



Entergy Operations, Inc
1448 S R 333
Russellville, AR 72802
Tel 501 858 5000

2CAN040301

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U. S. Nuclear Regulatory Commission
Document Control Desk
Mail Station OP1-17
Washington, DC 20555

Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
2003 Annual Report of Steam Generator Tubing In-service Inspections

Dear Sir or Madam:

Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specifications 4.4.5.5.b and 6.9.1.5.b require that results of ANO-2 steam generator (SG) tubing in-service inspections performed during the report period be submitted to the NRC on an annual basis. Attached is the Steam Generator Tubing In-service Inspection Annual Report which presents the results from ANO-2's scheduled refueling outage (2R15) inspection. These inspections were completed on April 24, 2002.

This submittal completes the reporting requirements of ANO-2 Technical Specifications 4.4.5.5.b and 6.9.1.5.b for 2003. This submittal contains no commitments.

Should you have any questions regarding this issue, please contact Fred Van Buskirk of my staff at (479) 858-3155.

Sincerely,

A handwritten signature in cursive script that reads "Sherrie R. Cotton".

Sherrie R. Cotton
Director, Nuclear Safety Assurance

SRC/fpv
Attachment

A047

cc w/ att: Mr. Ellis W. Merschoff
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

U. S. Nuclear Regulatory Commission
Attn: Mr. Thomas W. Alexion MS O-7D1
Washington, DC 20555-0001

ARKANSAS NUCLEAR ONE, UNIT 2 STEAM GENERATOR TUBING IN-SERVICE INSPECTION ANNUAL REPORT

1 INTRODUCTION

Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specification (TS) 4.4.5.5.b requires Entergy Operations to submit an annual report to the NRC that outlines the details of the steam generator (SG) tubing in-service inspections that were performed during the reporting period. The report shall include:

1. Number and extent of tubes inspected
2. Location and percent of wall-thickness penetration for each indication of an imperfection.
3. Identification of tubes plugged

The operating period for this report includes one outage, a refueling inspection (2R15) in April 2002.

2 DESIGN

The replacement steam generators are Westinghouse (W) Model Delta 109s. They consist of Inconel 690 thermally treated tubing that is 11/16" in diameter with a 0.040" wall thickness. The tubes are expanded full depth hydraulically in the tubesheet. The tube supports are constructed of stainless steel and are a broached trefoil-hole design. The upper bundle supports consist of five sets of staggered stainless steel anti-vibration bars (AVBs) that are numbered A01-A20.

3 2R15 OUTAGE RESULTS

3.1 2R15 Scope

Table 3.1 lists the inspection scope of 2R15.

**Table 3.1
2R15 Inspection Scope**

SG "A"

<u>Examination Type</u>	<u>Inspections Conducted</u>	<u>% Scope</u>	<u>Extent Tested</u>
Bobbin	10637	100	TEC to TEH
Row 1&2 U-Bend	181	100	08H to 08C
Bobbin I-Codes	15	N/A	N/A

SG "B"

<u>Examination Type</u>	<u>Inspections Conducted</u>	<u>% Scope</u>	<u>Extent Tested</u>
Bobbin	10636	100	TEC to TEH
Row 1&2 U-Bend	181	100	08H to 08C
Bobbin I-Codes	11	N/A	N/A

TEC – Tube End Cold

TEH – Tube End Hot

3.2 Degradation Mechanisms Found

Table 3.2 outlines the number of indications found during the outage.

**Table 3.2
2R15 Inspection Results**

<u>Location</u>	<u>SG "A"</u>	<u>SG "B"</u>
AVB Wear	0	1
Loose Part Wear	0	2
Manufacturing Burnish Marks (MBM)	139	216
Dents (Pre-service)	1017	596

3.3 NDE Techniques Utilized

Table 3.3 identifies the non-destructive examination (NDE) technique used for each location:

**Table 3.3
2R15 NDE Techniques**

Location	NDE Technique
Bobbin	0.560" Bobbin
U-Bend	0.520" Plus Point Coil
Special Interest	0.520" or 0.560" Plus Point Coil

3.4 Number of Tubes Plugged or Repaired by Damage Mechanism

There were no plugs or sleeves installed during 2R15.

3.5 Number and Percent Plugged and Sleeved Following 2R15

The number of tubes plugged or sleeved following 2R15 is shown in Table 3.5.

**Table 3.5
Cumulative Plugs and Sleeves in Service**

	SG "A"	SG "B"
Sleeves	0	0
Pre-service I-690 Welded	0	1
Post Installation Plugs	0	0
Percent Plugged	0.000 %	0.009 %

3.6 Description of Tube Integrity Assessment

The operational assessment was performed using deterministic methods for the identified damage mechanism and justified operation for the next two cycles. All performance criteria were met.

3.7 Description of Corrective Actions

There were no corrective actions taken since all tests met the specified criteria

3.8 Evaluation of Exceeding Condition Monitoring

Not applicable since all conditions were met.

3.9 Item #2 of the Technical Specification (location and percent of wall-thickness penetration for each indication of an imperfection)

This topic is addressed in Table 3.9 for SG "B" below. There were no indications identified in SG "A".

**TABLE 3.9
SG "B" INDICATION LIST FOR 2R15**

No.	Row	Column	Indication	Location	Reason	% TW
1	100	25	VOL	TSC +12.8	Loose Part	18
2	102	25	VOL	TSC +12.3	Loose Part	4
3	109	92	WAR	A11 - 0.17	AVB Wear	12

Legend:

VOL - Volumetric
WAR - Anti-Vibration Bar Wear
TSC - Tubesheet Cold
A11 - 11th Anti-Vibration Bar
TW - Through Wall