

From: Thomas Alexion
To: BENNETT, STEVE A
Date: 7/11/03 1:16PM
Subject: RAI - CRANE

Steve,

See the attached.

Tom

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Subject: RAI - CRANE
Creation Date: 7/11/03 1:16PM
From: Thomas Alexion

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**FOLLOW-UP REQUEST FOR ADDITIONAL INFORMATION (RAI) RELATED TO
ENERGY'S RESPONSE TO THE NRC REQUEST FOR CLARIFICATION OF HANDLING
HEAVY LOADS FOR THE ARKANSAS NUCLEAR ONE (ANO) SPENT FUEL CRANE
MECHANICAL AND CIVIL ENGINEERING BRANCH (EMEB)**

1. The response to EMEB RAI-3 in Attachment 1 of the June 30, 2003, supplemental letter states, "Acceptance criteria are focused on assuring that the crane will hold and not drop the load which allows use of less restrictive acceptance criteria than a Category 1 component." Identify the specific criteria that you consider as less restrictive.
2. The response to EMEB RAI-5 in Attachment 1 states, "Although a full response spectrum or time history analysis of the structure was not performed, both historical and current analyses calculated the first mode of the structure and used it to determine appropriate seismic accelerations." Discuss your justification for this simplification in the calculation by identifying the conservatism built into the employed methodology.
3. It is stated in response to EMEB RAI-5, Attachment 1, that, "The new analyses considered the structure self-weight (original analyses considered only the seismic loads from the crane and the lifted load, which was greater than the structure self-weight)." Confirm that the new analyses also considered the seismic loads from the crane and the lifted loads in addition to the structure self-weight.
4. It is stated in response to EMEB RAI-5, Attachment 1, that, "Seismic loads to the bent frame included loads from the L-3 crane; however, the entire load was originally applied to one bent at a time and no credit was taken for load sharing between adjacent bents. New analysis shares the load between multiple bents." Explain how load sharing between adjacent bents would lead to conservative results.
5. It is stated in proposed Amendment 19 to the Safety Analysis Report, page 9.6-34 (Attachment 2 to the June 30, 2003, supplemental letter), that, "An analysis was performed on the 3-foot, 6-inch thick reinforced concrete relay room ceiling slab, located below the cask travel path between column lines A2 and C2. The analysis was performed to demonstrate that a postulated cask drop would not damage any safety-related equipment located in the relay room. The analysis followed an energy absorption method. The energy input to the relay room ceiling slab was based on a 260 kip cask weight, 92-inch cask diameter and a drop height of one inch. This considers that the main hoist is designed such that the maximum load motion following a single wire rope failure is less than 1.5 feet and the maximum kinetic energy of the load will be less than that resulting from one inch free fall of the maximum critical load." Provide the basis for the criterion that the maximum kinetic energy of the load will be less than that resulting from one inch free fall of the maximum critical load.
6. Attachment 6 to the June 30, 2003, supplemental letter, ANO Calculation No. 61 Rev. 2, "Fuel Building Cask Crane Runway Girds and Support," page 3B, says, "The runway was evaluated for 80% of lateral loads from Trolley based on its extreme location near one end of crane bridge in combination with 50% of the loads resulting from bridge dead loads." Provide justification for the 50% reduction in the bridge dead load.
7. Provide justification for the reduction of the impact loads (vertical and horizontal impact factors have been reduced from the values provided in the previous submittal), as stated on page 4 of ANO Calculation No. 61, Rev. 1.