DRAFT EMEB REQUEST FOR ADDITIONAL INFORMATION
CONCERNING
DUKE POWER PROPOSED LICENSE AMENDMENT (TSC 2002-06)
NOVEMBER 1, 2002
OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

1. Attachment 3 of the November 1, 2002, submittal indicates that ultrasonic testing was performed on selected locations in the LPSW and HPSW. In addition, the submittal indicates that ultrasonic testing was performed along the 16 inch HPSW pipe where it most susceptible to corrosion and where the Auxiliary Building would be most vulnerable from a flood standpoint should a break occur in the pipe. The submittal indicates that these measurements verify that the structural integrity of the pipe is acceptable. Provide a comparison of the minimum measured wall thickness with the pipe nominal thickness at each location ultrasonically tested. Indicate whether any portions of the non-seismically qualified LPSW or HPSW have experienced erosion or corrosion problems and describe any corrective actions taken to preclude return of the problem.

2. Attachment 3 of the submittal indicates that the ability of the pipe to survive an earthquake must be established. Part of this effort involved review of the piping for conformance with the USAS B31.1 piping code. The submittal further indicates that pipe supports, hangers and materials of construction were reviewed. Provide the following information regarding the review for the conformance with USAS B31.1:

   a. The method(s) used to verify that the existing piping and pipe supports meet the design provisions of USAS B31.1. This includes the methods used to verify that the allowable stress limits for both primary and secondary loads have been satisfied.

   b. The method(s) used to verify that specific piping products and pipe hangers meet the standards listed in USAS B31.1.

   c. The method(s) used to verify that the piping materials meet the requirements of USAS B31.1.

   d. The method(s) used to verify that the fabrication, assembly, and erection requirements specified in USAS B31.1 have been satisfied.

   e. The method(s) used to verify that the inspection and test requirements specified in USAS B31.1 have been satisfied.

3. Attachment 3 of the submittal indicates that U-bolts are being removed from the LPSW piping near the air handling units in the HPI pump rooms. Provide the reason these U-bolts are being removed. Describe the method used to determine that the design provisions of USAS B31.1 are satisfied with the U-bolts removed.

4. Attachment 3 of the submittal indicates that a combination of seismic experience and analytical evaluations were used to determine the median ground acceleration and uncertainties of the existing piping. The submittal references ABS Calculation No. 1095211 C-001, Revision 0, as the basis for the median ground acceleration and

Attachment

uncertainty values. Provide the referenced calculation for staff review.

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   D. The method(s) used to verify that the fabrication, assembly, and erection requirements specified in USAS B31.1 have been satisfied.

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uncertainty values. Provide the following information regarding this calculation.

A. The median ground acceleration for the non-seismic piping at Oconee is represented by piping fragilities developed for fire protection piping designed to meet NFPA-13 seismic standards. The fragilities are presented in a paper by Harris, "Seismic Piping Fragilities Developed Based on Data From the 1989 Loma Prieta Earthquake." The paper indicates that the piping is designed to meet the lateral bracing requirements of NFPA-13, but the paper does not provide the range of lateral support spacings for the piping included in the database. The support spacings are not provided in the ABS calculation. Support spacing and support type are parameters that affect the seismic response of piping systems. Provide a comparison of the lateral support spacings and support types between the fire protection piping systems in the experience database and the non-seismic piping at Oconee for each pipe size represented by the fire protection piping seismic fragility. Provide a similar comparison for rigid deadweight supports.

B. Figure 9-3 of the calculation contains a comparison of the Oconee UHS with spectra presented in the Harris paper. The peak acceleration shown in the Oconee spectra exceeds the peak acceleration from the database piping by a substantial margin at spectral frequencies above 7 Hz. The calculation contains a conclusion that accelerations at these higher frequencies are not damaging to piping systems. Provide the technical basis for the conclusion that accelerations at frequencies above 7 Hz are not damaging to threaded piping systems. The discussion should also address the impact of accelerations above 7 Hz on piping supports and piping anchor points.

C. Provide a comparison of the Oconee vertical spectra with the vertical spectra shown in the Harris paper. Discuss how the Oconee piping vertical response is enveloped by the experience database piping vertical response. The discussion should address loads on pipe hangers and the potential for uplift loads at these pipe hangers.

D. The calculation develops a median ground acceleration capacity and composite uncertainty for piping designed to meet FSAR seismic requirements and a median ground acceleration capacity and composite uncertainty for piping with no seismic design. The composite uncertainty for the piping no seismic design is less than the uncertainty for piping designed to FSAR seismic requirements. Explain why there is greater certainty in the median ground acceleration capacity for piping with no seismic design than there is for piping that is designed to explicit seismic design requirements.