October 8, 1997

Mr. Otto L. Maynard
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, Kansas 66839

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING THE WOLF CREEK INDIVIDUAL PLANT EXAMINATION OF EXTERNAL EVENTS SUBMITTAL (TAC NO. M83696)

Dear Mr. Maynard:

Based on the NRC's ongoing review of the Wolf Creek Individual Plant Examination of External Events (IPEEE), the staff has determined that additional information is needed related to the seismic and fire analyses to complete the review of the IPEEE submittal. The information needed to complete the review is contained in the enclosure.

To assist the staff in meeting its review schedule, please respond to this request in writing within 60 days of receipt of this letter. If you have any questions, please contact me at (301) 415-1362.

Sincerely,

Original Signed By

Kristine M. Thomas, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure: Request for Additional Information

cc w/encl: See next page

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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

INDIVIDUAL PLANT EXAMINATION OF EXTERNAL EVENTS

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

A. Seismic

1. NUREG-1407 (Section 3.2.5.8, page 14) suggests that non-seismic failures and human actions are to be clearly identified and the assessment assure that they are low enough in probability to not compromise the seismic margins. Typically, some of the more risk significant human actions for PWRs are: connect service water as an auxiliary feedwater source, feed and bleed, control steam generator relief valves for steam generator cooling, RCS cooldown and depressurization to use the RHR system, reduce containment spray pump flow, room cooling recovery, and establish cold leg recirculation. The submittal does not provide sufficient assurance that human actions can be accomplished after an SME. Per NUREG-1407, show the analysis and logic used to verify that human actions do not control the probability of losing a success path after an earthquake. For each human action, provide the location and the timing of performance. In addition, explain what affect an earthquake would have on performance of these actions.

2. The submittal discussion regarding seismic degradation of fire protection equipment is limited to the interaction of piping in safety related areas. The evaluation should also include an examination of potential loss of fire protection capability itself, due to seismic events. Examples of items found in past studies include (but are not limited to):

   - Fire protection pumps and tanks
   - CO2 tanks and bottles
   - sprinkler standoffs (either penetrating suspended ceilings or simply hanging from the ceiling)
   - use of cast iron fire mains to provide fire water to fire pumps

   Provide the location of each of these items (if at the WCGS), how they are anchored and/or supported, and whether or not they are seismically qualified.

3. EPRI NP-6041 (Step 3 of Section 2) recommends development of generic anchorage capacities as part of the preparatory work. It states that "it is impossible to make judgments on the adequacy of seismic ruggedness without an understanding of the seismic demand corresponding

to the HCLPF level and some measure of equipment anchorage capacity". The submittal mentions the performance of a "bounding evaluation" for anchorages in only a few places (e.g., Section 3.5.6.).

a. Provide an example of a bounding anchorage evaluation, and

b. For each equipment category of Section 3.5 of the submittal, provide the guidance used by the SRT and the procedure it used during the WCGS IPEEE to screen out anchorages.

4. The evaluation of USI A-45 states that all "all components and structures relating to decay heat removal are adequate for the plant design basis SSE". Provide an evaluation of USI A-45 for the 0.3g RLE as requested in NUREG-1407, including, but not limited to, the basis for screening out the RWST, pond and service water system.

5. The submittal notes that horizontal SME in-structure response spectra demand exceeds the design basis spectra demand by as much as 50%. Determine and provide seismic capacities for those equipment items that have demands on the order of 40% to 50% higher than the design basis, in order to verify the judgments made during the walkdown screening.

6. The submittal notes that three items could not be assigned capacities more than 0.3g PGA by the SRT. The submittal also states that if it were not for these "indeterminate" items, the plant HCLPF capacity would be greater than 0.3g PGA. Among these items are:

- four 60 cell batteries and racks because of spacing between the batteries and rails

- twelve LSELS/ESFAS cabinets because they are not bolted together

The submittal also asserts that these items could be shown to have a larger seismic capacity than the SSE if detailed seismic margin assessments would be performed. Consistent with the guidance of NUREG-1407 for focused-scope plants and EPRI NP-6041 for performance of an EPRI seismic margin study, determine and provide the seismic capacity of these components.

B. <u>Fire</u>

1. Section 7.1.2 states that hot shorts are significant for a number of fire areas. Provide the fire areas for which hot shorts are significant. Describe the method used to account for hot shorts in the PRA of unscreened compartments. This description should include how cabinets and components were reviewed to determine the following: (1) if a hot short could occur, (2) the probability of hot shorts, and (3) the way in which the core damage frequency associated with hot shorts was developed.

2. The treatment of propagation of fire from cabinets was inconsistent. Propagation of fire from cabinets was assumed to not occur in the control room, whereas it could occur in all other cabinets of the plant. It is noted that the study distinguished among open cabinets, sealed cabinets in high traffic areas and sealed cabinets in low traffic areas. The justification for the propagation of fire from sealed cabinets of 0.69 is clearly stated. However, the derivation of 0.15, as the propagation probability from sealed cabinets in high traffic areas, is not clear.

   Describe the testing, inspection and/or surveillance program in place at WCGS that would ensure that cabinet seals are (a) always in place in the cabinets for which credit was taken in the IPEEE, and (b) effective in preventing fire propagation. Provide a derivation with explanation of the probability of 0.15 for sealed cabinets in high traffic areas. Provide a derivation with explanation for the assumptions that fires will not propagate from cabinets in the control room.

3. The general turbine area and the two radiation access areas were screened out by including the automatic suppression system unavailability as a multiplication factor on the fire ignition frequency and conditional core damage probability. FIVE allows this method of screening if it can be demonstrated that the suppression system is code compliant, and the time of extinguishment is less than the time of damage.

   For these areas, provide justification that the suppression systems are installed in a manner that complies with all applicable NFPA standards, and that the suppression systems would be effective to prevent damage to cables. Include in the response the damage criteria used, the time to damage cables or equipment, and the time to extinguish the fire.

4. A review of the submittal with respect to the PRA of unscreened compartments reveals that it was generally assumed that fires that propagate out of cabinets would damage cables and equipment within 10 to 20 feet of the cabinet. It was also assumed that halon suppression would be effective unless a system failure occurred in preventing damage to equipment outside this radius. This implicitly assumes that the systems are designed, installed and maintained in a code compliant manner.

   Provide justification that the suppression systems, taken credit for in the PRA of unscreened compartments, are designed, installed and maintained in accordance with appropriate industry standards, such as those published by the NFPA.

C. <u>HFO</u>

No additional information required.