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Acting Director
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CNRO-2004-00051

October 7, 2004

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Response to NRC Request for Additional Information Pertaining to Arkansas Nuclear One, Unit 2 Relaxation Request #4 to NRC Order EA-03-009 for the Control Element Drive Mechanism Nozzles (TAC No. MC2303)

Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

REFERENCE: Entergy Operations, Inc. letter CNRO-2004-00018 to the NRC dated March 11, 2004

Dear Sir or Madam:

In the referenced letter, Entergy Operations, Inc. (Entergy) requested relaxation from Section IV.C(5)(b) of First Revised NRC Order EA-03-009 for Arkansas Nuclear One, Unit 2 (ANO-2) via ANO-2 Relaxation Request #4. On July 27, 2004, the NRC staff transmitted to Entergy via e-mail a Request for Additional Information (RAI) pertaining to this request. Entergy's responses to the RAI questions are provided in the enclosure to this letter.

This letter contains no commitments.

If you have any questions, please contact Guy Davant at (601) 368-5756.

Sincerely,

FGB/GHD/ghd

Enclosure: Response to the NRC's Request for Additional Information

cc: (see next page)

A101

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ENCLOSURE

CNRO-2004-00051

RESPONSE TO THE NRC'S REQUEST FOR ADDITIONAL INFORMATION

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The NRC staff is currently reviewing Entergy's March 11, 2004 relaxation request pertaining to First Revised Order EA-03-009 for examination coverage of reactor pressure vessel (RPV) head control element drive mechanism (CEDM) penetration nozzles. The staff finds that information requested below is needed to continue its evaluation:

1. Entergy states that the analysis documented in Engineering Report M-EP-2003-002 was based on design information and actual UT data obtained during the ANO-2 Spring 2002 refueling outage. Since the data collected during the Spring 2002 was before Order EA-03-009 was issued, please indicate if there were any differences in the extent of UT data collected between the Spring 2002 outage and the Fall 2003 outage.

   Response

   In 2002, Entergy inspected a minimum of 1.0 inch above the J-groove weld to the lowest achievable point below the weld. During the 2003 inspections, Entergy inspected a minimum of ***2.0 inches*** *above the J-groove weld to the lowest achievable point below the weld.*

2. If there were any differences between the data acquired in the Spring 2002 outage and the Fall 2003 outage, please indicated if the analysis is still bounding.

   Response

   There were no differences in the type of data acquired; however, more data of the same type was acquired during the 2003 inspections compared to the 2002 inspections; no primary water stress corrosion cracking (PWSC) indications were identified. Please refer to Entergy letter 2CAN120302, 60-Day Report for ANO-2 Reactor Pressure Vessel Head Inspection for Refueling Outage 2R16, *dated December 8, 2003 for more information. Entergy has determined that the analysis supporting ANO-2 Relaxation Request #4 remains bounding.*

3. In the March 11, 2004 relaxation request submittal, the licensee does not discuss the Fall 2003 inspection of the CEDM nozzles that were performed per Order EA-03-009. Please discuss the inspections including results.

   Response

   CEDM nozzle inspections during the Fall 2003 outage included the following components:

   A. *Entergy performed volumetric UT and inside diameter (ID) surface ECT from 2 inches above the J-groove weld to the lowest achievable extent below the weld, at a minimum. The UT included a 0° leakage path assessment and time-of-flight diffraction (TOFD) examination 0.060 inch into the J-groove weld-to-tube interface (including the triple-point area of the weld). No indications of PWSCC were identified.*

B. *In cases where the inspection length below the J-groove weld required by the crack-growth analysis could not be achieved with the UT probe, Entergy performed manual ECT on the OD of the nozzle tube and J-groove weld to increase the inspection coverage. No indications of PWSCC were identified.*

C. *Entergy performed supplemental visual inspections from above the RPV cooling shroud. In addition, Entergy performed a bare metal visual examination on the RPV head flange and the portion of the RPV head extending out of the cooling shroud as well as 360° around the in-core instrumentation (ICI) nozzles. No indications of PWSCC were identified.*

D. *In lieu of performing a complete bare metal visual examination, Entergy committed to and performed a low frequency ECT on the CEDM nozzles. No base metal wastage was identified. (Entergy is planning to perform a complete bare metal visual examination during the next ANO-2 refueling outage; therefore, these low frequency ECT exams will not be required.)*

4. Section IV.A.1 of the licensee's submittal states that the proposed alternative includes ultrasonic testing from 2 inches above the J-groove weld to 1.544 inches above the bottom of the nozzle. Does the licensee intend to inspect 2 inches above the highest point of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis).

Response

Yes.

5. Section IV.A.3 of the licensee's submittal indicates that the extent of the augmented inspections will be as listed in Table 2 of its submittal. Table 2 lists minimum distances necessary for a crack to reach the J-groove weld in one operating cycle. Given that it is the staff's expectation that augmented inspections cover as much nozzle material as possible that does not receive ultrasonic inspection, please discuss the extent of the proposed augmented inspections as well as the extent of augmented inspections performed during the last refueling outage in Fall 2003. Please be specific and list coverage for all nozzles.

Response

Table 1 of the submittal specifies the minimum axial lengths and circumferential extents that must be examined for each nozzle group location. Table 2 provides individual nozzle information. Tables 1 and 2 indicate the minimum OD axial lengths range from 0.320 inch to 0.661 inch below the top of the blind zone.

During the Fall 2003 augmented inspections of the CEDM nozzles, Entergy performed manual ECT to examine the OD surface of the selected 75 CEDM nozzles. Entergy was able to attain greater coverage than the minimum criteria specified in Table 1. Specifically, Entergy attained axial coverage of approximately 0.8 inch below the top of the blind zone. Entergy plans to use the manual ECT technique employed during the Fall 2003 augmented inspections during the upcoming outage.