



50-313

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

April 11, 1997

NOED No. 97-6-009

Mr. C. Randy Hutchinson  
Vice President, Operations ANO  
Entergy Operations, Inc.  
1448 S. R. 333  
Russellville, AR 72801

SUBJECT: NOTICE OF ENFORCEMENT DISCRETION (NOED) FOR ENTERGY OPERATIONS, INC.  
REGARDING ARKANSAS NUCLEAR ONE, UNIT 1 (TAC NO. M98336)

Dear Mr. Hutchinson:

By letter dated April 9, 1997, (Attachment 1) you requested that the Nuclear Regulatory Commission (NRC) exercise discretion not to enforce compliance with the actions required in Arkansas Nuclear One, Unit 1 (ANO-1) Technical Specification (TS) 4.18.5.b. That letter documented information previously discussed with the NRC in telephone conversations on April 8 and 9, 1997, and in an earlier draft of the request (Attachment 2). You stated that on April 8, 1997, at 8:12 pm CDT, you determined that the plant was not in compliance with TS Section 4.18.5.b and a reactor shutdown would be required in accordance with TSs 4.0.3 and 3.0.3. You requested that a Notice of Enforcement Discretion (NOED) be issued pursuant to NRC's policy regarding exercise of discretion for an operating facility, as described in Section VII.C, of the General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600.

For several years the progression of intergranular corrosion that had been detected in the steam generator tube sections located inside the upper tube sheet had been tracked at ANO-1. Eddy current test techniques were used to measure the extent of tube degradation caused by the intergranular corrosion. Metallographic measurements of actual tube degradation were made on three tubes that had been removed from the B steam generator during refueling outage 1R13. These measurements indicated a systematic non-conservative bias of up to 50% through-wall in the eddy-current measurements of eleven patches of intergranular corrosion. Based on this data you concluded that it is possible that tubes were returned to service with degradation greater than 40% through-wall, thereby exceeding the TS limit. Once this conclusion was reached, TSs 4.0.3 and 3.0.3 required reactor shut down to begin within 25 hours.

The NOED was requested to authorize continued reactor operation until a TS amendment is processed. The proposed TS amendment would give a one-time authorization to operate with tubes having intergranular corrosion indications exceeding the TS limit until the next refueling outage. In your evaluation of the safety rationale for this request, you noted that all the degradation was inside the tube sheet. You assessed the inspection results in the selection

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of the three tubes that you removed from the steam generator. The three tubes removed were selected because the extent of intergranular corrosion was determined to bound the degradation in the remaining tubes. In accordance with NRC Regulatory Guide 1.121, "Bases for Plugging Degraded PWR Steam Generator Tubes," tube structural integrity may be demonstrated by subjecting the tube to the larger of three times the normal operating differential pressure or 1.4 times the main steam line break differential pressure (3765 psid for ANO-1). Tube leakage integrity may be demonstrated by subjecting the tube to the differential pressure the tube would experience under a postulated main steam line break (2500 psid for ANO-1). The three tubes that had been removed from the steam generator in 1R13 were subjected to pressure tests and withstood pressures in excess of 10,000 psig without leaking or bursting. You stated that review of eddy-current data over past cycles confirms that the patches of intergranular corrosion is exhibiting little or no growth. In addition, based on eddy-current testing, the tubes with the most severe intergranular corrosion were removed from service during the last refueling outage. Therefore, the results of the pressure tests are expected to be representative of the performance of the tubes through the current operating cycle and structural and leakage integrity over this time period is assured.

The staff has concluded that the structural support provided by the tubesheet would preclude catastrophic tube failures resulting from flaws in this region and, based on your pressure testing, tube leakage would not be expected even in the unlikely event of a main steam line break.

At the start of the current operating cycle, you established conservative administrative criteria that require the plant to be shut down if primary-to-secondary leakage into the steam generator reaches 100 gallons per day. The TS limit is 500 gallons per day. Sensitive N-16 gamma monitors were installed for use during this operating cycle to measure radioactivity in the secondary system and alarm in the control room if activity (leakage) is detected. These are effective compensatory measures to monitor steam generator tube leakage and support the authorization of continued power operation for the remainder of the operating cycle.

The anticipated worse case scenario resulting from the continued operation with the existing tube flaws would be the development of a small primary-to-secondary leak. Any leakage would be detected in its incipient stage and the reactor would be shut down. Absent the NOED, you would be required to shut down the reactor and repair the steam generator tubes. Continued operation with the existing tube flaw indications represents an insignificant risk and does not warrant the transient resulting from an unnecessary plant shutdown. Authorization of the NOED on this basis is consistent with criterion B.1.(a) of the NRC NOED policy.

On the basis of the staff's evaluation of your request, the staff concluded that an NOED is warranted because we are satisfied that this action involves minimal or no impact to safety and has no adverse radiological impact on public health and safety. Therefore, it is our intention to exercise discretion not to enforce compliance with TS 4.18.5.b until May 7, 1997, at

April 11, 1997

Mr. C. Randy Hutchinson

- 3 -

3:35 pm CDT, or until an amendment to TS 4.18.5.b is issued, whichever is sooner. This letter documents our telephone conversation on April 9, 1997, at 3:35 pm CDT, when we orally issued this notice of enforcement discretion.

However, as stated in the Enforcement Policy, action will normally be taken, to the extent that violations were involved, for the root cause that led to the noncompliance for which this NOED was necessary.

Sincerely,

ORIGINAL SIGNED BY:

William D. Beckner, Director  
Project Directorate IV-1  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation

Docket No. 50-313

Attachments: As stated

cc: See next page

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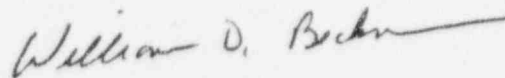
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William D. Beckner, Director  
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Mr. C. Randy Hutchinson  
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Arkansas Nuclear One, Unit 1

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