

September 25, 1996

Mr. Jerry W. Yelverton
Vice President, Operations AND
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72801

SUBJECT: EDDY CURRENT INDICATIONS IN COMBUSTION ENGINEERING DESIGNED WELDED
STEAM GENERATOR TUBE SLEEVES

Dear Mr. Yelverton:

The NRC staff has developed questions regarding the above subject and needs responses to determine Entergy Operations, Inc.'s (EOI's) plans with respect to inspection and repair of these sleeved tubes at the next outage. The staff requests that EOI respond to the enclosed request for additional information within 60 days from the date of this letter.

Sincerely,

ORIGINAL SIGNED BY:

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosure: Request for Additional Information

cc w/encl: See next page

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

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Sincerely,

A handwritten signature in cursive script, reading "Thomas W. Alexion", is written over the typed name.

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

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Mr. Jerry W. Yelverton
Entergy Operations, Inc.

Arkansas Nuclear One, Unit 1

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Russellville, AR 72801

REQUEST FOR ADDITIONAL INFORMATION

ON EDDY CURRENT INDICATIONS IN COMBUSTION ENGINEERING

DESIGNED WELDED STEAM GENERATOR TUBE SLEEVES

Background

During the Prairie Island Unit 1 (PI-1) January 1996 steam generator (SG) tube inspection, 61 eddy current (EC) indications were found in the upper sleeve weld region of Combustion Engineering (CE) welded tubesheet sleeves. These indications were characterized as single or multiple circumferential indications or volumetric indications. All sleeved tubes with the circumferential indications were removed from service (four tubes were pulled; seven tubes were plugged). The sleeved tubes with volumetric indications were evaluated for location. Sleeved tubes with volumetric indications located by EC below the centerline of the sleeve weld were removed from service; the remaining sleeved tubes were left in service (1 tube was pulled; 16 tubes were plugged; 34 tubes were left in service).

The five pulled sleeve/tube assemblies were examined by CE with oversight by the Electric Power Research Institute (EPRI). The results were documented in a March 1996 CE report, "Verification of the Structural Integrity of the ABB CENO Steam Generator Welded Sleeve," CEN-628-P, Revision 01-P. To summarize the report, the EC indications were the result of either or both of two weld conditions termed "incomplete fusion" or "sleeve outside diameter (OD) suckback" caused by improper cleaning of the parent tube prior to welding. Although present since installation, the nondestructive examination (NDE) methods used at the time were not sensitive enough to detect these weld conditions. There was no evidence of inservice induced degradation. The faulty installation process also affected sleeve/tube assemblies at the following plants: ANO-2, Ginna, Kewaunee and Zion-1 and -2. The staff needs responses to the following questions to determine the licensee's plans with respect to inspection and repair of these sleeved tubes at the next outage. (Questions do not need to be directed to Ginna since the SGs were recently replaced.)

Staff Questions

1. During the licensee's next SG tube inspection, what is the licensee's intention regarding inspection of the upper weld in the existing CE-designed welded sleeves? Include inspection scope and nondestructive methodology(ies) to be used.
2. What is the licensee's intention regarding disposition of sleeved tubes with weld zone indications? Include past practice and present intentions. If the licensee intends to leave weld zone indications (WZIs) in service, provide the basis for the acceptability of this practice including the uncertainty in locating the exact position of volumetric flaws.
3. The staff understands a CE topical report addressing the shortcomings found with previous installation practices (e.g., cleaning and NDE methods) is forthcoming. Is it the licensee's intention to adopt this topical report when it is issued? If so, how will the licensee incorporate this topical report into its Technical Specifications for future sleeving?

ENCLOSURE