Temperature" hazards in Table 19.1-1 of the FSAR. Also verify that all safety-related components and other components modeled in the PRA, including HVAC systems, are designed to withstand the minimum air temperature during winter. Additionally, revise Table 19.1-1 to clearly document the rationale supporting the basis used for screening these factors.