



ENTERGY

Entergy Operations, Inc.

1448 S.R. 333

Russellville, AR 72801

Tel 501 858 5000

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U. S. Nuclear Regulatory Commission
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Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Repair Limit for Circumferential Cracks in Steam Generator Tubing

Gentlemen:

On July 20, 1995, Entergy Operations met with the staff to discuss a proposal to justify a repair limit for circumferential cracks in steam generator tubing. In the past, all tubes containing circumferential cracks have been repaired upon detection. This was due, in part, to the uncertainties associated with detection and sizing of this type of flaw. New detection equipment and sizing methodologies have recently decreased these uncertainties. The newer detection equipment (utilizing a Plus Point probe) can identify smaller circumferential cracks than previously achievable with other equipment. This new technology could result in the identification of a relatively large number of circumferential cracks of a size that are not structurally significant and that previously would not have been detected. At Arkansas Nuclear One, Unit 2 (ANO-2), such an inspection transient could cause the amount of tubes plugged and sleeved to exceed our plugging limit and would definitely cause a further reduction in operating power level. Use of a circumferential crack repair limit, as justified in the attachment, would minimize the effects of such an inspection transient.

The attached evaluation, which has been approved by our internal and external safety committees, demonstrates that a 40% repair limit, consistent with the current technical specifications, is conservative for circumferential cracks. Improvements in circumferential crack detection and sizing, structural integrity of tubes containing circumferential cracks, crack growth rates, leakage and burst considerations, and operational response to primary to secondary leakage are discussed in the evaluation. The evaluation builds upon our previous submittals and presentations to the staff which described our integrated approach to handling circumferential cracks at ANO-2. This approach has been successful in ensuring the safe operation of ANO-2 since circumferential cracks were first discovered in March 1992. In order to provide the staff with more time for review, the attached evaluation utilizes the

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conservative approach of using a database containing only those tubes with apparent high growth rates to justify use of the 40% repair limit. This submittal will be supplemented, as necessary, to reflect additional data subsequently evaluated.

It is Entergy Operations' intent to have the option of using the repair limit for circumferential cracks beginning with our 2R11 refueling outage, which is scheduled to begin September 22, 1995. Should we utilize the repair limit, tube sections will be pulled, if necessary, to confirm the nondestructive examination sizing accuracy and evaluate structural compliance. A midcycle outage would be conducted to confirm growth rate assumptions following the first use of the repair limit. Additionally, end of cycle leak rates and tube burst probabilities would be calculated and confirmed to be within acceptable limits after each outage which utilizes this repair limit. Entergy Operations will utilize this repair limit only when current repair philosophies (i.e., sleeving or plugging) would not support continued safe and economic operation of ANO-2.

Since this submittal justifies a first of a kind use of the 40% repair limit, we will be available to make a presentation to the staff to further discuss this issue. If you have any questions regarding this submittal, please contact me.

Very truly yours,



Dwight C. Mims
Director, Licensing

DCM/jjd

attachment

cc: Mr. Leonard J. Callan
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

Mr. George Kalman
NRR Project Manager Region IV/ANO-1 & 2
U. S. Nuclear Regulatory Commission
NRR Mail Stop 13-H-3
One White Flint North
11555 Rockville Pike
Rockville, MD 20852