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2CAN060601

June 6, 2006

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

SUBJECT: Revised Report of Containment Building Tendon Surveillance and Concrete Inspection
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

REFERENCE: 1 Entergy letter dated April 11, 2006, *Report of Containment Building Tendon Surveillance and Concrete Inspection (2CAN040601)*

Dear Sir or Madam:

Entergy completed the Arkansas Nuclear One, Unit 2, (ANO-2) 25-year tendon surveillance and concrete inspection on February 10, 2006. Pursuant to the requirements of ASME Section XI, IWL-3300 and ANO-2 Technical Specification (TS) 6.6.6, an engineering report was prepared to document the evaluation of examinations that did not meet the acceptance standards of ASME IWL-3100 or IWL-3200. No indications were found that challenged the structural integrity of the Containment Building. In accordance with ANO-2 TS 6.6.6, the results of this engineering evaluation were submitted to the NRC in Reference 1. Based on the results of the engineering evaluation of the 25-year tendon surveillance and concrete inspection, Entergy has concluded that the ANO-2 Containment Building is capable of performing its design function. In discussion with the NRC Tech Staff, additional details were requested on two of the engineering evaluations. The additional information is noted by revision bars in the attached report.

This report includes no new commitments. If you have any questions or require additional information, please contact Steve Bennett at 479-858-4626.

Sincerely,

A handwritten signature in black ink, appearing to read "Dale E. James".

DEJ/sab

Attachment: Results of Engineering Evaluation for the ANO-2 25-Year Containment Building Tendon Surveillance and Concrete Inspection

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cc: Dr. Bruce S. Mallett
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Attachment

2CAN060601

**Results of Engineering Evaluation for the ANO-2 25-Year Containment Building
Tendon Surveillance and Concrete Inspection**

Results of Engineering Evaluation for the ANO-2 25-Year Containment Building Tendon Surveillance and Concrete Inspection

Entergy concluded the ANO Unit-2 25 year tendon surveillance and concrete inspection on February 10, 2006. While no indications were found that challenge current structural integrity or leak tightness of the containment, several indications were found that did not meet the acceptance criteria of IWL-3000. Pursuant to the requirements of IWL-3300 and ANO Unit-2 Technical Specification 6.6.6, an engineering report was prepared to document the evaluation of examinations that did not meet the acceptance standards of IWL-3100 or IWL-3200. This engineering report is documented under report number MULT-EP-06-0004 which was completed on March 14, 2006. In accordance with TS 6.6.6, the results of this evaluation are to be submitted to the NRC within 30 days of the completion of the evaluation. The results of the engineering evaluations are presented below.

- 1. Void in Tendon Sheathing Filler on Tendon 32H-05** – The difference between the amount of grease removed for tendon inspection and the amount of grease required to refill tendon 32H-05 exceeded 10% of the net tendon duct volume indicating the previous presence of a void in the tendon grease. Examination of the tendon anchorage hardware showed no indications of degradation. Additionally, a pump-through of tendon grease was performed with no debris, water, or corrosion products present in the pumped through grease. The tendon was refilled, removing the void. CR-ANO-2-2005-01510 documents the void. The following details apply:

Cause Of Condition - IWL-3310(a): The cause of this condition is believed to be an isolated occurrence of incomplete filling of the tendon sheath during initial construction.

Applicability to the Other Unit: While the potential for improper filling exists for ANO unit 1 as well, this event is believed to be an isolated occurrence. As a result, the existing tendon surveillance requirements are adequate to address this potential.

Acceptability of Containment - IWL-3310(b): The purpose of the tendon grease is to prevent corrosion of the tendon. Since there was no damage to the tendon wires and the corrosion protection medium (grease) has been restored; the containment remains acceptable for service.

Requirements for Repair or Replacement - IWL-3310(c): Replacement of the tendon grease was accomplished as documented in CR-ANO-2-2005-01510 and the vendor report.

Additional Examination Requirements - IWL-3310(d): No additional examinations are required in response to this condition.

- 2. Discontinuous Wires in Tendon V-109** – Two discontinuous wires were found on Tendon V-109 during retensioning following wire removal and documented in CR-ANO-2-2005-01527. The cause of this problem was improper buttonheading of a test wire during initial construction instead of one of the actual tendon wires. The result was that prior to wire removal for testing, there were 185 effective wires even though there were 186 seated buttonheads on each end. One wire from each end was not connected on the other end. As a result, after wire removal (for testing), 184 tendon wires remained for tendon V-109. MULT-EP-06-0004 documents that even with the reduction in effective number of wires, tendon V-109 still provides the necessary prestressing force to the

containment without overstressing the remaining wires. This is the first set of tendon liftoff examinations performed on the ANO-2 containment. However, Entergy believes that this is an isolated occurrence since ANO-1 has a similarly designed containment with no similar findings. The ANO-1 reactor building has conducted tendon liftoff examinations over the life of the plant, including the recently completed 30 year examinations, with no occurrences of this nature detected. The following details apply:

Cause of Condition - IWL-3310(a): This condition is believed to be an isolated occurrence caused by an error in buttonheading during initial construction.

Applicability to the Other Unit: While errors of this type are possible for Unit 1, this is considered to be an isolated incident. Furthermore, even if errors of this type were more widespread, the containment would continue to perform its design function.

Acceptability of Containment - IWL-3310(b): An evaluation was performed of the applied tendon wire stress to the allowable stress and it was determined that there is substantial margin available in the remaining tendon wires to show that the tendon remains operable. As a result, the containment is acceptable without further evaluation or repair replacement activities.

Requirements for Repair or Replacement - IWL-3310(c): As discussed under the acceptability of containment section above, no repair or replacement activities were required.

Additional Examination Requirements - IWL-3310(d): No additional examinations are warranted for this condition.

3. **Cracks in Concrete > 0.01 Inches in Width Within 2 Feet of Tendon Bearing Plates -** Cracks > 0.01 inches in width were noted in VT-1 examinations on the field sides of Tendon 3D128 and Tendon 12H-26. The onsite Registered Professional Engineer (RPE) investigated the cracks and determined that these indications were contained entirely within the surface layers of concrete and are purely cosmetic in nature. This type of cracking is typical of shrinkage or thermally initiated cracks and does not provide any significant reduction in concrete integrity. As a result, the cracks were accepted by evaluation in accordance with IWL- 3222. Since this was the first tendon examination on ANO-2 conducted to the rules of IWL it is likely that such cracks may have existed for a substantial portion of the plant life.

Cause of Condition - IWL-3310(a): The cause of this condition is believed to be temperature cracking which occurred during initial curing of the surface concrete.

Applicability to the Other Unit: Temperature cracks of this nature are common to all concrete and therefore this condition does exist on Unit 1. However temperature cracks of this nature do not challenge the acceptability of containment. As a result no action is required for Unit 1 as a result of these indications.

Acceptability of Containment - IWL-3310(b): Review by the onsite RPE indicated that these cracks were non structural in nature and that the containment is acceptable without additional evaluation or repair replacement activities.

Requirements for Repair or Replacement - IWL-3310(c): As discussed under the acceptability of containment section above, no repair or replacement activities were required.

Additional Examination Requirements - IWL-3310(d): No additional examinations are warranted for this condition.

- 4. Grease Leak Noted on Concrete Surface** - A grease leak was identified at multiple corners of the concrete patch from the ANO Unit 2 steam generator replacement construction opening. The leak was determined to be very small (a few ounces) and has not shown indications of continued growth. Actions have been taken under CR-ANO-2-2004-01774 to ensure that the leak does not prevent the containment from performing its design function. While this indication was not discovered during the inspection and therefore is not required to be part of the IWL-3300 report, the CR is referenced because the noted condition is applicable to the overall condition of the containment.

Cause of Condition - IWL-3310(a): Grease leaking from a tendon sheath is the probable cause of this condition.

Applicability to the Other Unit: Grease leaks are possible for ANO-1 but would be detected by the existing IWL examinations.

Acceptability of Containment - IWL-3310(b): CR-ANO-2-2004-01774 established that this condition does not impair the containment operability.

Requirements for Repair or Replacement - IWL-3310(c): No repair or replacement is required.

Additional Examination Requirements - IWL-3310(d): No additional examinations are required. The future IWL surveillances are adequate for monitoring this identified condition.

Based on the results of the 25 year tendon surveillance and concrete inspection, Entergy concludes that the ANO-2 containment is currently capable of performing its design function and should remain capable of performing its design function until completion of the 30 year tendon surveillance and concrete inspection.