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**Subject:** Please review 'Acceptance Review Questions\_ MNGP'  
**Attachments:** Acceptance Review Questions\_ MNGP.doc  
  
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Please review the attached document and provide your response as per the discussions during the Monticello EPU meeting conducted on May 14, 2008.

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## Questions Regarding the Monticello Power Uprate Environmental Assessment, Enclosure 4

1. In sections 6.1.6.1 and 6.2.2 of Enclosure 4, the Environmental Assessment provides a description of the Higgins' eye pearlymussel, a freshwater mollusk, which is a federally endangered species that is located in the Mississippi River in the vicinity of the Monticello Nuclear Generating Plant (MNGP). Its range has been reduced to 50% of historic levels, and is limited to the Mississippi River and three of its tributaries. The pearly mussel is susceptible to entrainment and impingement in its early life stages, including the male gamete and larval (glochidia) stages, both of which are found in river currents. In paragraph 6 of section 6.2.8 (Impingement and Entrainment) sentence one states "Extended power uprate does not effect the impingement and entrainment of organisms..." However, with an increase of the *average annual* water intake from the *current* water withdrawal rate of 509 cubic feet/second (cfs) to the *maximum annual average* surface water appropriation limit of 645 cfs (Section 6.2.2- Surface Water Appropriation), which is greater than a 25% increase in water withdrawal, a strong inference can be made that this increase in water withdrawal will correspondingly lead to a greater than 25% increase in pearlymussel early life stage mortality within the vicinity of MNGP. This would contradict the statement in section 6.2.8 quoted above that no organisms will be affected by impingement and entrainment. While current permits allow for an increase in average water withdrawal, this will still result in an increase in the average annual water withdrawal from the Mississippi River, and a corresponding increase in the mortality of the federally protected juvenile Higgins' eye pearlymussel. Do you have data to evaluate what impact this increased water withdrawal will have on the population of the Higgins' eye pearlymussel?
2. Section 6.2.4 (Increase in Circulating Water Discharge Temperature) describes the thermal impacts associated with an increased discharge temperature of 4.5degrees F, stating that "The slight discharge canal temperature increase will not result in one half of the surface width of the river temperature exceeding the 90 degree F maximum...", and "... water temperatures downstream are not high enough to harm aquatic species or impede fish migration even in summer months." In section 6.2.6 (Mississippi River Thermal Plume) it is stated "... roughly 30 to 70 percent of the river is unaffected by the heated discharge. This also means that up to 70% of the river width is affected by current heat discharges. And section 6.2.7 (Cold Shock) notes that compliance with State water quality standards was not possible under extreme summer flows. The thermal plume has been noted to extend six kilometers downstream of the plant. With an increase of 4.5 degrees F for thermal discharges, it appears that there can be increases in the length of the thermal plume, increases to the percent of the river affected by the heated discharge beyond the current 70%, and an increase in non-compliance with State water quality standards, which contradicts several of your findings in section 10.0 (Conclusions). Please address these concerns.

1. In response to Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," and 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," the licensee should have in place approved programs for design-basis review, testing and surveillance for safety-related MOVs. Provide an evaluation of the EPU impact on these programs.
2. Provide review results of each safety-related systems and safety-related valves (including safety/relief valve set points) that are affected by EPU, and maximum changes in flow rate, pressure, and fluid /ambient temperature. The licensee states that a field adjustment to a torque switch setting was identified for one MOV. The licensee should identify this valve and associated system, and provide the evaluation that resulted in the required adjustment.
3. Describe activities and lessons learned programs that are dedicated to the enhancement of MOVs and AOVs performance/design basis review, and testing programs.
4. Provide an evaluation of EPU impact on the functional design of safety-related pumps, and EPU impact on the IST program for pumps and valves.
5. Precedents approved - SPU Amendment Request for Millstone 3. (Section 2.2.4)  
(ADAMS #ml072000386)  
- SPU Amendment Request for Comanche Peak, (section 2.2.4)  
(ADAMS # ml072490131)

### **3) CSGB – SG TUBE INTEGRITY AND CHEMICAL ENGINEERING BRANCH – ALLEN HISER**

#### **2.1.5 Protective Coating Systems (Paints) - Organic Materials**

The applicant should identify the conditions (temperature, pressure, radiological dose) used to qualify Service Level I protective coatings in containment for current operating conditions and assess whether they remain bounding for DBA conditions following the extended power uprate.

#### **2.1.6 Flow-Accelerated Corrosion**

The applicant should provide a sample list of components for which wall thinning is predicted and measured by ultrasonic testing or other methods in order to assess the accuracy of the FAC predictions from CHECWORKS. This list should also include the initial wall thickness (nominal), current (measured) wall thickness, and a comparison of the measured wall thickness to the thickness predicted by the CHECWORKS FAC model.

The applicant should identify those systems that are expected to experience the greatest increase in wear as a result of power uprate and the effect of individual process variables (i.e., moisture content, temperature, oxygen, and flow velocity) on each system identified. For the most susceptible systems and components, the applicant should provide the total predicted increase in wear rate due to FAC as a result of power uprate conditions.

### **4) EEEB – ELECTRICAL ENGINEERING BRANCH – MATTHEW MCCONNELL**

1) In Section 2.3 of the LAR under the section titled 'Outside Containment', the licensee stated the following:

"The total integrated doses (normal plus accident) for EPU conditions were evaluated and determined not to adversely affect qualification of most of the EQ equipment located outside of containment. Equipment not qualified to the new environmental conditions at EPU will be reanalyzed, re-qualified, or replaced prior to implementation of EPU."

In order for the Electrical Engineering Branch (EEEB) to start its review, the full EQ analysis must be completed. This includes any reanalysis, re-qualification, or replacement of equipment. The licensee must also describe how the equipment was evaluated (e.g., calculations, assessments, etc.) and show how the equipment remains bounded (i.e., provide the original design parameters and the updated values including the supporting calculations).

2) For each topic in Section 2.3 of the LAR, the licensee consistently concludes that systems, structures, and components continue to remain bounded by existing analyses.

In order for EEEB to start its review, the licensee must demonstrate how the analyses for the SSCs remain bounding (i.e., provide the original design parameters and the updated values including the supporting calculations). Additionally, the licensee also must provide more detailed information as to how the SSCs were evaluated.

3) In Section 2.3 of the LAR (Specifically Sections 2.3.3 and 2.3.4), the licensee stated that some equipment may change.

In order for EEEB to start its review, the licensee must provide assurance that all required plant modifications are accounted for in its EPU application.

4) In Section 2.3 of the LAR, the licensee consistently notes that conditions do not change significantly as a result of EPU.

In order for EEEB to start its review, the licensee must quantify the changes in conditions as a result of the proposed EPU.

## **5) SRXB – REACTOR SYSTEMS BRANCH – BENJAMIN PARKS**

The SRXB issue with Rod Drop Accident is as follows:

Appendix B to SRP Section 4.2, Revision 3, provides new acceptance criteria for the "reactivity initiated accident," i.e., the Control Rod Drop Accident.

The acceptance criteria are given in terms of peak radial average fuel enthalpy and fuel rod internal pressure for low-power events with respect to high cladding temperature. At greater than 5% thermal power, the criterion is based on CPR. For pellet clad metal interaction, fuel failure criteria are expressed in terms of radial average fuel enthalpy and fuel hydrogen content.

The acceptance criteria are below the previously accepted 170 cal/g for fuel failure, and significantly below the design limit of 280 cal/g.

## **6) EMCB – MECHANICAL AND CIVIL ENGINEERING BRANCH – BASAVARAJU CHAKRAPANI**

The analysis does not account for Finite Element mesh bias and uncertainty errors consistent with those accepted by the staff in previous applications. The FE bias and uncertainty errors were established from the bench-marking of Hope Creek FE analysis to the shaker test results. Why should Monticello's FE analysis be any different?

The dryer was considered structurally adequate despite the fact that the minimum alternating stress ratio is less than 2, which the staff and ACRS consider as the threshold for acceptance due to the limited validation of the ACM Code. Why didn't the applicant consider dryer structural modifications and improvements to increase the minimum stress ratio to a magnitude higher than 2?

The application does not include information on operating history, location of flaws and cracks that currently exist in the steam dryer, and the root causes for such cracks. Furthermore, the application does not address the effect of EPU on the integrity of the dryer in the presence of existing cracks.

Insufficient details were provided regarding the establishment of the Main Steam Lines time histories that are used to define the dryer loads. How were they established? What is their length? How did the applicant determine that they are conservative?

The application does not address the strong spectral (PSD) peak around 100 Hz (for outer hood nodes 7 and 99). The application should clarify the source and nature of the strong peak at these nodes.

The application does not include the procedure employed for noise signal removal. No information was provided on whether only fictitious tones due to ACM error are removed from dryer loads? It is unclear why the alternating stress ratios dropped so significantly by 50% when noise is removed.

The application does not include information on the mode shapes of the dryer at and near peak frequencies including 25-26 Hz, 154 Hz, and 162 Hz.

A bump up factor of 1.39 was used to scale stresses and loads from CLTP to EPU. This factor appears non conservative considering that a bump up factor at about 2.1 would more appropriately capture the potential valve resonance frequency near 162 Hz.

7) **AADB – ACCIDENT DOSE BRANCH – ALEEM BOATRIGT**

Request to review accident analyses calculations as per the telephone conference between NRC and NMC on May 15, 2008.

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