ENGINEERING FILE NUMBER: 1006

PSC Precision Surveillance Corporation

Main Title: Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

Sub-Title: Surveillance Report

BY

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Reviewed by: Ronald Hough, P.E. General Manager

ENGINEERING DEPARTMENT

ABSTRACT

This report presents the findings of the ten year visual tendon surveillance of Arkansas Nuclear One - Unit 2. This surveillance mainly consisted of sheathing filler analysis and tendon anchorage inspection. Based on the results of this surveillance, no abnormal degradation of the containment post tensioning is evident.

REVISION CONTROL LOG

Rev.	Revision Date	By	Approved By	Pages Affected
1	5/13/88	JW	RDH	i thru iv, 1 thru 9, A-1 thru A-2, B-1 thru B-37,
0	7/1/88	JW	RDH	C-1, D-1 thru D-111, E-1 thru E-2, F1 thru F10,

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

Summary

This report covers the Ten-Year visual tendon surveillance of the Arkansas Nuclear One - Unit 2 primary reactor containment building. The tendon surveillance program consists of periodic visual inspection for physical condition of a randomly pre-selected group of surveillance tendons. Visual tendon surveillance consists of removing grease caps, sheathing filler analysis, anchorage inspection, and resealing.

The Ten-Year tendon surveillance was performed approximately 123 months after completion of the structural integrity test and involved 9 tendons (3 verticals, 3 hoops, and 3 domes).

Only one item should be noted, that tendon 31H36 had two ounces of water found in the field end.

Inspection of the anchorages, sheathing filler, buttonheads, and wire continuity were all found acceptable. Therefore, based on the results of this ten-year surveillance, no abnormal degradation of the containment post-tensioning is indicated.

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Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

Introduction

This report covers the ten-year visual tendon surveillance of the Arkansas Nuclear One - Unit 2 primary reactor containment building. The containment building tendon surveillance program is a systematic means of assessing the continuing quality and structural performance of the post tensioning system. The ten-year tendon surveillance is the fourth is a series with additional tests scheduled at five year intervals hereafter.

The Arkansas Nuclear One - Unit 2 containment meets the guidelines established in Regulatory Position C2 of Regulatory Guide 1.35, Revision 2 for identical containment structures on one site, without environmental or other apparent differences, constructed in a continuous manner by the same contractor. Therefore, only a visual surveillance was performed. The contractor for Arkansas Nuclear One - Units 1 and 2 was Bechtel Power Corporation, San Francisco, California.

This tendon surveillance program consists of periodic visual inspection for physical condition of a randomly pre-selected group of surveillance tendons. This inspection provides confidence in the condition and functional capability of the system and an opportunity for timely corrective measures if adverse conditions are detected. Visual tendon surveillance consists of removing grease caps, sheathing filler analysis, anchorage inspection, and resealing.

The ten-year tendon surveillance of the Arkansas Nuclear One-Unit 2 reactor building post tensioning system was performed in February 1988 (approximately 123 months after completion of the structural integrity test performed in October, 1977). The surveillance was conducted in accordance with "Reactor Building Tendon Surveillance Procedure", Operating Procedure No. 2402.48 Revision 2. A copy of that Test Procedure is included in this report under Appendix B. The group of three vertical, three hoop, and three dome tendons were selected for inspection in compliance with NRC Regulatory Guide 1.35 (Rev. 2 January 1976). The location and identification of these surveillance tendons are shown in Appendix A.

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

I. Surveillance Procedures

Detailed procedures for the conduct of surveillance operations are included in Appendix B. The following summarizes the typical activities performed on a surveillance tendon.

Following removal of the tendon anchorage cap, samples of filler are taken from each cap for laboratory analysis. Sheathing filler is then removed from the hardware, and the various anchorage components are inspected for physical condition. The inspection includes: a count of missing, split, deformed, and unseated buttonheads; examination of the stressing anchorages, shims, and bearing plate for cracks and other visual deformations and examination of all metal components for coverage by filler as well as corrosion. The results of these examinations and inspections are recorded on appropriate data sheets. Also recorded for unexpected conditions is the general appearance of the filler material, the amount of water (if any) drained from or found in the cap, and the estimated amount of filler removed or drained from the anchorage and tendon sheathing as well as the amount of filler replaced.

II. Sheathing Filler Analysis

A sample of sheathing filler was removed from each end of each surveillance tendon. Chemical tests were performed on one sample from each tendon. The sample analyzed was selected arbitrarily from the tendon shop or field end. Chemical tests on the second samples from a tendon were required only if the results of the tests on the first sample failed to meet the acceptance criteria of Attachment 4 of Operating Procedure 2402.48 Rev. 2.

Maximum acceptance limits of 10% by weight water and 10 parts per million for water-soluble chlorides, nitrates, and sulfides were established in Attachment 4 of Operating Procedure 2402.48 Rev. 2. Those limits for water-soluble ions are the same as given by ASME Section III, Division 2-[illegible] Concrete Reactor Vessels and containments for new sheathing filler while no limit for water content was given by the ASME Code. All samples tested met the acceptance criteria for water and water-soluble ions. The results of analysis of the sheathing filler are given in [illegible] and the sheathing filler removal and installation [illegible] are given in Appendix D. A summary of the [illegible] report results are tabulated in Table I

III. Tendon End Anchorage Inspection

The anchorage components were inspected after end cap removal to determine whether sheathing filler coverage was adequate. In every case but one the tendon wire buttonheads were completely coated by the sheathing filler while 73% of the other metal components were completely coated. In no case was coating less than 50%.

After the sheathing filler was cleaned off, the anchorage components were inspected for corrosion, cracks, and buttonhead size and condition. Corrosion of anchorage components was found to be either corrosion level No. 1- "bright metal, no visible exidation" or corrosion level No. 2 - "reddish brown, no pitting". No cracks in anchorheads, shims, or bearing plates were observed. A total of 10 buttonheads were found to have splits which were judged to be acceptable as the heads were seated and wires were carrying load.

Inspection of buttonhead size is not intended to be a basis for acceptance or rejection of each tendon but rather a recording of the as-inspected condition. Eight tendons had offsize buttonheads of 10 to 20 while one other tendon exhibited eight offsize buttonheads. No offsize buttonheads showed any signs of cracking (neither slips nor splits). In some cases, the go-no go gage would not pass over pairs or groups of buttonheads, but further inspection showed the heads were not offsize but spaced too closely for the gage wall to pass between.

A possible condition that would explain this problem was conjectured in the last surveillances for Unit 2. From the regular pattern of these offsize buttonheads, it seems that the hole spacings on the anchorheads may be slightly irregular. This condition would not have been observed during construction, as buttonheads are checked for size before tensioning, and the heads would not be fully seated. Since the offsize buttonheads were subjected to 80% of the ultimate strength during construction without buttonhead failures, and no visible signs of in-service failure such as cracking were observed, the offsize buttonheads have no harmful effect on the post tensioning system integrity.

A tabulated summary of the tendon end anchorage inspection results is given in Table II while the complete set of data sheets are in Appendix D.

III. Tendon End Anchorage Inspection, Continued

A review of the grease replacement and loses from Table II, shows that replacement was equal to or more than the amount removed. However, this amount was no greater than four gallons, which is a very small percent of the total and common occurrence for tendon system surveillances.

IV. Other Observations

The neutralization test is generally run by grease manufacturers on new batches of product. It is a method of determining the overbase additives in the grease. Degradation of the sheathing filler will yield a change in acidity of the material and would be detected as an increase in ion content (chlorides, nitrates, and sulfides). Up until this third surveillance, the neutralization number was tested for as per ASTM D644. ASME Section III Division 2 Code requiring the neutralization number to be tested for as per ASTM D974 - Modified. This revision was used in the Third and this surveillance.

Tendon V56 showed a low neutralization of 2.62. This indicates that V56 was probably filled with 2090P grease rather than 2090P-4. Both greases were used on the site and the neutralization numbers are in a range to be expected for 2090P and 2090P-4 grease.

Tendon 31H36 field end had two ounces of water found in the grease can. The grease was discolored as it was for tendon 12H18 shop end. Laboratory testing of grease for water found the water content below 1% for both tendons. Therefore, the occurrence of discoloring was localized and the condition of water being present was not a sign of degradation of the system. It is most likely the water was present from a leaking seal. Since the seals were replaced and the water content was at acceptable levels, the condition is accepted as is.

V. Comparison With Past Surveillances

All tendons inspected during this surveillance had never been inspected in previous surveillances. The data from this surveillance's operations; grease testing, control of grease quantity, and visual inspection are consistent with results obtained in past surveillances.

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

TABLE I - SUMMARY OF LABORATORY ANALYSIS OF SHEATHING FILLER

Tendon	End	Water Solubles - ppm			Water Content (ASTM D95) (% W/W)	Neutralization Number mg KOH/g Per ASTM D974 (Modified) Base Number
		Chlorides (ASTM D512)	Nitrates (ASTM D992)	Sulfides (APHA)		
V9	F	0.515	<0.05	0.013	0.19	38.71
V56	S	0.456	0.05	0.014	0.20	2.62
V95	F	0.603	<0.05	0.012	0.54	43.79
12H18	S	0.162	<0.05	0.037	0.14	42.76
31H36	F	0.132	<0.05	0.003	0.92	41.55
32H50	F	0.074	<0.05	0.012	0.10	40.65
3D104	F	0.074	<0.05	0.003	0.22	40.77
2D219	S	0.132	<0.05	<0.001	0.25	43.95
1D327	S	0.191	<0.05	<0.001	0.32	45.45
Allowable Maximum		10 ppm	10 ppm	10 ppm	10% W/W	>0.00

Ten Year Visual Tendon Surveillance of the Arkansas
Nuclear One - Unit 2 Primary Reactor Containment Building
Summary of Tendon End Anchorage Inspections

Table II

Tendon	End	TENDON SHEATHING FILLER Amount Removed (Gal.)	Amount Replaced (Gal.)	Color Change	ANCHORAGE COVERAGE (%) Cap	Button-heads	Anchor heads	Shims	Bearin Plate
V9	S	.5	.5	None	100	100	100	100	100
	F	.5	.5	None	100	100	100	N/A	100
V54 [4]	S	.25	3.25	None	100	100	100	100	100
V56	S	.5	4.5	None	100	100	100	100	100
	F	.5	.5	None	100	100	100	N/A	100
V95	S	.5	.25	None	100	100	100	100	100
	F	.5	.5	None	100	100	100	N/A	100
12H18	S	2.5	4.75	Yes	80	100	90	80	80
	F	1.75	3.75	None	80	100	80	80	80
31H36	S	2.5	4.25	None	80	100	95	80	100
	F	2.25	5.25	Yes	50	50	50	50	50
32H50	S	2.25	2.25	None	80	100	80	80	80
	F	3.0	3.75	None	80	100	100	100	100
3D104	S	3.25	4.0	None	100	100	100	100	100
	F	3.75	4.25	None	100	100	100	100	100
2D219	S	3.0	4.5	None	100	100	100	100	100
	F	3.0	4.0	None	100	100	100	100	100
1D327	S	3.25	5.0	None	100	100	100	100	100
	F	2.75	5.25	None	100	100	100	100	100

Tendon	End	ANCHORAGE CORROSION LEVELS Button-heads	Anchor-heads	Shims	Bearing Plate	BUTTONHEADS Missing	Split	Offsize
V9	S	1	1	1	1			10
	F	1	1	N/A	1			
V54 [4]	S	1	1 (80%)	1	1			8
	F		2 (20%)					
V56	S	1	1	1	1		10	
	F	1	1	N/A	1			
V95	S	1	1	1	1			12
	F	1	1	N/A	1			
12H18	S	1	1	1	1			20
	F	1	1 (98%)	1	1			
			2 (2%)					
31H36	S	1	1	1	1			
	F	1	1	1	1			14
32H50	S	1	1	1	1			
	F	1	1	1	1			19
3D104	S	1	1	1	1			6
	F	1	1	1	1			13
2D219	S	1	1	1	1			4
	F	1	1	1	1			10
1D327	S	1	1 (80%)	1	1			2
			2 (20%)					
	F	1	1	1	1			14

See Page 6 for Notes on Table II

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

Notes on Table II: Summary of Tendon End Anchorage Inspections

1. Corrosion levels are defined as follows:

   1 = Bright Metal, No Visible Oxidation

   2 = Reddish Borwn, No Pitting

   3 = 0" < Pitting < .003"

   4 = .003" < Pitting < .006"

   5 = .006" < Pitting < .010"

2. Tendon end defined as:

   S = Shop End (top for Verticals)

   F = Field End (botton for Verticals)

3. N/A = not applicable (there are no shims on the field end of the vertical tendons)

4. Obstruction of field end V54 was found, therefore, V56 was substituted as the surveillance tendon per review and instruction of A.P. & L. Engineering.

Ten Year Visual Tendon Surveillance of the Arkansas
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Summary of Water Inspections

TABLE III

TENDON NUMBER	SHOP	FIELD
V9	None	None
V53	None	N/A
V54	None	N/A
V55	None	N/A
V56	None	None
V57	None	N/A
V95	None	None
12H18	None	None
31H36	None	Two Oz.
30H50	None	None
3D104	None	None
2D219	None	None
1D227	None	None

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

Conclusions

The anchorage inspection showed that the anchorage components had no observed cracking and negligible corrosion. The sheathing filler from every surveillance tendon was found to be acceptable. The tendon wire buttonheads were found to be acceptable, with only negligible variances existing. All surveillance tendons were visually inspected for discontinuous wires and none were found.

Based on the results of the ten-year tendon surveillance of Arkansas Nuclear One - unit 2, no abnormal degradation of the containment post-tensioning is indicated.

Ten Year Visual Tendon Surveillance of the Arkansas
Nuclear One - Unit 2 Primary Reactor Containment Building

LIST OF REFERENCES

1. United States NRC Regulatory Guide 1.35, Inservice Inspection of Ungrouted Tendons in Pre-Stressed Concrete Containment Structures, Revision 2, January 1976.

2. Arkansas Nuclear One, Unit 2, One-Year Visual Tendon Surveillance Report, prepared by Bechtel National, Inc. Research and Engineering Group.

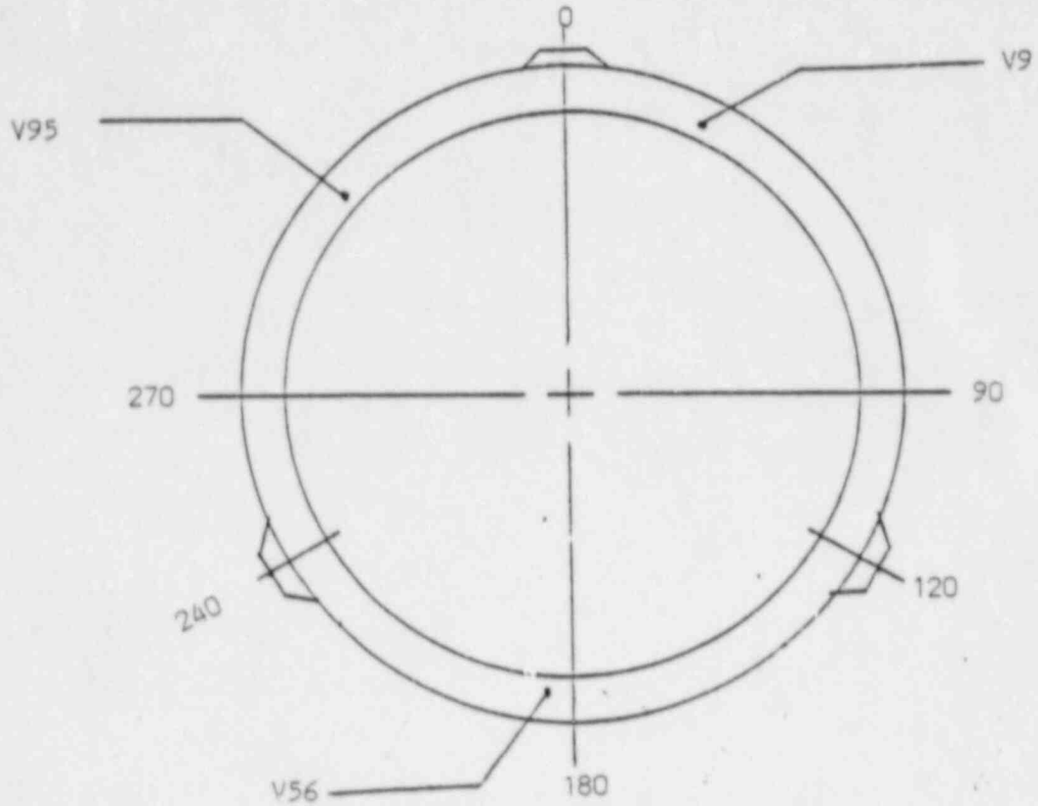
3. Arkansas Nuclear One, Unit 2, Three-Year Visual Tendon Surveillance Report, prepared by Bechtel Power Corporation, Special Services & Testing.

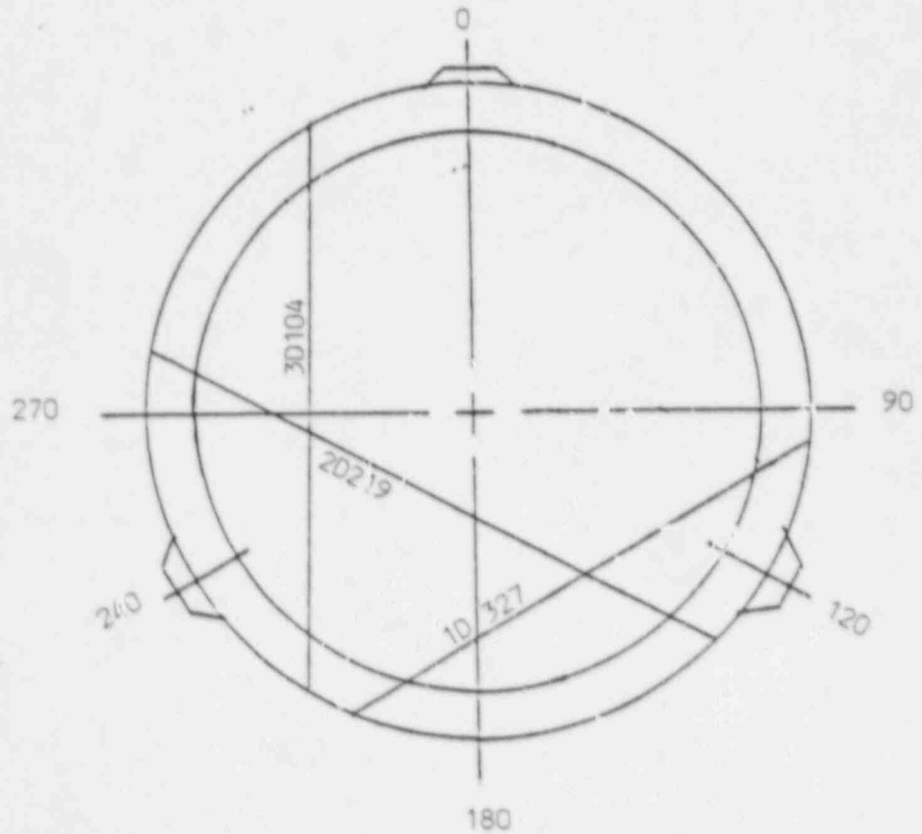
4. Arkansas Nuclear One, Unit 2, Five-Year Visual Tendon Surveillance Report, prepared by Inryco, Incorporated, Surveillance Department.

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

APPENDIX A - Ten Year Surveillance Tendon Locations

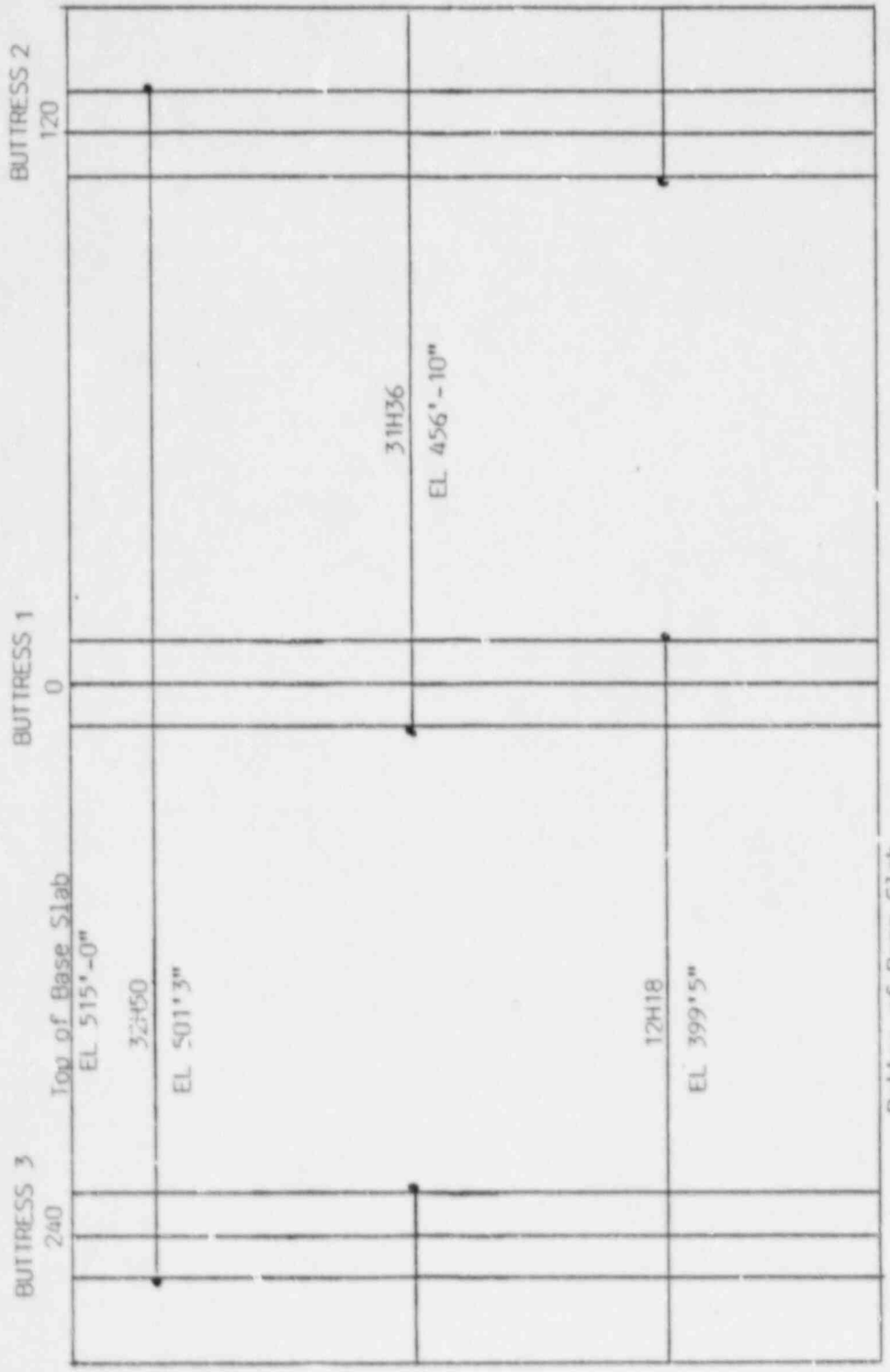
PSC Precision Surveillance Corporation	ARKANSAS POWER & LIGHT ANO UNIT #2 10th YEAR SURVEILLANCE	CALCULATION NO:
	SAFETY RELATED / NON-SAFETY RELATED	PAGE A1 OF 2





PREPARED BY Bill Carter	DATE 7-1-88	REVIEWED BY	DATE

PSC Precision Surveillance Corporation	ARKANSAS POWER & LIGHT ANO UNIT #2 10th YEAR SURVEILLANCE	CALCULATION NO:
	SAFETY RELATED / NON-SAFETY RELATED	PAGE A2 OF 2



HORIZONTAL TENDONS DEVELOPED ELEVATION

PREPARED BY Bill Carter	DATE 7-1-88	REVIEWED BY	DATE

Ten Year Visual Tendon Surveillance of the Arkansas
Nuclear One - Unit 2 Primary Reactor Containment Building

APPENDIX B - Arkansas Nuclear One
(Unit 2)
Tendon Surveillance
Test Procedure

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

JO# 14910

TITLE: RECORD OF CHANGES AND REVISIONS

FORM NO. 1000.06A

MECHANICAL MAINTENANCE

REV. # 24

Safety

TENDON SURVEILLANCE PROCEDURE
2407.048 REV. 2

Unit Unit Copy # 105

SAFETY RELATED YES ☑ NO ☐

PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV
1	2	20	2						
2	2	21	2						
3	2	22	2						
4	2	23	2						
5	2	24	2						
6	2	25	2						
7	2	26	2						
8	2	27	2						
9	2	28	2						
10	2	29	2						
11	2	30	2						
12	2	31	2						
13	2	32	2						
14	2	33	2						
15	2	34	2						
16	2	35	2						
17	2	36	2						
18	2								
19	2								

APPROVED BY: Stephen M Dawney

APPROVAL DATE: 2/17/88

REQUIRED EFFECTIVE DATE:

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048

ARKANSAS NUCLEAR ONE

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REVISION	2	DATE	07/12/88
CHANGE		DATE	

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ARKANSAS NUCLEAR ONE	PAGE 2 of 36	
	REVISION 2 DATE 02/12/88	
	CHANGE DATE	

1.0 PURPOSE

The purpose of this procedure is to provide the instructions and documentation requirements to assess the continuing quality and structural performance of the Unit 2 Containment post-tensioning system.

2.0 SCOPE

2.1 This procedure covers the following:

2.1.1 Visual inspection and laboratory testing of the sheathing filler samples from each of the surveillance tendons.

2.1.2 Inspection of the anchor assembly of each of the surveillance tendons for deficiencies such as corrosion, cracks, missing wires, or off-size buttonheads.

2.1.3 Evaluation of the test and inspection results to assess the general condition of the post-tensioning system and evaluation of time dependent factors such as corrosion.

2.2 This procedure does contain monitoring requirements for assessing conformance with Limiting Conditions for Operation (LCO) of the the Unit 2 Technical Specifications.

2.3 This procedure may be used as a partial procedure in conjunction with an approved corrective action Job Order.

2.3.1 When using this procedure in a partial performance, the sections and the steps to be performed shall be listed below as designated by the Cognizant Supervisor.

N/A

Michael W. Combs — 2/5/88 — 4/20/88 Rev. 4/2-/88

Cognizant Supervisor — Date

3.0 DESCRIPTION

The tendon surveillance consists of a periodic inspection for the physical condition of a randomly selected group of surveillance tendons. This provides confidence in the condition and functional capability of the system and an opportunity for timely corrective measures should adverse conditions be found. Tendon surveillance testing consists of sheathing filler inspection, anchorage inspection, inspection of anchorage components and vertical repacking and sealing. Twenty-one (21) tendons are to be randomly designated as surveillance tendons during each of the the first three surveillances. The surveillance tendons consist of ten hoop

tendons, five vertical tendons located at approximately equally spaced intervals, and six dome tendons - two in each of the three groups of the dome tendons as operating conditions allow. The number of surveillance tendons in each of the succeeding surveillance years is nine (9) which consists of three hoop tendons, one from each 240° sector; three vertical tendons; and three dome tendons, one from each group. The recommended surveillance tendons may be varied provided that the selection is based on a random and representative basis and the total number of tendons in each of the different groups to be tested remains unchanged. One tendon in each group (Dome, Vertical, Hoop) shall remain unchanged after the initial selections to develop a history of tendon performance and to correlate the observed data. The tendon numbering system and the tendon locations are defined on the design drawings for the post tensioning system. An index to these drawings are provided in Attachment 2. Drawing C-2608 Sheet 4 through 6 shows the surveillance years, the corresponding surveillance numbers and the recommended surveillance tendons for the life of Unit 2.

4.0 REFERENCES

4.1 References used in the preparation of this procedure:

4.1.1 CE Memo 83-205 dated 9-22-1983

4.1.2 Unit 2 Technical Specifications 3.6.1.1, 3.6.1.5 and 4.6.1.5.

4.1.3 Drawing C-2608 Sheets 4, 5 and 6.

4.2 References which are required to be used in conjunction with this procedure.

4.2.1 Drawing C-2608 Sheets 4, 5 and 6.

4.3 Regulatory correspondence containing NRC commitments which have been incorporated in this procedure.

4.3.1 None

5.0 TEST EQUIPMENT, SPECIAL TOOLS, AND SUPPLIES

5.1 Grease Sampling Tool

5.2 "Go No-Go" Gauge

5.3 Thermometer

5.4 Viscosity Oil Company Visconorust 2090 P-4.

6.0 LIMITS AND PRECAUTIONS

6.1 Limits

6.1.1 The Steps in this procedure must be followed in sequence.

6.1.2 The Tendon Surveillance may be performed during operation of Unit 2.

6.1.3 The Tendon Surveillance shall be performed 1 year, 3 years and 5 years from the date of the structural integrity test (October 17, 1977) and at five year intervals thereafter.

6.1.4 The time between removal and replacement of the sheathing filler from the tendon shall NOT exceed 3 weeks; during this period the tendons and anchors shall be protected with Viscosity Oil Company Visconorust 2090 P-4.

6.1.5 IF during the performance of this procedure any equipment or component is found to be non-functioning or out of tolerance,
THEN,
stop and initiate a RAC.

6.2 Precautions

6.2.1 Performing the Tendon Surveillance could require working at high elevations - Safety lines and safety belts shall be used.

6.2.2 Do not attempt to blow the Filler Material out of the tendons, high pressure air could rupture the tendon sheath.

7.0 PREREQUISITES AND INITIAL CONDITIONS

7.1 Verify that areas below the work location that are accessible by other personnel have been posted and barricaded to prevent injury to personnel from dropped objects.

CB 12/20/88

7.2 Record the Tendon Numbers that are to be tested in accordance with Drawing C-2608 Sheets 4, 5 and 6.

Vertical: V9
V54 *
V95

*V54 FIELD END INACCESSIBLE. V56 INSPECTED BOTH ENDS IN LIEU OF CB 2/24/88

Hoop: 12H18
31H36
32H50

Dome: 1D327
2D219
3D104

CB 12/20/88

7.3 Verify that the Supporting Engineer has been notified that the job is ready to start. CB 12/20/88

NOTE
Completion of the steps in this procedure should be initial/dated on Attachment 5.

8.0 INSTRUCTIONS

NOTE
The sheathing filler could be found in a liquid, gel or a solid form. Complete removal of the sheathing filler is not required provided that all of the filler that is removed during this surveillance is replaced.

8.1 Sheathing Filler Inspection

8.1.1 Record the Tendon Number on Attachment 5.

A. Inspect for water in the tendon void, in the grease can and around the tendon anchorage using the instructions in Attachment 7.

8.1.2 Remove the Tendon Filler Cap from the Tendon.

8.1.3 Record the amount (volume) of sheathing filler material removed on Attachment 5.

8.1.4 Record the Ambient Temperature (T1) on Attachment 5.

NOTE
Step 8.1.5 applies to vertical tendons only.

8.1.5 Check the level of the filler in the following manner:

NOTE
Ambient temperature is defined as the containment exterior concrete temperature.

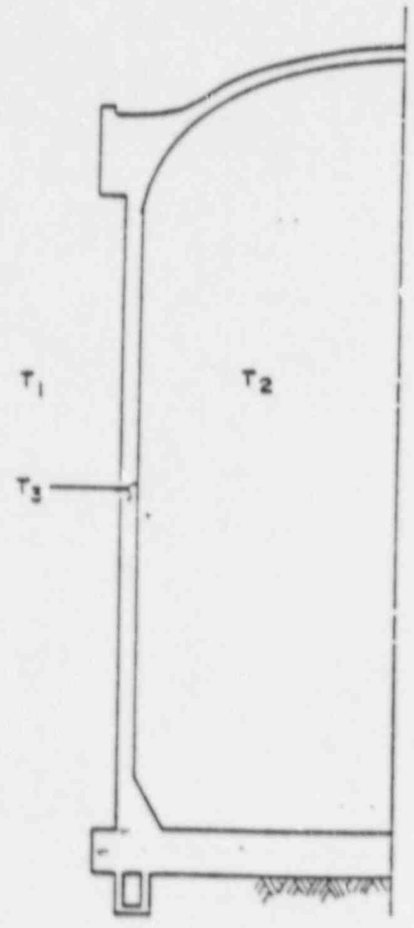
A. Record the Ambient Temperature (T1) on Attachment 5.

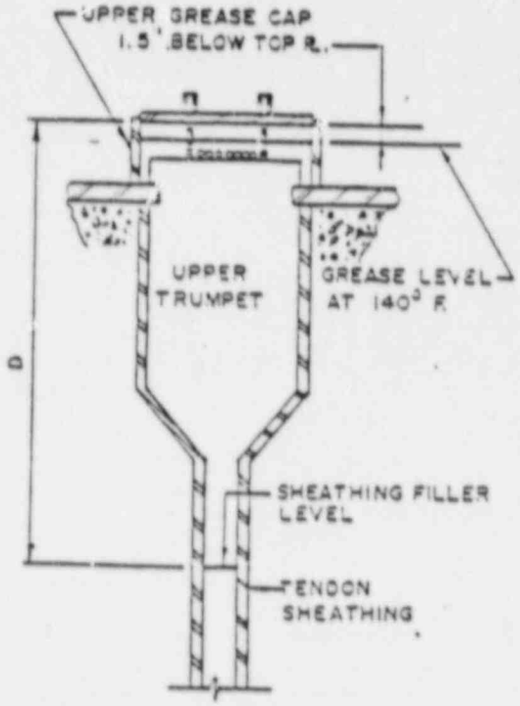
B. Add the temperature readings of 2TE-5606-5 and 2TE-5606-6 together and divide by two (2) and record the result as T2 on Attachment 5.

C. Add the temperature (T1) and temperature (T2) together, divide by two (2) and record the result as T3 on Attachment 5.

D. Determine what the correct level of the filler material is supposed to be from the chart below.

T3 (°F)	140	130	120	110	100	90	80	60	40
D (inch)	1.5	8.5	12.0	14.5	16.5	18.5	20.0	24.0	28.0





D = DISTANCE FROM TOP OF UPPER CAP TO THE SHEATHING FILLER LEVEL.

$$T_3 = \frac{(T_1 + T_2)}{2}$$

T_1 = AMBIENT TEMPERATURE

T_2 = AVERAGE TEMPERATURE INSIDE CONTAINMENT

T_3 = AVERAGE TEMPERATURE

E. Measure the distance (D) from the top of the Tendon Trumpet to the level of the Filler material and record the measurement on Attachmunt 5.

8.1.6 Compare the color of the filler with new unused filler and record the color comparison on Attachment 5.

A. IF the filler is tan colored,
THEN obtain a one quart sample of the tan colored grease and place in storage for 24 hours,
IF NOT,
THEN mark this step N/A.

B. IF the filler is still tan colored after 24 hours in storage,
THEN submit the colored sample for testing to the Cognizant Supervisor.

NOTE

It is acceptable to obtain the sample from the top (shop) end of the vertical tendons using the special long handled tool that is shown in Attachment 6. The correct way to use the long handle tool is to first thoroughly clean the tool with Viscosity Number 16 solvent and then push the tool into the grease (filler); pull the tool out and scrape the grease (filler) into the sample container. This operation may be repeated until a full sample is obtained.

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

NOTE

IF a sample was taken for a color comparison THEN taking another one-quart sample for chemical testing is NOT required. It is acceptable to use samples taken for color comparison for the chemical testing.

8.1.7 Obtain a one quart sample of filler from each end on the tendons to be inspected.

8.1.8 Label each sample in a manner that shows which tendon and which end of the tendon the sample was taken from.

NOTE

Two samples are taken from each of the tendons that are inspected. One of the samples is submitted for analysis and the other is stored.

8.1.9 Submit one of the two one quart samples for chemical testing.

A. IF the first sample fails the chemical analysis, THEN submit the second sample that was taken from the same tendon for testing,
IF NOT,
THEN dispose of the second sample.

B. IF the second sample fails the chemical analysis THEN initiate a PEAR so that an evaluation can be performed to determine if replacement of the filler material is required.

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the Stressing Plate and the Buttonheads with Viscosity Number 16 Solvent.

NOTE

Step 8.2.2 is a visual inspection. The Buttonheads are actually the end part of the wire cable that have been formed into the shape of a Button-head. A suspect wire is a missing buttonhead or a loose or raised button head.

8.2.2 Inspect the Buttonheads for the following and record the results of this inspection on Attachment 5.

- Broken or missing Buttonheads
- Shape of the Buttonhead
- Cracks
- Corrosion
- Overall General Appearance.
- Buttonheads that are not seated tightly in the Stressing Plate

A. IF any Buttonheads are found to be missing, THEN strain the grease through a fine mesh screen until the Buttonhead is found.

B. IF three or more buttonheads are found loose or broken, THEN inspect all the wires (Buttonheads) in one tendon on each side of the tendon that has broken wires.

NOTE

IF both of the tendons adjacent to the deficient tendon show evidence to indicate less than three broken wires per tendon THEN the deficiency should be considered to be unique and acceptable.

C. IF either OR both of the tendons on either side of the tendon that has broken wires have three or more broken wires, THEN initiate a Plant Engineering Action Request (PEAR) so that an evaluation can be made.

NOTE

Attachment 1 shows a drawing of the Go/No Gage. It is acceptable to fabricate this gage as long as the gage is within the tolerances shown on the drawing.

8.2.3 Inspect each Buttonhead using the Go/No-Go Gage and record results on Attachment 5.

8.2.4 Inspect the anchor head, shims and the stress plate for corrosion, cracks or evidence of deterioration. Record the results of this inspection on Attachment 5.

8.2.5 Apply a coating of Viscosity Oil Company's 2090 P-4 to the tendon end anchorage following the inspection.

8.3 Vertical Tendon Repacking

NOTE

The average Tendon temperature (T3) is the average value of the ambient temperature (T1) and the average temperature inside Unit 2 Containment building (T2) at the time when the sheathing filler is checked, removed or added.

NOTE

Repacking the top and the bottom caps for the vertical tendons may be done using unheated Sheathing filler material providing the amount of material drained off does not exceed 5 gallons for the top cap and 25 gallons for the bottom cap IF the average tendon temperature (T3) does NOT exceed 70°F.

8.3.1 Determine the average temperature (T3) in the following manner:

NOTE

Ambient temperature is defined as the Containment exterior concrete temperature.

A. Record the Ambient Temperature (T1) on Attachment 5.

B. Add the temperature readings of 2TE-5606-5 and 2TE-5606-6 together and divide by two (2) and record the result as T2 on Attachment 5.

C. Add the temperature (T1) and temperature (T2) together, divide by two (2) and record the result as T3 on Attachment 5.

NOTE

The correct sheathing filler material to use to refill the tendons is Viscosity Oil Company's Visconorust 2090-P.

CAUTION

Using heated filler material with a temperature less than 120° or higher than 240° could damage the sheath.

8.3.2 Repacking Sheathing Filler Material

A. IF the Sheathing Filler material that was removed is less than 5 gallons for the top cap and less than 25 gallons for the bottom cap and the average temperature (T3) is less than 70°F,
THEN Repack the Top and the Bottom caps with unheated sheathing Filler material,
IF NOT,
THEN mark this step N/A.

B. IF the average temperature (T3) exceeds 70°F and/or the amount of the Filler Material drained from the Bottom Cap exceeds 25 gallons,
THEN repack the tendon using heated Filler Material
IF NOT,
THEN mark this step N/A.

C. IF the Sheathing Filler material was repacked with heated filler material
THEN record the temperature of the filler material at the pump,
IF NOT,
THEN mark this step N/A.

D. Install the Filler Cap.

8.4 Dome and Hoop Repacking

NOTE

The correct sheathing filler material to use to refill the tendons is Viscosity Oil Company's Visconorust 2090-P.

CAUTION

Using heated filler material with a temperature less than 120° or higher than 240° could damage the sheath.

8.4.1 Pump heated filler material through the hose until all old filler material has been purged from the hose.

8.4.2 Attach the hose to the shop or field end of the hoop or dome tendon.

8.4.3 Verify that all valves, vents and drains for the tendon are open.

NOTE

If less than 5 gallons of filler material has been removed from each filler end, Then it is acceptable to replace the filler material by pumping or pouring into each end provided that each end is vented to bleed out air.

8.4.4 Pump heated filler material (120°F to 240°F) into the tendon until at least five gallons of filler material without air bubbles or foreign material is visible in the filler material.

8.4.5 Record the filler material temperature at the pump on Attachment 5.

8.4.6 Record the filler material installation pressure on Attachment 5.

8.4.7 Record the Ambient Temperature (T1) on Attachment 5.

8.4.8 Record the date that the filler cap was installed on Attachment 5.

8.5 Tendon Resealing

CAUTION

Only new unused gaskets, washers, gasket sealant and o-rings may be used.

8.5.1 Install the tendon filler cap.

A. Torque the vertical tendon bottom caps to 160 ft-lbs in 40 ft-lbs increments in a criss cross pattern.

B. Torque the top vertical tendons caps and all other filler caps to 50 ft-lbs (two passes at 50 ft-lbs) in criss cross pattern.

NOTE

Step 8.5.2 is to be performed at least 24 hours after the completion of step 8.5.1.

8.5.2 Check the torque value by torquing the filler caps to 160 ft-lbs for vertical tendon bottom caps and 50 ft-lbs for all other tendon filler caps.

9.0 RESTORATION AND CHECKOUT

9.1 Verify that all tools and equipment have been returned to their proper storage location. DB 4/20/88

9.2 Submit copies of Attachment 5 (for each tendon) to ANO Plant engineering so that a comparison with the original stressing record and/or the previous surveillances to determine the following:

9.2.1 Additional wires have been broken since the last inspection.

9.2.2 A change in corrosion status of the sheathing filler material has occurred. DB 4/20/88

9.3 Verify that the Unit 2 Operations Shift Supervisor has been notified that the job is complete. DB 4/20/88

10.0 ATTACHMENTS AND FORMS

10.1 Attachment 1 - Go-No Gauge

10.2 Attachment 2 - Drawing Index

10.3 Attachment 3 - Instructions for Replacing Filler Material

10.4 Attachment 4 - Procedure for Laboratory Testing of Sheathing Filler Material

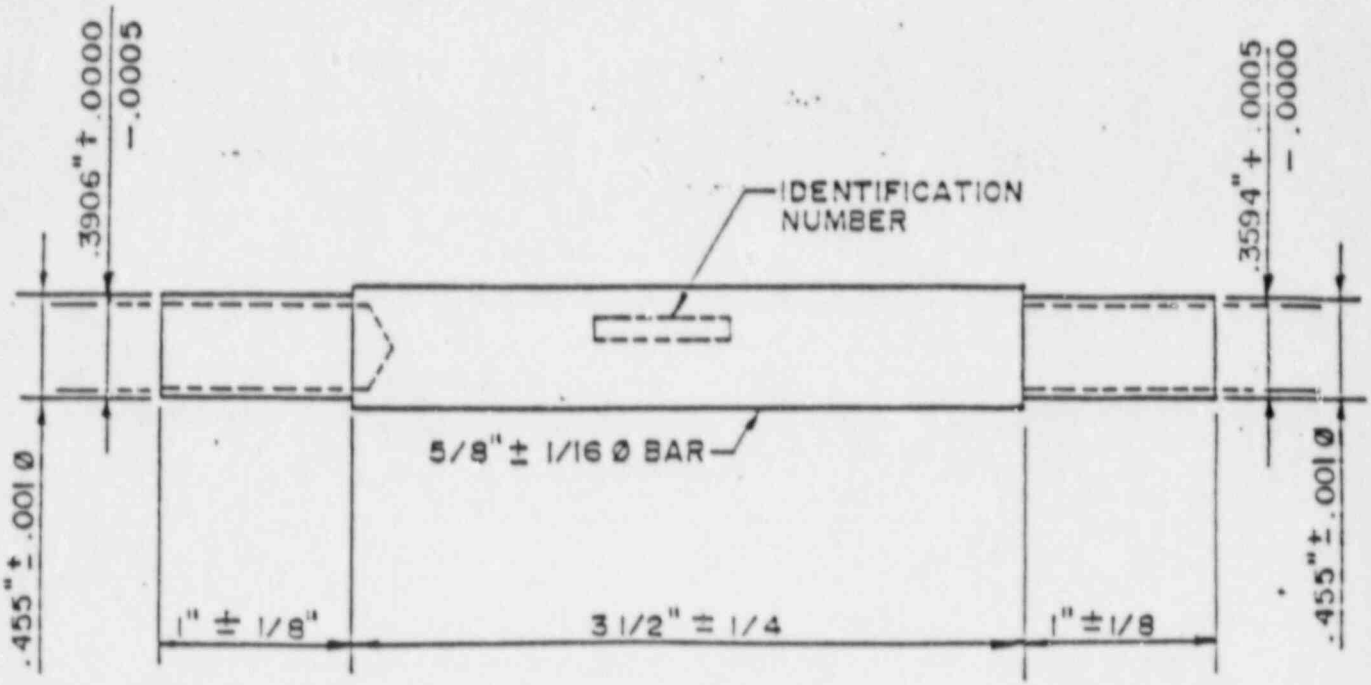
10.5 Attachment 5 - Data Sheet

10.6 Attachment 6 - Grease Sample Tool

10.7 Attachment 7 - Inspection for Water in the Tendon Void, in the Grease Can and around the Tendon Anchorage

ATTACHMENT 1

GO/NO-GO GAUGE



NOTES:

1. Holes shall be sized after heat treating.
2. Hole diameter shall be certified prior to all tendon surveillance by using calibrated equipment.
3. Each gage shall have an identifying number.
4. Hole diameter shall be certified at the completion of tendon surveillance using calibrated equipment.

ATTACHMENT 2

DRAWING INDEX

The following drawings describe the elements of the post-tensioning system relevent to the tendon surveillance. These drawings are available from the Arkansas Power & Light Company.

Preson Drawing Number	Drawing Description
2A04, 2A05, 2A06	Anchor Details
2A07	Tendon washer and shims details
2A08	Deadend plate-bottom vertical
2PH02, 2PH03, 2PH04 2PH06, 2PH07, 2PH08	Horizontal tendon numbering system and tendon locations
2DP04, 2DP05, 2DP06 2DP07, 2DP08	Dome tendon numbering system and tendon locations
2PV11 2PV29	Vertical tendon number system and tendon locations

Bechtel Drawing	Drawing Description
A2200	Reactor Building Developed Elevation and details

ATTACHMENT 3

Instructions For Replacing Filler Material

1.0 Record the Tendon Number _____. ____/____

CAUTION

The temperature of the heated sheathing material should be between 190°F and 300°F.

CAUTION

It is advisable to pump the sheathing filler material into the bottom of vertical tendons to prevent trapping air in the sheath.

2.0 Pump heated (temperature between 190°F and 300°F) sheathing filler material into the tendon until at least five gallons of filler material without any air bubbles or visible foreign material comes out of the outlet farthest from the pump. ____/____

NOTE

The vertical tendon bottom filler caps are to be torqued to 160 ft-lbs in 40 ft-lbs increments using a criss cross pattern. The other filler caps are to be torqued to 50 ft-lbs using a criss cross pattern. Only new gaskets, washers, gasket sealant and o-rings shall be used.

3.0 Torque the filler caps to the desired torque value.
Torque wrench used _____. ____/____

NOTE

The following steps are for vertical tendons only and are to be performed 24 hours after step 3.0 has been completed.

4.0 Remove the top filler cap. ____/____

5.0 Check the level of the filler material in the following manner:

5.1 Determine the Average Temperature (T3) in the following manner:

NOTE

Ambient temperature is defined as the Containment exterior concrete temperature.

5.1.1 Record the Ambient Temperature _____°F (T1) ____/____

ATTACHMENT 3

Instructions For Replacing Filler Material

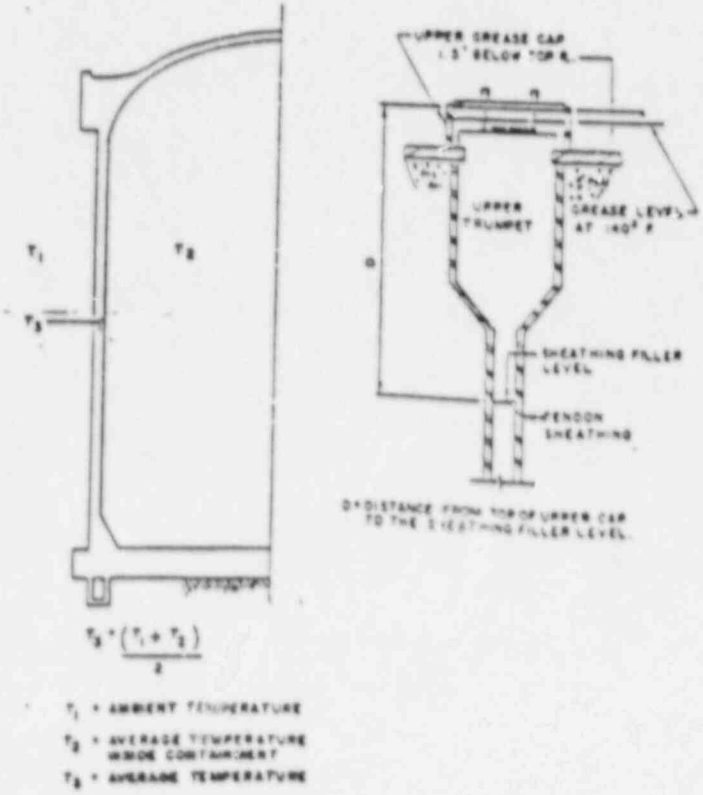
5.1.2 Record the Temperature Readings of
2TE-5605-5 _____ °F, and
2TE-5606-6 _____ °F _____ /

5.1.3 Add the two temperature readings taken in step 5.1.2 and divide by 2 and record the result:
_____ °F (T2) _____ /

5.1.4 Add T1 (from step 5.1.1) and T2 (from step 5.1.3) and divide by 2 and record the result
_____ °F (T3) _____ /

5.2 Determine the desired Sheathing filler level from the following chart:

T3 (°F)	140	130	120	110	100	90	80	60	40
D (inch)	1.5	8.5	12.0	14.5	16.5	18.5	20.0	24.0	28.0



ATTACHMENT 3

Instructions For Replacing Filler Material

5.3 Measure the actual level of the sheathing filler in the tendon and record _____". _____/

5.4 IF the level is not within 1.5" of the desired level
THEN adjust as required (add or remove filler material) until the level is correct,
IF the level is within 1.5" of the correct level,
THEN mark this step N/A. _____/

NOTE
The vertical tendon bottom filler caps are to be torqued to 160 ft-lbs in 40 ft-lbs increments using a criss cross pattern. Only new gaskets, washers, gasket sealant and o-rings may be used.

5.5 Install the filler cap. _____/

5.6 Torque the filler caps to the desired torque value.
Torque wrench used _____. _____/

ATTACHMENT 4

PROCEDURE FOR LABORATORY TESTING
OF THE SHEATHING FILLER MATERIAL

NOTE

The instructions in this Attachment are to be performed by the testing laboratory. The following is a list of tests and the acceptance criteria for each of the tests.

TEST	LIMITS
Water Soluble Chloride	Less than 10.0 ppm
Water Soluble Nitrates	Less than 10.0 ppm
Water Soluble Sulfides	Less than 10.0 ppm
Water content	Less than 10% Dry Weight
Neutralization Number (Reserve Alkalinity)	The base number shall be at least 50% of the as installed value, unless the as installed value is 5 or less, in which case the base number shall be no less than zero. If the tendon duct is filled with a mixture of materials having various as installed base numbers, the lowest number shall govern acceptance .

1.0 PURPOSE

This Attachment provides the instructions and documentation requirements to be used by the test laboratory for testing The Sheathing Filler material used in Arkansas Nuclear One Unit 2 Containment Building Tendons.

2.0 SCOPE

2.1 The one-quart samples are to be tested for the following:

2.1.1 The amount of water soluble chlorides, nitrates, and sulfides which are leached from a given contact area between water and the sheathing filler under standard conditions.

2.1.2 The water content of the Sheathing Filler Material.

2.1.3 The reserve alkalinity of the sheathing filler material.

ATTACHMENT 4

PROCEDURE FOR LABORATORY TESTING
OF THE SHEATHING FILLER MATERIAL

2.1.4 This document does not relieve the testing laboratory of responsibility for conducting the necessary laboratory tests in a manner consistent with industry standards.

3.0 REFERENCES

3.1 Chlorides (Cl) by ASTM D-512.

3.2 Nitrate (NO_3) by ASTM-992 Brucine Method or Cadmium Reduction Method.

3.3 Sulfides (S) by APHA (American Public Health Association) Standard Method - Methylene Blue

4.0 INSTRUCTIONS

NOTE

Water Soluble Chlorides should be less than 10.0 ppm. Water Soluble Nitrates should be less than 10.0 ppm. Water Soluble Sulfides shall be less than 10.0 ppm.

4.1 Water Soluble Impurities

4.1.1 A Water extraction of each sample of filler material shall be made and tested as follows:

A. Use a Spatula coat the inside (bottom and sides) of a 1-liter glass beaker with a 1/4" layer of sheathing filler.

B. Fill the beaker with room temperature distilled water.

CAUTION

While performing the next step do NOT heat on a hot plate; INSTEAD use an oven or an immersion heater so that the water will remain clear for the tests.

C. Heat the water to a controlled temperature of 100°F and maintain for four hours.

ATTACHMENT 4

PROCEDURE FOR LABORATORY TESTING
OF THE SHEATHING FILLER MATERIAL

D. Run a blank on the distilled water.

1. IF titrated,
THEN use a microburet, 1 ml or 5 ml
with 0.01 - 0.05 ml graduation intervals.

E. Decant the water and analyze for soluble ions. Test only for salts in leached water. The water analysis shall be as follows:

1. Chlorides (Cl) by ASTM D-512.
2. Nitrate (NO3) by ASTM D-992 Brucine Method or Cadmium Reduction Method.
3. Sulfides (S) by APHA (American Public Health Association) Standard Method - Methylene Blue.

NOTE
The water content shall be less than 10% dry weight.

4.2 Water Content

4.2.1 Determine the water content in accordance with ASTM-D95.

NOTE
Neutralization Number (Reserve Alkalinity). The base number should be at least 50% of the as installed value, unless the as installed value is 5 or less, in which case the base number should be no less that zero. IF the tendon duct is filled with a mixture of materials having various as installed base numbers THEN the lowest number will govern acceptance. This number is determined for information purposes only.

4.3 Neutralization Number

NOTE
The Neutralization number is to be determined in accordance with ASTM D-974 (modified).

4.3.1 Heat a 10 gram sample, 10 ml isopropyl alcohol, and 5 ml toulene until the sample is solubilized.

4.3.2 Add 90 ml distilled water, 20 ml 1N sulfuric acid and place in a steam bath for 1/2 hour. Stir well.

ATTACHMENT 4

PROCEDURE FOR LABORATORY TESTING
OF THE SHEATHING FILLER MATERIAL

4.3.3 Add 1% phenolphthalein indicator and titrate with 1N sodium hydroxide.

4.3.4 Calculate the base number (mg KOH perg):

[(20) (acid normality) - (ml base)(base normality)]
56/g of sample.

5.0 Report

5.1 Submit two copies of the report of the sheathing filler material to Arkansas Power and Light.

5.2 The Report shall contain the following:

5.2.1 Sample Identification Number.

5.2.2 Concentration of water soluble chlorides, nitrates, and sulfides with an accuracy of 0.1 ppm.

5.2.3 Concentration of water (H20) with an accuracy of 0.1 percent of the dry weight of the filler material.

5.2.4 Neutralization number with an accuracy of 0.01 mg reagent per gram of filler material.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number _____ ____/____

8.1.2 Remove the Tendon Filler Cap.
Field End ____/____
Shop End ____/____

8.1.3 Volume of Sheathing Filler Removed: _____gal. ____/____

8.1.4 Ambient Air Temperature (T1): _____°F ____/____

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) _____°F. ____/____

B. Inside Containment Temperature (T2) _____°F. ____/____

C. Average Temperature (T3) _____°F. ____/____

D. Desired Filler Material Level _____ _____". ____/____

E. Actual Filler Material Level _____". ____/____

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No _____ ____/____

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A _____ ____/____

Sample Submitted because of Tan Colored Filler Material. Yes _____ No _____ ____/____

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End ____/____
Field End ____/____

_____ /
Independent Verifier Date

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) _____

A. Testing Results:
Sat _____ Unsat _____ _____/_____

B. Second Sample Submitted:
Yes _____ No _____
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A _____
Filler Material Require Replacement?
Yes _____ No _____ _____/_____

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) _____ _____/_____

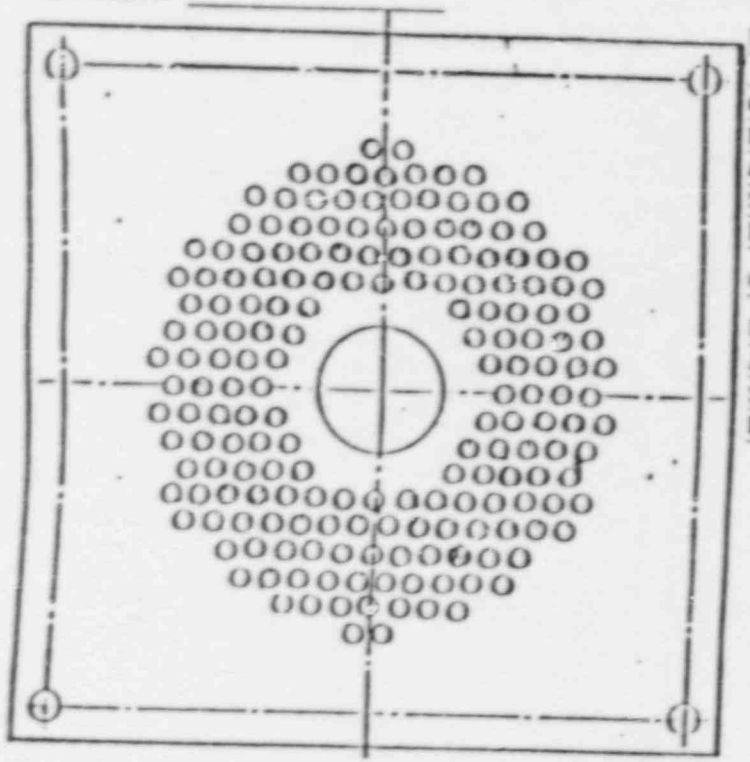
ARKANSAS UNIT 2

TENDON SURVEILLANCE

TENDON END ANCHOR SKETCH

TENDON NO. _____

LOCATION _____



PERFORMED BY _____

APPROVED BY _____

DATE _____

FILLER COVERAGE -

CAP

BUTTONHEADS

ANCHOR END

SHIMS

BEARING PLATE

CORROSION LEVEL

BUTTONHEADS

ANCHOR END

SHIMS

BEARING PLATE

8.2.2 Buttonhead Inspection

ATTACHMENT 5
DATA SHEET

LEGEND

- ● OFF-SIZE BUTTONHEAD
- ◐ BUTTONHEAD WITH SPLIT
- ◉ WIRE REMOVED PREVIOUSLY
- Ø DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL

#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ARKANSAS UNIT 2

TENDON SURVEILLANCE

TENDON END ANCHOR SKETCH

TENDON NO. _____

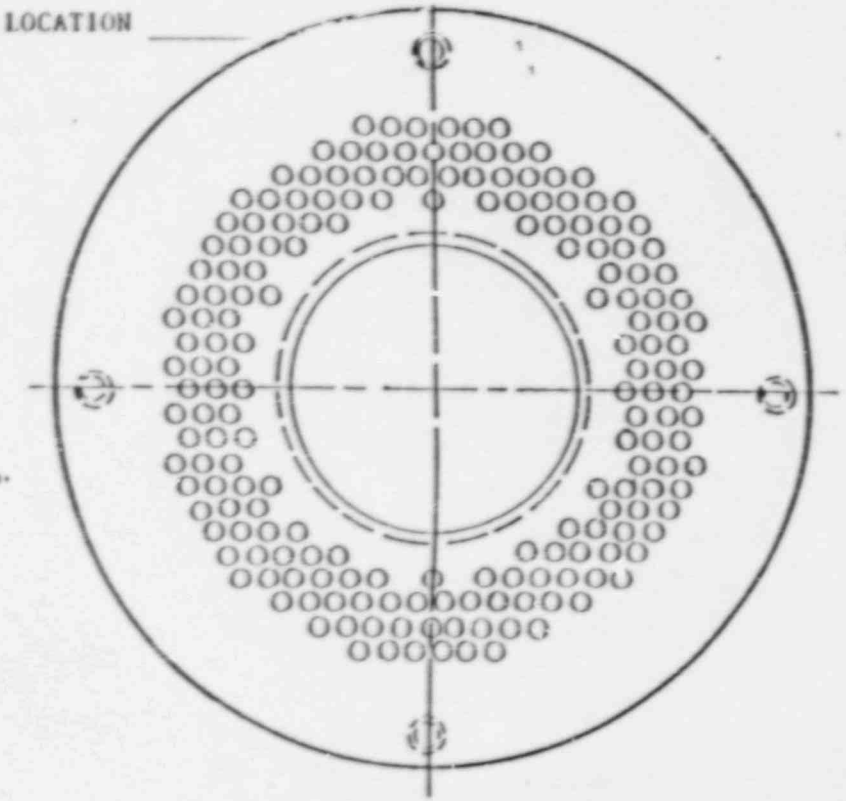
LOCATION _____

BY _____

DATE _____

APPROVED BY _____

DATE _____



FILLER COVERAGE

CAP

BUTTONHEADS

ANCHOR HEAD

SHIMS

BEARING PLATE

CORROSION LEVEL

BUTTONHEADS

ANCHOR HEAD

SHIMS

BEARING PLATE

ATTACHMENT 5
DATA SHEET

LEGEND

- ○ OFF-SIZE BUTTONHEAD
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ● DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE

THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL

#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ARKANSAS NUCLEAR ONE

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE

PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE

NO: 2402.048

PAGE 26 of 36

REVISION 2 DATE 02/12/88

CHANGE DATE

827 of 37

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) _____ °F. _____ /

B. Containment Temperature (T2)

_____ °F. _____ /

C. Average Temperature (T3) _____ °F. _____ /

8.3.2 Tendon repacked with heated Filler material?
Yes _____ No _____ _____ /

Amount of filler material repacked into tendon (Gal) _____ _____ /

Filler Temperature at the Pump _____ °F. _____ /

Filler Cap Installed. _____ /

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. _____ /

8.4.2 Attach pumping unit hose to tendon. _____ /

8.4.3 verify that all valves, vents and drains are open. _____ /

8.4.4 Amount of Filler material repacked into tendon. _____ (gal) _____ /

8.4.5 Filler Temperature at the pump _____ °F _____ /

8.4.6 Filler Installation Pressure _____ psi _____ /

8.4.7 Ambient Temperature (T1) _____ °F _____ /

8.4.8 Date Filler Cap Installed _____ _____ /

8.5 Tendon Resealing

8.5.1 Install the filler caps.

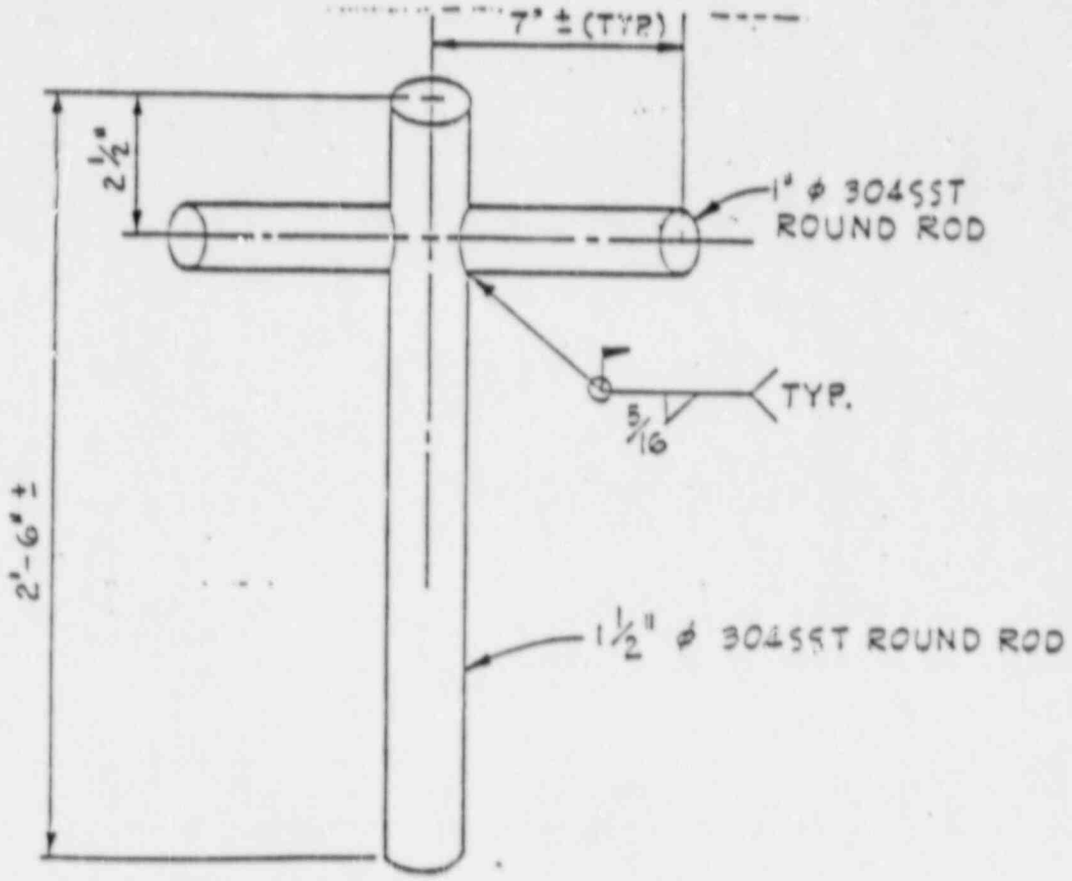
Final torque value of the tendon filler caps: _____ Ft-lbs
_____ Ft-lbs
Torque Wrench used _____ _____ /

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: _____ ft-lbs
_____ ft-lbs
Torque Wrench used _____ _____ /

ATTACHMENT 6

GREASE SAMPLE TOOL



NOTES:

1. MATERIAL AND FABRICATION TO BE NON-Q.
2. ROD ENDS TO HAVE A SMOOTH FINISH.

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID, IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
January .', 1988
Page 1 of 7
REVISION 0

ARKANSAS POWER & LIGHT CO.
ARKANSAS NUCLEAR ONE
UNITS 1 & 2

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

INSPECTION FOR WATER IN THE TENDON VOID, IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGE

Prepared by W F Fredrickson Title M&R, Q.A. Date 1-15-88
Approved by W.F. Fredrickson Title M&R, Q.A Date 1-15-88
Approved by [illegible] Title Mgr, Eng Date 1-15-88

sq6-1.ano

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

1. PURPOSE

This procedure will establish the requirements for performing an inspection of the Post-Tensioning Tendon System for evidence of water during the scheduled In-Service Inspection of the Tendon System of Arkansas Power & Light Company's Arkansas Nuclear One - Units 1 and 2.

2. SCOPE

This procedure will be limited to performing and documenting the inspection for water from the tendon void or around the tendon anchorage assembly, including the grease can. This inspection shall be performed just prior to removal of the grease can and during the physical inspection of the tendon anchorage assembly.

3. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

4. QUALIFICATION

As stated in PSC Procedure QA 4.1.

5. EQUIPMENT

No special equipment is required. It is expected that this inspection take place as part of the procedure for the removal of grease can.

5. 1. QUALITY CONTROL EQUIPMENT

5. 1. 1. Suitable quantities of clean, unused non-metallic containers for obtaining water samples.

5. 1. 2. Clean unused rags or wipers.

5. 1. 3. Indelible permanent marking devices and/or labels for the sample containers.

5. 1. 4. Flashlights and batteries.

5. 1. 5. Pens; Markers; Data Sheets.

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
January 15, 1988
Page 3 of 7

6. PRECAUTIONS

Review the Safety Comments provided in the Surveillance Program Quality Control Manual for the following items that shall apply both for tendon force control and personnel safety.

6. 1. Section 3.1: Tendon Wire Breaking Strength

6. 2. Section 3.2.2: Personnel Safety

6. 3. Section 3.5: Construction Safety: Personnel Safety

6. 4. A tendon grease can weighs in excess of 100 pounds and may contain about 200 pounds of grease. Be prepared to support this weight when the grease can is unbolted and removed.

6. 5. The sheathing filler, grease, may be in liquid, gel or solid form. Tendons in the area of steam or feed penetrations in operating plants, may contain hot grease and some caution should be exercised. It is not necessary to drain all the grease from a tendon void and is to be avoided, if possible.

6. 6. CAUTION - NEVER STRIKE THE BUTTONHEADS, THE WIRES, OR THE ANCHORHEADS OF A STRESSED TENDON WITH A HAMMER OR ANY OTHER OBJECT.

6. 7. Have sufficient quantities or sizes of containers on hand to catch the grease, as it may fall from the tendon void, anchorage or grease can.

6. 8. IF AT ANY TIME A CRACKED OR BROKEN ANCHORHEAD IS DETECTED AS A RESULT OF THESE INSPECTIONS, ALL WORK SHALL STOP. ALL PERSONNEL SHALL BE MOVED AWAY FROM THAT AREA. THE PSC CONSTRUCTION SUPERVISOR SHALL BE NOTIFIED. THE WORK AND/OR INSPECTIONS SHALL CONTINUE AFTER A SAFETY EVALUATION HAS BEEN MADE AND ONLY AT THE DIRECTION AND CONTROL OF THE PSC CONSTRUCTION SUPERVISOR AND THE RESPONSIBLE ENGINEER REPRESENTING ARKANSAS POWER & LIGHT COMPANY DURING THE ARKANSAS NUCLEAR ONE IN-SERVICE-INSPECTION.

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
January 15, 1988
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7. QUALITY CONTROL

There are no hold points for this operation. Quality Control Inspectors shall perform the inspections that are described in this procedure and document those results on Data Sheet 6.1.

7. 1. The Quality Control Inspector shall be responsible for properly identifying any water samples that may have been collected. The Inspector shall also be responsible for controlling those samples until they are turned over to the Owner or his agent or sent out for testing.

8. PREREQUISITES

8. 1. CCD- Document the tendon identification, tendon end, buttress number, unit number and other information on Data Sheet 6.1.

8. 2. Provide support for the Grease Can. Be prepared to catch any grease that may fall during loosening and removal.

8. 3. Care shall be exercised to avoid splashing or spilling grease on concrete and other surfaces. Spilled grease shall be removed and cleaned using Viscosity Oil, Viscor #16 industrial solvent or equivalent. It may be advantageous to tape plastic sheeting around the bearing plate and concrete to lessen the effect of spilled grease.

8. 4. This inspection will be performed as a prelude to the removal of the grease can. It is expected that all the tools and preparation for the removal of the grease can will be in place or have been performed. As the main purpose of this procedure is to detect the presence of water in the tendon void, the Inspector shall be afforded access to the tendon during loosening of the grease can bolts to see if water is in evidence.

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

9. GREASE CAN REMOVAL

If upon removal of the grease can, it is determined that the anchorhead is broken, all work shall stop on that tendon and all personnel shall leave the area of the tendon. The PSC Construction Supervisor and the Responsible Engineer of the Owner or his agent shall determine the seriousness of this event and evaluate the feasibility and safeness of continuing operations in that tendon.

9. 1. Position platform, as required, at the end of the tendon to be inspected. (As part of Grease Can Removal Procedure)

9. 2. Place a container and/or a protective cover under the tendon grease can to protect adjacent areas from dripping grease.

9. 3. Have a clean dry plastic container available for catching water samples.

9. 4. As the main purpose of this procedure is to determine the presence of water in the grease can or around the anchorhead, the Inspector shall be alert to obtain samples of that water as the can is loosened and removed and to estimate the quantity detected.

9. 4. 1. QCD- Document the quantity of water detected and if a sample was collected.

9. 5. Remove the bolts holding the grease can to the bearing plate. The grease can must be fully supported as the bolts are being removed. Care should be taken when removing the end cap since the bulk filler may drop off or drip as a liquid of medium viscosity. Allow the Inspector the opportunity to obtain water samples, if any water is present.

9. 6. CAUTION - BE PREPARED TO SUPPORT THE GREASE CAN. IT MAY WEIGH UP TO 200 POUNDS.

9. 7. Carefully remove the grease can to avoid spilling the contents. The Inspector shall inspect the interior of the can for the presence of water and if possible collect a sample of that water.

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE S/ 6.1
INSPECT FOR WATER
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9. 7. 1. QCD- Document the quantity of water detected and if a sample was collected.

9. 8. Inspect the tendon anchorage assembly, shims, bearing plate, anchorhead and buttonheads for the presence of water.

9. 8. 1. QCD- Document the quantity of water detected and if a sample was collected.

9. 9. Work shall continue for the In-Service Inspection as regularly scheduled or as required by the Procedures in the Surveillance Program Quality Control Manual.

9. 10. The next point that water could be encountered would be during or just after Detensioning the Tendon. Therefore, the Inspector shall be especially vigilant during this portion of the In-Service Inspection to detect the presence of water. Inspect for the presence of water during or after Detensioning the Tendon.

9. 10. 1. QCD- Document the quantity of water detected and if a sample was collected.

10. DISTINGUISHING CHARACTERISTICS

The quantity of water observed in or on the tendon during the In-Service Inspection is important from the standpoint of the Corrective Action which could be required by the Owner or his agent. The quantity could vary from condensation, wetness without running off, to that condition where water pours out from the tendon void. The following terms will be used to describe the condition of moisture that will be reported to the Owner or his agent.

10. 1. OBSERVABLE MOISTURE

"Observable Moisture" is defined as that quantity of water which has been immediately observed by the Inspector to be concentrated, collected or draining out from the grease can or tendon anchorage assembly. While this is intended to describe that moisture condition associated with condensation, it could be present in quantities of less than 8 ounces.

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

10. 2. SIGNIFICANT MOISTURE

"Significant Moisture" is defined to be a quantity of water 1/2 pint (8 ounces) or more which has collected, concentrated or observed to be draining out of the tendon anchorage assembly or grease can. This quantity is considered to be from a condition other than water formed through condensation.

11. NOTIFICATION

The Owner or his agent shall be formally notified when water, regardless of quantity, has been detected during the In-Service Inspection. This Notification shall define the condition detected referencing Section 10 of this Procedure and the specific quantity detected.

11. 1. The Owner or his agent shall be responsible for any corrective action and/or Notification of the NRC should that be required.

11. 2. The work and inspection shall continue until completed or formal notification by the Owner or his agent halt the work at some agreed on point.

12. SAMPLE RETENTION/TESTING

The samples may be temporarily retained by the PSC Quality Control Inspector until such time that the method of testing can be determined or the samples are turned over to the Owner or his agent.

12. 1. QCD- Verify that the water samples are adequately identified.

12. 2. QCD- Document the location of storage for the samples.

13. DOCUMENTATION

The items in this procedure requiring documentation shall be documented on Data Sheet 6.1.

13. 1. The Data Sheet references the applicable section number of the procedure for each QCD Point.

14. ATTACHMENTS
14. 1. Data Sheet 6.1.

ATTACHMENT 7

INSPECTION FOR WATER IN THE TE[illegible]
IN THE GREASE CAN AND AROUND THE TE[illegible]URAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: _____ DATE: _____
TENDON NO.: _____ TENDON END/BUTTRESS NO.: _____ SURVEILLANCE ____
OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes No Quantity _____ Sample Taken Yes No
Comments _____

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes No Quantity _____ Sample Taken Yes No
Comments _____

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes No Quantity _____ Sample Taken Yes No
Comments _____

(9.10) DURING DETENSIONING
(9.10.1) Water Detected Yes No Quantity _____ Sample Taken Yes No
Comments _____

(11.) OWNER/AGENT NOTIFIED Yes No DATE _____
" CONDITION: OBSERVABLE ____. SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No
(12.2) SAMPLES STORED AT _____

QC Signoff _____ Level _____ Date _____

QC Review _____ Level _____ Date _____
Title _____

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

APPENDIX C - Sheathing Filler Analysis Reports

C 1 of 1

SUBURBAN LABORATORIES, Inc.

4140 LITT DRIVE HILLSIDE ILLINOIS 60162 1183

EARL I ROSENBERG
President

H B THOMAS JR
Director

April 13, 1988

APPROVED PSC
QUALITY SECTION
BY H.F. Hendrickson
DATE 4-18-88

Precision Surveillance Corporation
3468 Watling Street
East Chicago, Indiana 46312

Attention: Mr. Harry F. Hendrickson,
Manager, Quality Assurance

Re: P.O. #536

Samples Received: 3/16/88
ANO-UNIT # 2 ** 4/12/88
Grease Samples

	(ppm) Chloride*	(%) Water Content	Neutralization Number (mg/KOH/g)	(ppm) Nitrate*	(ppm) Sulfide*
S/L #8-2570 - V 95 - Gallery - Field End	0.603	0.54	[illegible]2.79	< 0.05	0.012
S/L #8-2571 - V 9 - Gallery - Field End	0.515	0.19	[illegible]8.71	< 0.05	0.013
S/L #8-2572 - V 56 - Top - Shop End	0.456	0.20	[illegible]2.62	0.05	0.014
S/L #8-2573 - 12H 18 - Buttress 1 - Shop End	0.162	0.14	42.76	< 0.05	0.037
S/L #8-2574 - 31H 36 - Buttress #1 - Field End ** 4/12/88	0.132	0.92	41.55	< 0.05	0.003
S/L #8-2575 - 32H 50 - Buttress #2 - Field End ** 4/12/88	0.074	0.10	40.65	< 0.05	0.012
S/L #8-2576 - 1D 327 - Field End	0.191	0.32	45.45	< 0.05	< 0.001
S/L #8-2577 - 2D 219 - Shop End	0.132	0.25	43.95	< 0.05	< 0.001
S/L #8-2578 - 3D 104 - Shop End	0.074	0.22	40.77	< 0.05	0.003

ANALYSIS CERTIFIED BY: H B Thomas Jr , Director (HRT/ak)

*Water Soluble

Moisture / Method: ASTM D-95

Chlorides / Method: ASTM D-512

Sulfides / Method: APHA-427C

Nitrates / Method: ASTM-992

Neutralization # / Method: ASTM-974 (modified) ** 4/12/88

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

APPENDIX D - Tendon Surveillance Data Sheets

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/20/88

TENDON NO.: V9 TENDON END/BUTTRESS NO.: Shop end SURVEILLANCE 4th

OTHER TENDON END LOCATION INFO N/A (Top)

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.10) DURING DETENSIONING

(9.10.1) Water Detected Yes (N/A) Quantity _____ Sample Taken Yes No

Comments

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____

CONDITION: OBSERVABLE ____ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)

(12.2) SAMPLES STORED AT _____

QC Signoff M. Lee Level II Date 2/20/88

QC Review [signature] Level III Date 3/22/88

Title MGR, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V9 — MK 12/20/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A
(Shop End) Top side — MK 12/20/88

8.1.3 Volume of Sheathing Filler Removed: 1/4 gal. — MK 12/20/88

8.1.4 Ambient Air Temperature (T1): 54 °F — MK 12/20/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) 50 °F. — MK 12/20/88

B. Inside Containment Temperature (T2)
2TE5605-5 77.7°F 78.7 °F. — MK 12/20/88
2TE5606-2 78.7°F

C. Average Temperature (T3) 64.4 °F. — MK 12/20/88

D. Desired Filler Material Level
Approx. 23 ". — MK 12/20/88

E. Actual Filler Material Level 21.4 ". — MK 12/20/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ — MK 12/20/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ — MK 12/20/88

Sample Submitted because of Tan Colored Filler Material. Yes ____ No ✓ — MK 12/20/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
(Shop End) Top side — MK 12/20/88
Field End — N/A

CM 12/23/88
Independent Verifier Date

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
ARKANSAS NUCLEAR ONE	PAGE 24 of 36	
	REVISION 2 DATE 02/12/88	
	CHANGE DATE	

V9 Shop End

ATTACHMENT 5
DATA SHEET

Sample Submitted fc Testing :
(Shop or Field end) EB 3/10/88

A. Testing Results:
Sat X Unsat _____ EB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X EB 4/19/88

8.2 Inspection of the Anchorage Components

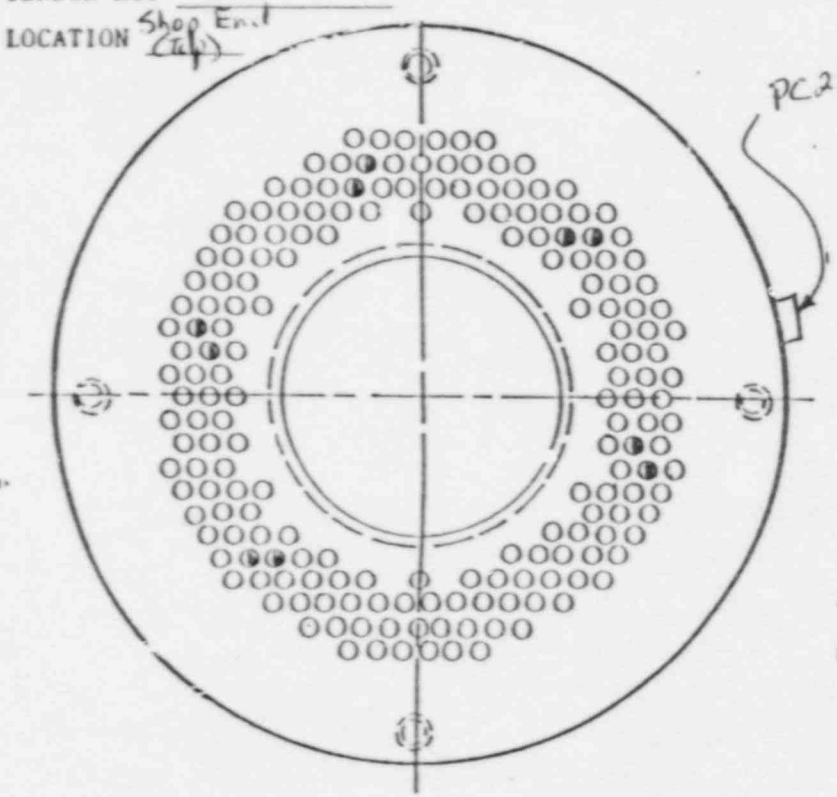
8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 MZ 2/20/88

A thin coat of 2090 P.4 applied to buttenheads, anchorhead and shims (1/4 Gal) MZ 2/20/88

torque to 50 ft-# w.t. TW-321. MZ 2/20/88

10th ARKANSAS UNIT 2
10th Year TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. V9
LOCATION Shop End (Cap)



BY MLS
DATE 2/20/88
APPROVED BY [signature]
DATE 3/22/88

FILLER COVERAGE

CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1
SHIMS	1
BEARING PLATE	1

Shim Stack - 13.25" (3/8", 1/2", 4-3")
Coolmo-60-GNG-003

ATTACHMENT 5
DATA SHEET

LEGEND
- Ø OFF-SIZE BUTTONHEAD's found were Large
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ● DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .015"

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ARKANSAS NUCLEAR ONE
PLANT MANUAL SECTION: MECHANICAL MAINTENANCE
PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE
NO: 2402.048
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CHANGE DATE

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PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
ARKANSAS NUCLEAR ONE	PAGE 27 of 36	
	REVISION 2 DATE 02/12/88	
	CHANGE DATE	

V9 Shop end

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 42 °F. MZ 12/29/88

B. Containment Temperature (T2)

2TE5605-5 76.3
2TE5606-6 75.7 °F. } Avg. 76°F MZ 12/29/88

C. Average Temperature (T3) 59 °F. MZ 12/29/88

8.3.2 Tendon repacked with heated Filler material? MZ 12/29/88
Yes ✓ No _____

Amount of filler material repacked into tendon (Gal) 1/4 + 1/4 Control = 1/2 Total MZ 12/29/88

Filler Temperature at the Pump 169 °F. MZ 12/29/88

Filler Cap Installed. MZ 12/29/88
Final Filler Material level 23" } MZ 12/29/88
Desired Filler Material Level is 24" }

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 12/29/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 12/29/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ 12/29/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ 12/29/88

8.4.5 Filler Temperature at the pump N/A °F MZ 12/29/88

8.4.6 Filler Installation Pressure N/A psi MZ 12/29/88

8.4.7 Ambient Temperature (T1) N/A °F MZ 12/29/88

8.4.8 Date Filler Cap Installed N/A MZ 12/24/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs } Two passes
50 Ft-lbs
Torque Wrench used TW-321 MZ 12/29/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: N/A ft-lbs
ft-lbs
Torque Wrench used N/A MZ 3/1/88

V9 Shop End

ATTACHMENT 5
DATA SHEET

Sheathing Filler Material level check after 24 hours of refilling. Page 2 of

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 42 °F. MZ, 3/1/88

B. Containment Temperature (T2)

2TE 5605-5 76.2
2TE 5606-6 75.7 °F. } Avg. 76.0°F MZ, 3/1/88

C. Average Temperature (T3) 59 °F. MZ, 3/1/88

8.3.2 Tendon repacked with heated Filler material? MZ, 3/1/88
Yes N/A No N/A

Amount of filler material repacked into tendon (Gal) N/A MZ, 3/1/88

Filler Temperature at the Pump N/A °F. MZ, 3/1/88

Filler Cap Installed. MZ, 3/1/88

8.4 Dome and Hoop Repacking Desired Filler Material Level 24" / Final Filler Material Level 23½" } MZ. 3/1/88

8.4.1 Purge pumping hose of old filler material. N/A MZ, 3/1/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ, 3/1/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ, 3/1/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ, 3/1/88

8.4.5 Filler Temperature at the pump N/A °F MZ, 3/1/88

8.4.6 Filler Installation Pressure N/A psi MZ, 3/1/88

8.4.7 Ambient Temperature (T1) N/A °F MZ, 3/1/88

8.4.8 Date Filler Cap Installed N/A MZ, 3/1/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs } MZ, 3/1/88
50 Ft-lbs }
Torque Wrench used TW-321

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs MZ, 3/3/88
50 ft-lbs
Torque Wrench used TW-321

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO Unit 2 DATE: 2/26/88
TENDON NO.: V9 TENDON END/BUTTRESS NO.: Field SURVEILLANCE 4th
OTHER TENDON END LOCATION INFO Gallery

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.10) DURING DETENSIONING
(9.10.1) Water Detected Yes (N/A) No Quantity _____ Sample Taken Yes No
Comments

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____
CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)
(12.2) SAMPLES STORED AT _____

QC Signoff M. Leed Level II Date 2/26/88
QC Review [signature] Level III Date 3/2/88
Title NDE, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V9 — MZ 12/26/88

8.1.2 Remove the Tendon Filler Cap.
(Field End)
Shop End — MZ 12/26/88; N/A MZ 12/26/88

8.1.3 Volume of Sheathing Filler Removed: 1/4 gal. — MZ 12/26/88

8.1.4 Ambient Air Temperature (T1): 69 °F — MZ 12/26/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — MZ 12/26/88

B. Inside Containment Temperature (T2) N/A °F. — MZ 12/26/88

C. Average Temperature (T3) N/A °F. — MZ 12/26/88

D. Desired Filler Material Level N/A ". — MZ 12/26/88

E. Actual Filler Material Level N/A ". — MZ 12/26/88

8.1.6 Color Comparison

A. Tan Colored? Yes ____ No ✓ — MZ 12/26/88

B. Tan Colored after 24 hours?
Yes ____ No ____ N/A ✓ — MZ 12/26/88

Sample Submitted because of Tan Colored Filler Material. Yes ____ No ✓ — MZ 12/26/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End
(Field End) — N/A MZ 12/26/88; MZ 12/26/88

MZ 12/26/88
Independent Verifier / Date

V9 Field End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) eb 3/10/88

A. Testing Results:
Sat X Unsat _____ eb 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X eb 4/19/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 MLL 2/26/88

1/2 Gal. Cold packed around anchorage components. MLL 2/26/88

Grease Can Installed using Old gasket, temporarily, and torqued to 160 ft-lbs in 40 ft-lb Increments. MLL 2/26/88

Gasket replaced and new "O" rings installed. SEE Page 5 of 5 Section 8.5. MLL 2/26/88

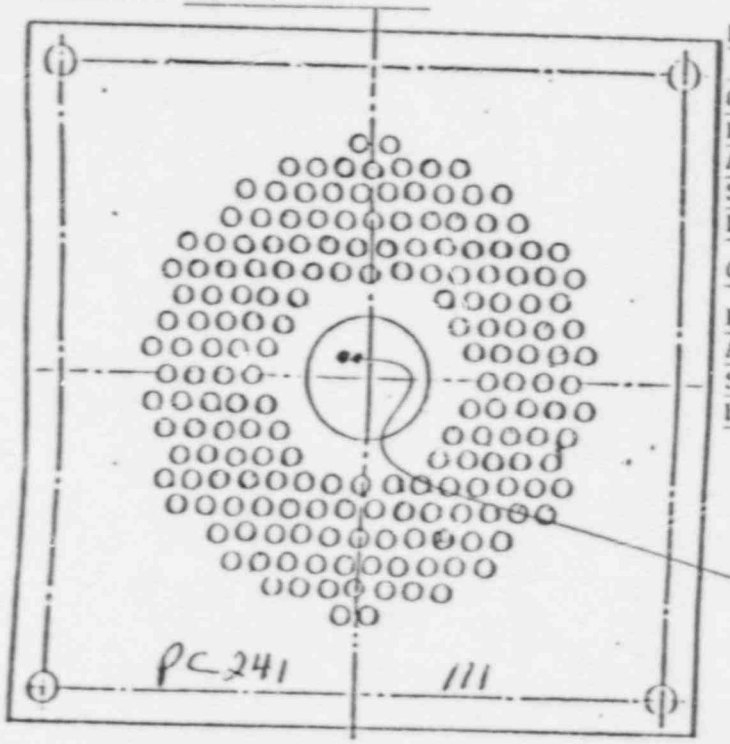
ARKANSAS UNIT 2
10th Year TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. V9
LOCATION Field End

PERFORMED BY [illegible] 2/26/88
APPROVED BY [illegible]
DATE 3/22/88

FILLER COVERAGE	
CAP	100%
BUTTONHEADS	100%
ANCHOR END	100%
SHIMS	N/A
BEARING PLATE	100%
CORROSION LEVEL	
BUTTONHEADS	1
ANCHOR END	1 (Mill Scale)
SHIMS	N/A
BE RING PLATE	1

60/No-60 # GNG-003



extra wire protruding ≈ ½" from center grease hole.
[illegible]
2/26/88

LEGEND
- ● OFF-SIZE BUTTONHEAD
- ◐ BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ◑ DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

2.2.2 Buttonhead Inspection

ATTACHMENT 5
DATA SHEET

V9 Field End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 69 °F. MZ 12/26/88

B. Containment Temperature (T2)

2TE 5605-5 73.2
2TE 5606-6 74.8 °F. 75.0 Average MZ 12/26/88

C. Average Temperature (T3) 72 °F. MZ 12/26/88

8.3.2 Tendon repacked with heated Filler material?
Yes N/A No ✓ MZ 12/26/88

Amount of filler material repacked into tendon (Gal) 1/2 (Control Anchorage) MZ 12/26/88

Filler Temperature at the Pump N/A °F. MZ 12/26/88

Filler Cap Installed. 2/26/89 MZ 12/26/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 12/26/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 12/26/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ 12/26/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ 12/26/88

8.4.5 Filler Temperature at the pump N/A °F MZ 12/26/88

8.4.6 Filler Installation Pressure N/A psi MZ 12/26/88

8.4.7 Ambient Temperature (T1) N/A °F MZ 12/26/88

8.4.8 Date Filler Cap Installed N/A MZ 12/26/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 160 Ft-lbs } In 40 ft-lb
N/A Ft-lbs } Increments
Torque Wrench used TW-321 MZ 12/26/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 160 ft-lbs
N/A ft-lbs
Torque Wrench used TW-321 MZ 12/29/88

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
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Revision 0

PROJECT: ANO Unit 2 DATE: 2/29/88

TENDON NO.: V53 TENDON END/BUTTRESS NO.: Shop (Top) SURVEILLANCE 4 4h

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.10) DURING DETENSIONING (N/A)

(9.10.1) Water Detected Yes No Quantity _____ Sample Taken Yes No

Comments _____

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____

CONDITION: OBSERVABLE ___ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)

(12.2) SAMPLES STORED AT _____

QC Signoff M. Ledd Level II Date 2/29/88

QC Review [signature] Level III Date 3/22/88

Title MGR, Q.C.

PLANT MANUAL SECTION:	PROCEDURE/WORK PLAN TITLE:	NO:
MECHANICAL MAINTENANCE	TENDON SURVEILLANCE PROCEDURE	2402.048

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ATTACHMENT 5
DATA SHEET

FILLER LEVEL CHECK

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V53 — MZ, 2/29/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A MZ, 2/29/88
Shop End — MZ, 2/29/88

8.1.3 Volume of Sheathing Filler Removed: None gal. — MZ, 2/29/88

8.1.4 Ambient Air Temperature (T1): 50 °F — MZ, 2/29/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) 42 °F. — MZ, 2/29/88

B. Inside Containment Temperature (T2)
2TE 5605-5 76.3 } Avg. 76 °F. — MZ, 2/29/88
2TE 5606-6 75.7 }

C. Average Temperature (T3) 59 °F. — MZ, 2/29/88

D. Desired Filler Material Level 24". — MZ, 2/29/88

E. Actual Filler Material Level 21½". — MZ, 2/29/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ — MZ, 2/29/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ — MZ, 2/29/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ — MZ, 2/29/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — N/A MZ, 2/29/88
Field End — N/A MZ, 2/29/88

N/A MZ , 2/29/88
Independent Verifier Date

V53 Shop end

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) N/A

A. Testing Results:
Sat N/A Unsat N/A

MZ 2/29/88

B. Second Sample Submitted:
Yes N/A No N/A
2nd Sample Testing Results:
Sat N/A Unsat N/A
N/A N/A
Filler Material Require Replacement?
Yes N/A No N/A

MZ 2/29/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) None

MZ 2/29/88

V53 Shop End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. MZ, 12/29/88

B. Containment Temperature (T2) N/A °F. MZ, 12/29/88

C. Average Temperature (T3) N/A °F. MZ 12/29/88

8.3.2 Tendon repacked with heated Filler material? Yes N/A No N/A MZ, 12/29/88

Amount of filler material repacked into tendon (Gal) N/A MZ, 12/29/88

Filler Temperature at the Pump N/A °F. MZ 12/29/88

Filler Cap Installed. MZ 12/29/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ, 12/29/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ, 12/29/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ, 12/29/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ, 12/29/88

8.4.5 Filler Temperature at the pump N/A °F MZ, 12/29/88

8.4.6 Filler Installation Pressure N/A psi MZ 12/29/88

8.4.7 Ambient Temperature (T1) N/A °F MZ 12/29/88

8.4.8 Date Filler Cap Installed N/A MZ 12/29/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs } Two Passes
50 Ft-lbs
Torque Wrench used TW-321 MZ, 12/29/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
50 ft-lbs
Torque Wrench used TW-321 MZ, 3/1/88

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ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/20/88

TENDON NO.: V54 TENDON END/BUTTRESS NO.: Shop End SURVEILLANCE 4th

OTHER TENDON END LOCATION INFO Top

(9.4) DURING LOOSENING OF GREASE CAP

(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.10) DURING DETENSIONING

(9.10.1) Water Detected Yes (N/A) No Quantity _____ Sample Taken Yes No

Comments

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____

CONDITION: OBSERVABLE ____ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)

(12.2) SAMPLES STORED AT _____

QC Signoff M. Lee Level II Date 2/20/88

QC Review [signature] Level III Date 3/22/88

Title MGR, Q.C.

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE / WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V54 — MZ 12/20/88

8.1.2 Remove the Tendon Filler Cap.
Field End N/A
(Shop End) Top side — MZ 12/20/88

8.1.3 Volume of Sheathing Filler Removed: 1/4 gal. — MZ 12/20/88

8.1.4 Ambient Air Temperature (T1): 54 °F — MZ 12/20/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) 50 °F. — MZ 12/20/88

B. Inside Containment Temperature (T2)
2TE5605-5 77.7 (77.7) °F. — MZ 12/20/88
2TE5606-6 77.7

C. Average Temperature (T3) 64.4 °F. — MZ 12/20/88

D. Desired Filler Material Level
Approx. 23 ". — MZ 12/20/88

E. Actual Filler Material Level 44 3/4 ". — MZ 12/20/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ — MZ 12/20/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ — MZ 12/20/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ — MZ 12/20/88

INDEPENDENT VERIFICATION

An Independent Verifie. shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
(Shop End) Top — MZ 12/20/88
Field End N/A

MZ 2/23/88
Independent Verifier Date

V54
Shop End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) NONE CB 3/10/88

A. Testing Results:
Sat N/A Unsat N/A CB 3/10/88

B. Second Sample Submitted:
Yes N/A No N/A
2nd Sample Testing Results:
Sat N/A Unsat N/A
N/A N/A
Filler Material Require Replacement?
Yes N/A No N/A CB 3/10/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) Unnecessary due this coating MLL 2/20/88

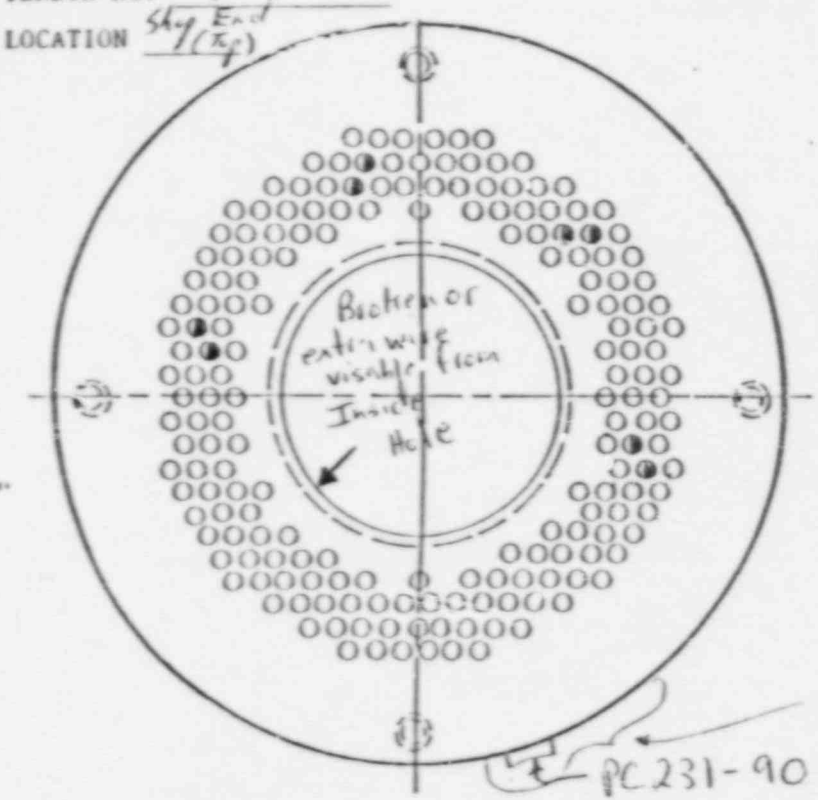
Coat Anchorage Assembly with 2090 P-4 (¼ Gal) MLL 2/20/88

Torqued Caps to 50 ft-lbs with TW321 MLL 2/20/88

ARKANSAS UNIT 2
10th Year TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. V54
LOCATION Shy End (Ty)

BY M. Lee
DATE 2/20/88
APPROVED BY [signature]
DATE 3/4/88



Approx. 5"x3" Area of light rust
Level #2

FILLER COVERAGE

CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

Coating was very thin.

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1 & 2 (See Note)
SHIMS	1
BEARING PLATE	1

Shim Stack 12.8" (3.3", 5.2", 3")
Co/No-Co # ENG-003

LEGEND
- ⊘ OFF-SIZE BUTTONHEAD found to be large.
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ● DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ATTACHMENT 5
DATA SHEET

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V54 Shop End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 42 °F. MZ 1/29/88

B. Containment Temperature (T2)

2TE 5605-5 76.3 °F. > Avg. 76°F
2TE 5606-6 75.7 °F. MZ 1/29/88

C. Average Temperature (T3) 59° °F. MZ 1/29/88

8.3.2 Tendon repacked with heated Filler material?
Yes ✓ No _____ MZ 1/29/88

Amount of filler material repacked into tendon (Gal) 3 + 1/4 (coated) = 3 1/4 Total MZ 1/29/88

Filler Temperature at the Pump 169 °F. MZ 1/29/88

Filler Cap Installed.
Final Filler Material level 23" (Drained Filler Material Level is 24") MZ 1/29/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 1/29/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 1/29/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ 1/29/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ 1/29/88

8.4.5 Filler Temperature at the pump N/A °F MZ 1/29/88

8.4.6 Filler Installation Pressure N/A psi MZ 1/29/88

8.4.7 Ambient Temperature (T1) N/A °F MZ 1/29/88

8.4.8 Date Filler Cap Installed N/A MZ 1/29/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs (Two Passes)
50 Ft-lbs
Torque Wrench used TW-321 MZ 1/29/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: N/A ft-lbs
ft-lbs
Torque Wrench used N/A MZ 3/1/88

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V54 Shop End

ATTACHMENT 5
DATA SHEET

Sheathing Filler Material level check after 24 hours of Refilling.

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 42 °F. MK 3/1/88

B. Containment Temperature (T2)

2TE 5605-5 76.2
2TE 5606-6 75.7 °F. } Avg. 76.0°F MK 3/1/88

C. Average Temperature (T3) 59 °F. MK 3/1/88

8.3.2 Tendon repacked with heated Filler material?
Yes N/A No N/A MK 3/1/88

Amount of filler material repacked into tendon (Gal) N/A MK 3/1/88

Filler Temperature at the Pump N/A °F. MK 3/1/88

Filler Cap Installed. MK 3/1/88

8.4 Dome and Hoop Repacking Desired Filler Material Level 24" / Final Filler Material Level 23¾" } MK 3/1/88

8.4.1 Purge pumping hose of old filler material. N/A MK 3/1/88

8.4.2 Attach pumping unit hose to tendon. N/A MK 3/1/88

8.4.3 verify that all valves, vents and drains are open. N/A MK 3/1/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MK 3/1/88

8.4.5 Filler Temperature at the pump N/A °F MK 3/1/88

8.4.6 Filler Installation Pressure N/A psi MK 3/1/88

8.4.7 Ambient Temperature (T1) N/A °F MK 3/1/88

8.4.8 Date Filler Cap Installed N/A MK 3/1/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs / 50 Ft-lbs } Two Passes

Torque Wrench used TW-321 MK 3/1/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs / 50 ft-lbs

Torque Wrench used TW-321 MK 3/3/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
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PROJECT: ANO Unit 2 DATE: 2/29/88
TENDON NO.: V55 TENDON END/BUTTRESS NO.: Shop (Top) SURVEILLANCE 4th
OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSTWING OF GREASE CAN
(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.8) ARC/VD TENDON ANCHORAGE
(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.10) DURING DETENSIONING (N/A)
(9.10.1) Water Detected Yes No Quantity _____ Sample Taken Yes No
Comments _____

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____
CONDITION: OBSERVABLE ____ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)
(12.2) SAMPLES STORED AT _____

QC Signoff M. Lee Level II Date 2/29/88
QC Review [signature] Level III Date 3/22/88
Title MGR, Q.C.

ATTACHMENT 5
DATA SHEET

FILLER LEVEL CHECK

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V55 — MK, 2/29/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A — MK, 2/29/88
Shop End — MK, 2/29/88

8.1.3 Volume of Sheathing Filler Removed: None gal. — MK, 2/29/88

8.1.4 Ambient Air Temperature (T1): 50 °F — MK, 2/29/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) 42 °F. — MK, 2/29/88

B. Inside Containment Temperature (T2)
2TE 5605-5 76.3 } Avg 76 °F. — MK, 2/29/88
2TE 5606-6 75.7 }

C. Average Temperature (T3) 59 °F. — MK, 2/29/88

D. Desired Filler Material Level 24". — MK, 2/29/88

E. Actual Filler Material Level 23½". — MK, 2/29/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ — MK, 2/29/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ — MK, 2/29/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ — MK, 3/29/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — N/A — MK, 2/29/88
Field End — N/A — MK, 2/29/88

N/A MK, 2/29/88
Independent Verifier Date

V55 Shop End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) N/A

A. Testing Results:
Sat N/A Unsat N/A

MRL 12/29/87

B. Second Sample Submitted:
Yes N/A No N/A
2nd Sample Testing Results:
Sat N/A Unsat N/A
N/A N/A
Filler Material Require Replacement?
Yes N/A No N/A

MRL, 12/29/87

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) None

MRL, 12/29/87

V55 Shop end

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. — MR 12/29/88

B. Containment Temperature (T2) N/A °F. — ML 12/29/88

C. Average Temperature (T3) N/A °F. — ML 12/29/88

8.3.2 Tendon repacked with heated Filler material? Yes N/A No N/A — ML 12/29/88

Amount of filler material repacked into tendon (Gal) N/A — ML 12/29/88

Filler Temperature at the Pump N/A °F. — ML 12/29/88

Filler Cap Installed. — ML 12/29/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A — ML 12/29/88

8.4.2 Attach pumping unit hose to tendon. N/A — ML 12/29/88

8.4.3 verify that all valves, vents and drains are open. N/A — ML 12/29/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) — ML 12/29/88

8.4.5 Filler Temperature at the pump N/A °F — ML 12/29/88

8.4.6 Filler Installation Pressure N/A psi — ML 12/29/88

8.4.7 Ambient Temperature (T1) N/A °F — ML 12/29/88

8.4.8 Date Filler Cap Installed N/A — ML 12/29/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs } Two Passes
50 Ft-lbs
Torque Wrench used TW-321 — ML 12/29/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
50 ft-lbs
Torque Wrench used TW-321 — ML 3/1/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
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PROJECT: ANO Unit 2 DATE: 2/27/88
TENDON NO.: V56 TENDON END/BUTTRESS NO.: Shop SURVEILLANCE 4th
OTHER TENDON END LOCATION INFO On Top

(9.4) DURING LOOSENING OF GREASE CAP
(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.10) DURING DETENSIONING
(9.10.1) Water Detected Yes (N/A) Quantity _____ Sample Taken Yes No
Comments

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____
CONDITION: OBSERVABLE ___ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)
(12.2) SAMPLES STORED AT _____

QC Signoff M. Ladd Level II Date 2/27/88
QC Review Reynolds Level III Date 3/22/88
Title M&E, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V56 — MZ 12/27/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A MZ 12/27/88
(Shop End) — MZ 12/27/88

8.1.3 Volume of Sheathing Filler Removed: 1/4 gal. — MZ 12/27/88

8.1.4 Ambient Air Temperature (T1): 59 °F — MZ 12/27/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) 50 °F. — MZ 12/27/88

B. Inside Containment Temperature (T2)
2TE 5605-5 74.8 } Average 74.7 °F. — MZ 12/27/88
2TE 5606-5 74.5 }

C. Average Temperature (T3) 62.3 °F. — MZ 12/27/88

D. Desired Filler Material Level 24". — MZ 12/27/88

E. Actual Filler Material Level 43 3/4". — MZ 12/27/88

8.1.6 Color Comparison

A. Tan Colored? Yes ____ No ✓ — MZ 12/27/88

B. Tan Colored after 24 hours?
Yes ____ No ____ N/A ✓ — MZ 12/27/88

Sample Submitted because of Tan Colored Filler Material. Yes ____ No ✓ — MZ 12/27/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
(Shop End) — MZ 12/27/88
Field End — N/A MZ 12/27/88

12/27/88
Independent Verifier Date

V56 Shop End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop) or Field end) 3/10/88

A. Testing Results:
Sat X Unsat _____ 04/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X 04/19/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 MR 2/27/88

1/2 Gal. Cold Packed around anchorage components MR 2/27/88

Torqued can bolts to 50 ft-lbs (Two passes) with torque wrench TW-321 MR 2/27/88

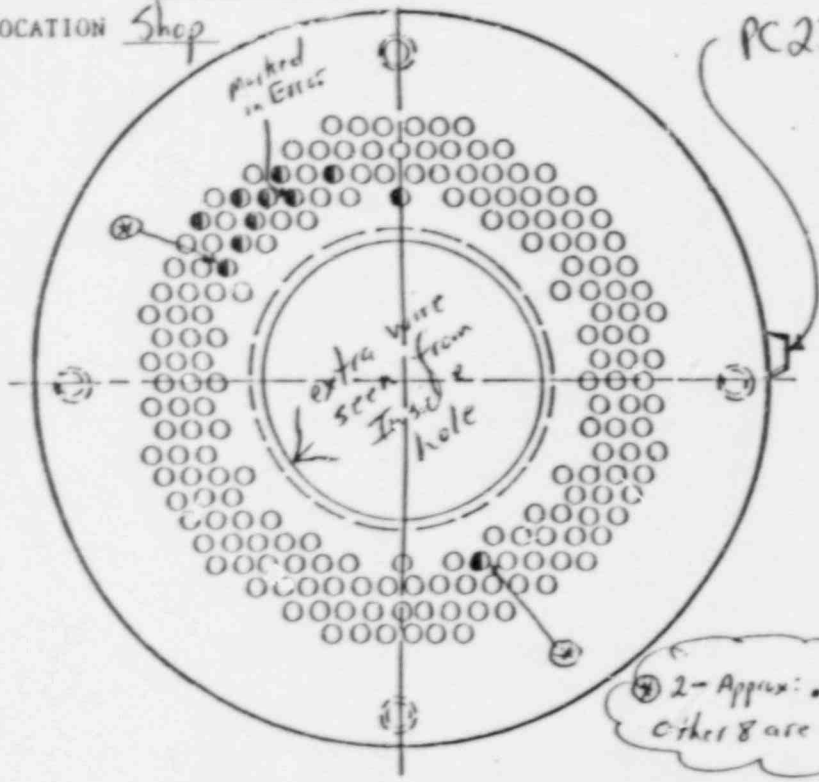
ARKANSAS UNIT 2

10th Year TENDON SURVEILLANCE

TENDON END ANCHOR SKETCH

TENDON NO. V56

LOCATION Shop



PC231 130

BY M. Lash

DATE 2/27/88

APPROVED BY [illegible]

DATE 3/22/88

FILLER COVERAGE

CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1
SHIMS	1
BEARING PLATE	1

Shim Stack 13¼" (3-3", ½", ⅜", 3")

60/No-60 # 6N6-003

LEGEND

- ◐ OFF-SIZE BUTTONHEAD
- ● BUTTONHEAD WITH SPLIT (10 Total)
- ● WIRE REMOVED PREVIOUSLY
- ◍ DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE

THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL

#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ATTACHMENT 5
DATA SHEET

Page 4 of 5

ARKANSAS NUCLEAR ONE

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE

PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE

NO: 2402.048

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REVISION 2 DATE 02/12/88

CHANGE DATE

D26 of 111

V56 Shop End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 42 °F. MZ 12/29/88

B. Containment Temperature (T2)
2TE5605-5 76.3
2TE5606-C 75.7 °F. } Avg. 76°F MZ 12/29/88

C. Average Temperature (T3) 59 °F. MZ 12/29/88

8.3.2 Tendon repacked with heated Filler material? MZ 12/29/88
Yes ✓ No ____

Amount of filler material repacked into tendon (Gal) 4 + 1/2 Control = 4½ Total MZ 12/29/88

Filler Temperature at the Pump 169 °F. MZ 12/29/88

Filler Cap Installed. MZ 12/29/88
Final Filler Material Level 23¼" } MZ 2/29/88
Desired filler material Level is 24"

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 12/27/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 12/27/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ 12/27/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ 12/27/88

8.4.5 Filler Temperature at the pump N/A °F MZ 12/27/88
8.4.6 Filler Installation Pressure N/A psi MZ 12/27/88

8.4.7 Ambient Temperature (T1) N/A °F MZ 12/27/88

8.4.8 Date Filler Cap Installed N/A MZ 12/27/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs } Two Passes
50 Ft-lbs
Torque Wrench used TW-321 MZ 12/29/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: N/A ft-lbs
ft-lbs
Torque Wrench used N/A MZ 3/1/88

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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	CHANGE DATE	

V56 Shop End

ATTACHMENT 5
DATA SHEET

Sheathing Filler Material level check after 24 hours of Refilling.

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 42 °F. — DMZ 3/1/88

B. Containment Temperature (T2)

2TE 5605-5 76.2 °F. } Avg 76°F — DMZ 3/1/88
2TE 5606-6 75.7 °F.

C. Average Temperature (T3) 59 °F. — DMZ 3/1/88

8.3.2 Tendon repacked with heated filler material? — DMZ 3/1/88
Yes N/A No N/A

Amount of filler material repacked into tendon (Gal) N/A — DMZ 3/1/88

Filler Temperature at the Pump N/A °F. — DMZ 3/1/88

Filler Cap Installed — DMZ 3/1/88

Desired Filler Material Level 24"
8.4 Dome and Hoop Repacking Final Filler Material Level 23½" } DMZ 3/1/88

8.4.1 Purge pumping hose of old filler material. N/A — DMZ 3/1/88

8.4.2 Attach pumping unit hose to tendon. N/A — DMZ 3/1/88

8.4.3 verify that all valves, vents and drains are open. N/A — DMZ 3/1/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) — DMZ 3/1/88

8.4.5 Filler Temperature at the pump N/A °F — DMZ 3/1/88

8.4.6 Filler Installation Pressure N/A psi — DMZ 3/1/88

8.4.7 Ambient Temperature (T1) N/A °F — DMZ 3/1/88

8.4.8 Date Filler Cap Installed N/A — DMZ 3/1/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs } Two Passes
50 Ft-lbs
Torque Wrench used TW-321 — DMZ 3/1/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
50 ft-lbs
Torque Wrench used TW-321 — DMZ 3/3/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO Unit 2 DATE: 2/27/88
TENDON NO.: V56 TENDON END/BUTTRESS NO.: Field SURVEILLANCE 4
OTHER TENDON END LOCATION INFO Gallery

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.10) DURING DETENSIONING
(9.10.1) Water Detected Yes No Quantity ____ Sample Taken Yes No
Comments (N/A)

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE ____
CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)
(12.2) SAMPLES STORED AT ____

QC Signoff M. Lee Level II Date 2/27/88
QC Review [signature] Level III Date 3/22/88
Title NGP, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V56 — MZ 12/27/88

8.1.2 Remove the Tendon Filler Cap.
(Field End)
Shop End
MZ 12/27/88
N/A MZ 12/27/88

8.1.3 Volume of Sheathing Filler Removed: 1/4 gal. MZ 12/27/88

8.1.4 Ambient Air Temperature (T1): 72 °F MZ 12/27/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. MZ 12/27/88

B. Inside Containment Temperature (T2) N/A °F. MZ 12/27/88

C. Average Temperature (T3) N/A °F. MZ 12/27/88

D. Desired Filler Material Level N/A ". MZ 12/27/88

E. Actual Filler Material Level N/A ". MZ 12/27/88

8.1.6 Color Comparison.

A. Tan Colored? Yes _____ No ✓ MZ 12/29/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ MZ 12/27/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ MZ 12/27/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End
(Field End)
N/A MZ 12/27/88
MZ 12/27/88

12/29/88
Independent Verifier Date

V56 Field End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing : (Shop or Field end) CB 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 ML 12/27/87

½ Gal. Cold packed around anchorage components. ML 2/27/88

ARKANSAS UNIT 2

10th Yr TENDON SURVEILLANCE

TENDON END ANCHOR SKETCH

TENDON NO. V56

LOCATION Field End

PERFORMED BY MK 2/27/88

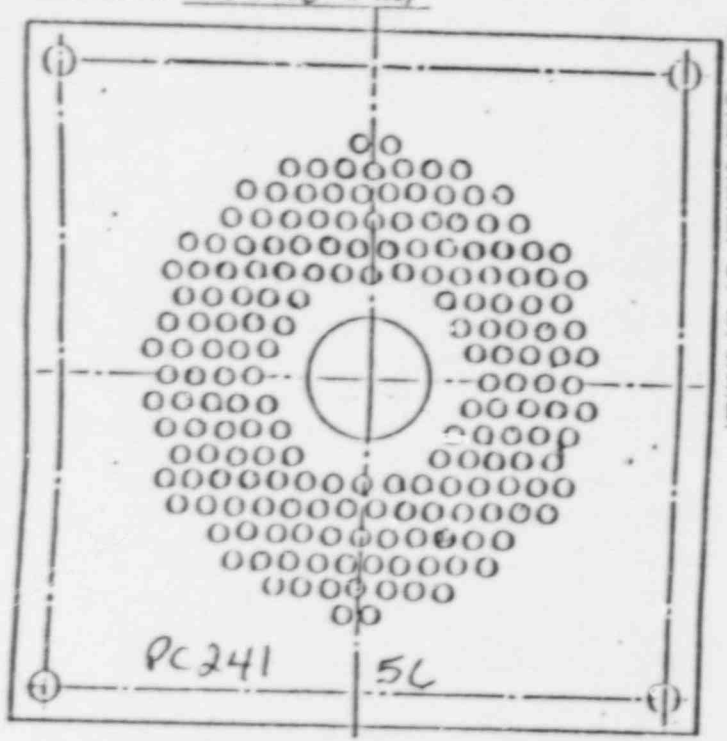
APPROVED BY [signature]

DATE 3/22/88

FILLER COVERAGE	
CAP	100%
BUTTONHEADS	100%
ANCHOR END	100%
SHIMS	N/A
BEARING PLATE	100%

CORROSION LEVEL	
BUTTONHEADS	1
ANCHOR END	1
SHIMS	N/A
BEARING PLATE	1

Go/No-Go # GNG-003



LEGEND
- ● OFF-SIZE BUTTONHEAD
- ◐ BUTTONHEAD WITH SPLIT
- ◉ WIRE REMOVED PREV'OUSLY
- ◍ DISCONTINUOUS WIRE REMOVED THIS SURVEILLAECE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING < .006"
#5 .006" < PITTING < .010"

3.2.2 Buttonhead Inspection

ATTACHMENT 5
DATA SHEET

Page 3 of 5

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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V56 Field End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 71 °F. MZ 12/27/88

B. Containment Temperature (T2)

2TE 5605-5 74.8
2TE 5606-6 74.5 °F. } Average 74.7 MZ 12/27/88

C. Average Temperature (T3) 72.8 °F. MZ 12/27/88

8.3.2 Tendon repacked with heated Filler material? MZ 12/27/88
Yes N/A No ✓

Amount of filler material repacked into tendon (Gal) 1/2 (coated anchorage) MZ 12/27/88

Filler Temperature at the Pump N/A °F. MZ 12/27/88

Filler Cap Installed. MZ 12/27/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 12/27/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 12/27/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ 12/27/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ 12/27/88

8.4.5 Filler Temperature at the pump N/A °F MZ 12/27/88
8.4.6 Filler Installation Pressure N/A psi MZ 12/27/88

8.4.7 Ambient Temperature (T1) N/A °F MZ 12/27/88

8.4.8 Date Filler Cap Installed N/A MZ 12/27/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 160 Ft-lbs } 40 ft-lb Increments
N/A Ft-lbs
Torque Wrench used TW-321 MZ 12/27/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 160 ft-lbs
N/A ft-lbs
Torque Wrench used TW-321 MZ 12/29/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 4.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/29/88
TENDON NO.: V5 TENDON END/BUTTRESS NO.: SHOP/TOP SURVEILLANCE 10th YR
OTHER TENDON EN. LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.10) DURING RETENSIONING N/A
(9.10.1) Water Detected Yes No Quantity _____ Sample Taken Yes No
Comments _____

(11.) OWNER/AGENT NOTIFIED N/A Yes No DATE _____
CONDITION: OBSERVABLE ____ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No N/A
(12.2) SAMPLES STORED AT _____

QC Signoff M. Ledd Level III Date 2/29/88
QC Review _____ Level III Date 3/22/88
Title MGR, Q.C.

CHECK FILLER LEVEL

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V57 — MZ 2/29/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A MZ 2/29/88
Shop End — MZ 2/29/88

8.1.3 Volume of Sheathing Filler Removed: NONE gal. — MZ 2/29/88

8.1.4 Ambient Air Temperature (T1): 50 °F — MZ 2/29/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) 42 °F. — MZ 2/29/88

B. Inside Containment Temperature (T2)
2TE-5605-5 = 76.3 } AVG. 76 °F. — MZ 2/29/88
2TE-5606-6 = 75.7 }

C. Average Temperature (T3) 59 °F. — MZ 2/29/88

D. Desired Filler Material Level 24". — MZ 2/29/88

E. Actual Filler Material Level 21". — MZ 2/29/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No X — MZ 2/29/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A X — MZ 2/29/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No X — MZ 2/29/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — N/A MZ 2/29/88
Field End — N/A MZ 2/29/88

N/A MZ 2/29/88
Independent Verifier Date

V57
SHOP

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) N/A

A. Testing Results:
Sat N/A Unsat N/A

MHL 2/29/88

B. Second Sample Submitted:
Yes N/A No N/A
2nd Sample Testing Results:
Sat N/A Unsat N/A
N/A N/A
Filler Material Require Replacement?
Yes N/A No N/A

MHL 2/24/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads.
Amount Removed (Gal.) N/A (None)

MHL 2/29/88

V57
SHOF

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. — MRL, 2/29/88

B. Containment Temperature (T2) N/A °F. — MRL, 2/29/88

C. Average Temperature (T3) N/A °F. — MRL, 2/29/88

8.3.2 Tendon repacked with heated Filler material? Yes N/A No N/A — MRL, 2/29/88

Amount of filler material repacked into tendon (Gal) N/A — MRL, 2/29/88

Filler Temperature at the Pump N/A °F. — MRL, 2/29/88

Filler Cap Installed. — MRL, 2/29/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. — N/A MRL, 2/29/88

8.4.2 Attach pumping unit hose to tendon. — N/A MRL, 2/29/88

8.4.3 verify that all valves, vents and drains are open. — N/A MRL, 2/29/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) — MRL, 2/29/88

8.4.5 Filler Temperature at the pump N/A °F — MRL, 2/29/88

8.4.6 Filler Installation Pressure N/A psi — MRL, 2/29/88

8.4.7 Ambient Temperature (T1) N/A °F — MRL, 2/29/88

8.4.8 Date Filler Cap Installed N/A — MRL, 2/29/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs 2 TWO PASSES
50 Ft-lbs 3
Torque Wrench used TW-321 — MRL, 2/29/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
50 ft-lbs
Torque Wrench used TW-321 — MRL, 3/1/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/20/88

TENDON NO.: V95 TENDON END/BUTTRESS NO.: Shop End SURVEILLANCE 4th

OTHER TENDON END LOCATION INFO Top Side

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.10) DURING DETENSIONING

(9.10.1) Water Detected Yes (N/A) No Quantity _____ Sample Taken Yes No

Comments _____

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)

(12.2) SAMPLES STORED AT _____

QC Signoff M. Lee Level II Date 2/20/88

QC Review [signature] Level III Date 3/22/88

Title MGR, QC

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V95 — MZ 12/20/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A
(Shop End) Top Side — MZ 12/20/88

8.1.3 Volume of Sheathing Filler Removed: 1/4 gal. — MZ 12/20/88

8.1.4 Ambient Air Temperature (T1): 54 °F — MZ 12/20/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) 50 °F. — MZ 12/20/88

B. Inside Containment Temperature (T2)
2TE5605-5 78.7 (78.7) °F. — MZ 12/20/88
2TE5606-6 78.7

C. Average Temperature (T3) 64.4 °F. — MZ 12/20/88

D. Desired Filler Material Level
Approx. 23 ". — MZ 12/20/88

E. Actual Filler Material Level 20.10 ". — MZ 12/20/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ — MZ 12/20/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ — MZ 12/20/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ — MZ 12/20/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
(Shop End) Top Side — MZ 12/20/88
Field End — N/A

MZ 12/23/88
Independent Verifier / Date

V95
Shop End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing:
(Shop or ~~Field~~ end) ~~CB~~ 3/10/88

A. Testing Results:
Sat X Unsat _____ ~~CB~~ 4/9/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X ~~CB~~ 4/9/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 MZ 2/20/88

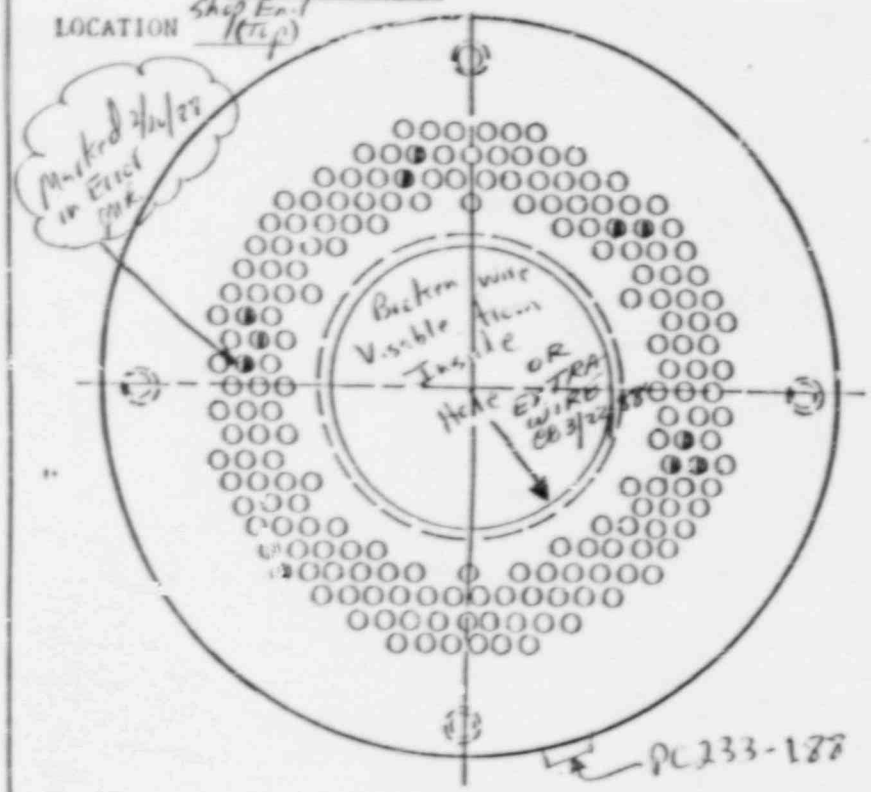
Coated Anchorage Assembly w.th 2090 P.4 (1/4 Gal) MZ 2/20/88

Torqued Caps 50 ft.# w.th TW-321 MZ 2/20/88

ARKANSAS UNIT 2
10th Year TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. V95
LOCATION Shop End (Top)

BY M. Ledo
DATE 2/20/88
APPROVED BY [signature]
DATE 3/22/88



FILLER COVERAGE

CAP	100 %
BUTTONHEADS	100 %
ANCHOR HEAD	100 %
SHIMS	100 %
BEARING PLATE	100 %

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1
SHIMS	1
BEARING PLATE	1

Shim Stack 12.10" (2-3", 2-1", ½", ¼", 3")
Gc/No-Gc # GNG-003

ATTACHMENT 5
DATA SHEET

LEGEND
- OFF-SIZE BUTTONHEAD found to be large
- BUTTONHEAD WITH SPLIT
- WIRE REMOVED PREVIOUSLY
- DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ARKANSAS NUCLEAR ONE
PLANT MANUAL SECTION: MECHANICAL MAINTENANCE
PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE
NO: 2402.C48
PAGE 26 of 36
REVISION 2 DATE 02/12/88
CHANGE DATE

Page 4 of 5

V95 Shop End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 42 °F. MZ 12/29/88

B. Containment Temperature (T2)

2TE 5605-5 76.3 °F. > Avg. 76 MZ 12/29/88
2TE 5606-6 75.7 °F. MZ 12/29/88

C. Average Temperature (T3) 59 °F. MZ 12/29/88

8.3.2 Tendon repacked with heated filler material?
Yes _____ No ✓ MZ 12/29/88

Amount of filler material repacked into tendon (Gal) None + ¼ Control = ¼ Total MZ 12/29/88

Filler Temperature at the Pump N/A °F. MZ 12/29/88

Filler Cap Installed. MZ 12/29/88
Final Filler Material level 24" } M.L 2/29/88
Domed Filler material Level is 24" }

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 12/29/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 12/29/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ 12/29/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ 12/29/88

8.4.5 Filler Temperature at the pump N/A °F MZ 12/29/88

8.4.6 Filler Installation Pressure N/A psi MZ 12/29/88

8.4.7 Ambient Temperature (T1) N/A °F MZ 12/29/88

8.4.8 Date Filler Cap Installed N/A MZ 12/29/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps. 50 Ft-lbs } Two Passes
50 Ft-lbs }
Torque Wrench used TW-321 MZ 12/29/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
50 ft-lbs
Torque Wrench used TW-321 MZ 3/1/89

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO Unit 2 DATE: 2/26/88 1st
TENDON NO.: V75 TENDON END/BUTTRESS NO.: Field SURVEILLANCE ___
OTHER TENDON END LOCATION INFO Gallery

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.10) DURING DETENSIONING (N/A)
(9.10.1) Water Detected Yes No Quantity ____ Sample Taken Yes No
Comments ____

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE ____
CONDITION: OBSERVABLE ___ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)
(12.2) SAMPLES STORED AT ____

QC Signoff M L [illegible] Level II Date 2/26/88
QC Review [signature] Level III Date 3/22/88
Title MGR, QC

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number V95 — MZ 2/24/88

8.1.2 Remove the Tendon Filler Cap.
(Field End)
Shop End
MZ 2/26/88
N/A MZ 2/26/88

8.1.3 Volume of Sheathing Filler Removed: ~~None~~ 1/4 gal. MZ 2/26/88
MZ 2/24/88

8.1.4 Ambient Air Temperature (T1): 68 °F MZ 2/24/88 MZ 2/26/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. MZ 2/26/88

B. Inside Containment Temperature (T2) N/A °F. MZ 2/26/88

C. Average Temperature (T3) N/A °F. MZ 2/26/88

D. Desired Filler Material Level N/A ". MZ 2/26/88

E. Actual Filler Material Level N/A ". MZ 2/26/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ MZ 2/26/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ MZ 2/26/88

Sample Submitted because of Tan Colored Filler Material. Yes ____ No ✓ MZ 2/26/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End
(Field End)
N/A MZ 2/26/88
MZ 2/26/88

CE 2/26/88
Independent Verifier Date

V95 Field End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing
(Shop or ~~Field~~ end) CB 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4. MK 2/26/88

1/2 (Gal) Cold Packed (contd)
Around Anchorage Components MK 2/26/88

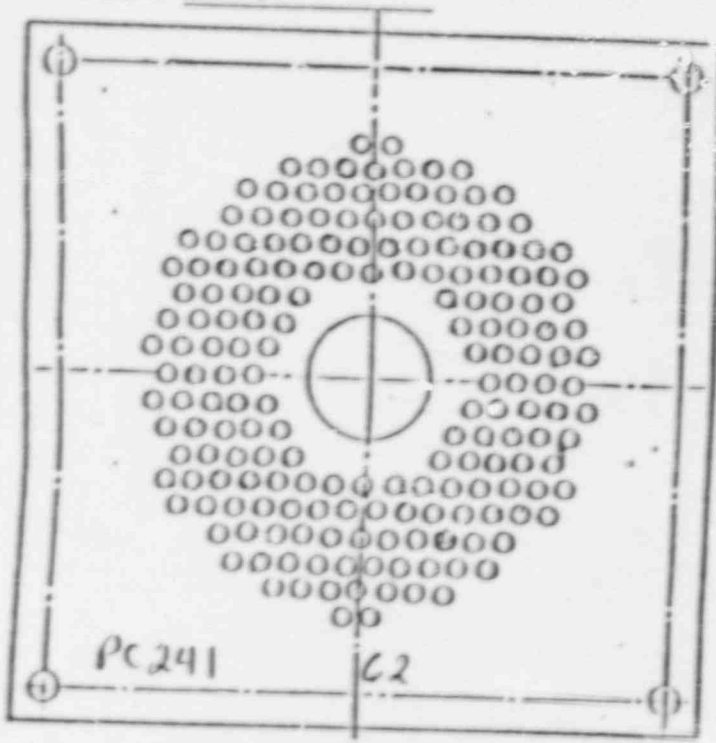
10th ARKANSAS UNIT 2
7th Year TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. V95
LOCATION Field

PERFORMED BY MLD 2/24/88
APPROVED BY [signature]
DATE 3/22/88

BUTTONHEAD COVERAGE	
CAP	100%
BUTTONHEADS	100%
ANCHOR END	100%
SHIMS	N/A
BEARING PLATE	100%
CORROSION LEVEL	
BUTTONHEADS	1
ANCHOR END	1
SHIMS	N/A
BEARING PLATE	1

Co/No-Co # CN6-003



LEGEND
- ● OFF-SIZE BUTTONHEAD
- ◐ BUTTONHEAD WITH SPLIT
- ◉ WIRE REMOVED PREVIOUSLY
- ◍ DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ⊠ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

8.2.2 Buttonhead Inspection

ATTACHMENT 5
DATA SHEET

Page 3 of 5

ARKANSAS NUCLEAR ONE
PLANT MANUAL SECTION: MECHANICAL MAINTENANCE
PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE
NO. 2402.048
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CHANGE DATE

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V95 Field End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) 68 °F. MZ 2/26/88

B. Containment Temperature (T2)

2TE 5605-5 75.2
2TE 5606-6 74.8 °F. Average 75.0°F MZ 2/26/88

C. Average Temperature (T3) 71.5 °F. MZ 2/26/88

8.3.2 Tendon repacked with heated Filler material?
Yes N/A No ✓ MZ 2/26/88

Amount of filler material repacked into tendon (Gal) 1/2 (Coated Anchorage) MZ 2/26/88

Filler Temperature at the Pump N/A °F. MZ 2/26/88

Filler Cap Installed. 2/26/88 MZ 2/26/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 2/26/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 2/26/88

8.4.3 verify that all valves, vents and drains are open. N/A MZ 2/26/88

8.4.4 Amount of Filler material repacked into tendon. N/A (gal) MZ 2/26/88

8.4.5 Filler Temperature at the pump N/A °F MZ 2/26/88

8.4.6 Filler Installation Pressure N/A psi MZ 2/26/88

8.4.7 Ambient Temperature (T1) N/A °F MZ 2/26/88

8.4.8 Date Filler Cap Installed N/A MZ 2/26/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 160 Ft-lbs } In 40 ft-lb
N/A Ft-lbs } Increments MZ 2/26/88

Torque Wrench used TW-321

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 160 ft-lbs
N/A ft-lbs MZ 2/29/88

Torque Wrench used TW-321

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/24/88
TENDON NO.: 12H18 TENDON END/BUTTRESS NO.: SHOP/BTT #1 SURVEILLANCE 10+1 YR
OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAP
(9.4.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.10) DURING DETENSIONING N/A
(9.10.1) Water Detected N/A Yes No Quantity _____ Sample Taken Yes No
Comments _____

(11.) OWNER/AGENT NOTIFIED N/A Yes No DATE _____
CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No
(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 2/26/88
QC Review _____ Level II Date 4/20/88
Title Q.C. Inspector

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
ARKANSAS NUCLEAR ONE	PAGE 23 of 36	
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	CHANGE DATE	

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 12H18 — CB 2/24/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A CB 2/24/88
Shop End — CB 2/24/88

8.1.3 Volume of Sheathing Filler Removed: 2 gal. — CB 2/24/88

8.1.4 Ambient Air Temperature (T1): 74 °F — CB 2/24/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — CB 2/24/88

B. Inside Containment Temperature (T2) N/A °F. — CB 2/24/88

C. Average Temperature (T3) N/A °F. — CB 2/24/88

D. Desired Filler Material Level N/A ". — CB 2/24/88

E. Actual Filler Material Level N/A ". — CB 2/24/88

8.1.6 Color Comparison

A. Tan Colored? Yes X (JUST AROUND 1/8 OF BUTTONHEADS) No _____ — CB 2/24/88

B. Tan Color [illegible]er 24 hours?
Yes _____ No X N/A _____ — CB 3/1/88

Sample Submitted because of Tan Colored Filler Material. Yes X No _____ — CB 3/10/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — CB 2/24/88
Field End — N/A CB 2/24/88

M. Ford — Independent Verifier
2/24/88 — Date

12418 SHOP END

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) CB 3/19/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/2 CB 2/26/88

1/4 GAL COATED GREASE ON ANCHORAGE COMPONETS CB 2/26/88

ARKANSAS UNIT 2

10+A YR TENDON SURVEILLANCE

TENDON END ANCHOR SKETCH

TENDON NO. 12H18

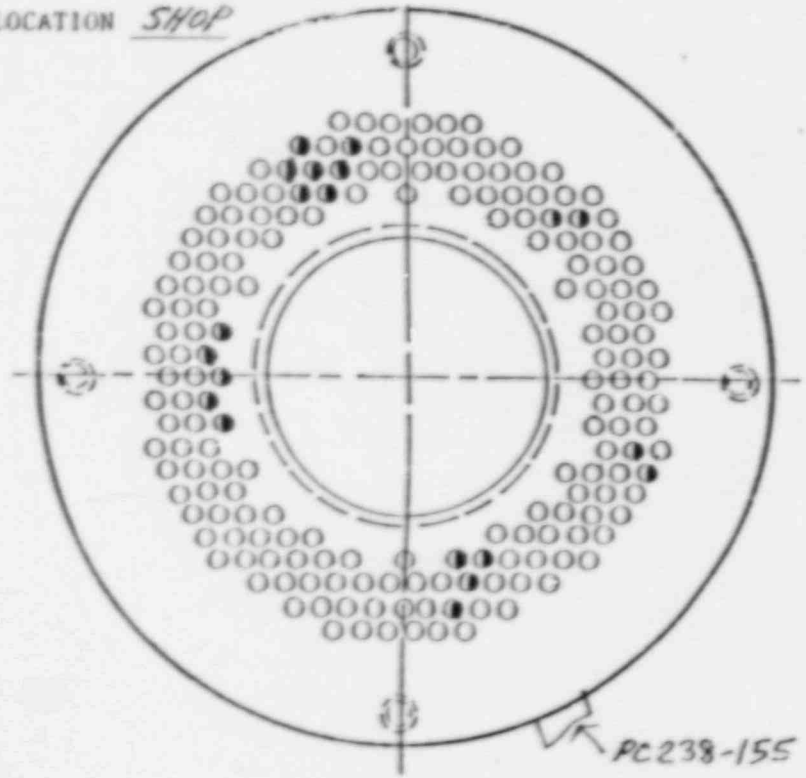
LOCATION SHOP

BY [signature]

DATE 2/26/88

APPROVED BY A. J. Lord

DATE 4/20/88



FILLER COVERAGE

CAP	80
BUTTONHEADS	100
ANCHOR HEAD	~~80~~ 90 2/26/88
SHIMS	80
BEARING PLATE	80

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1
SHIMS	1
BEARING PLATE	1

SHIM STACK 5.7" (½, ½, ½, ½, ½, 3)

GAG # 64 GAUGE

OFFSIZE BUTTONHEADS LARGE

ATTACHMENT 5
DATA SHEET

LEGEND

- OFF-SIZE BUTTONHEAD
- BUTTONHEAD WITH SPLIT
- WIRE REMOVED PREVIOUSLY
- DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- MISSING WIRE

NOTE

THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL

#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

12H18 SHOP END

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. GB 12/24/88

B. Containment Temperature (T2)

N/A °F. GB 12/24/88

C. Average Temperature (T3) N/A °F. GB 12/24/88

8.3.2 Tendon repacked with heated Filler material?
Yes N/A No N/A GB 12/24/88

Amount of filler material repacked into tendon (Gal) N/A GB 12/24/88

Filler Temperature at the Pump N/A °F. GB 12/24/88

Filler Cap Installed. N/A GB 12/24/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A GB 12/31/88

8.4.2 Attach pumping unit hose to tendon. N/A GB 12/31/88

8.4.3 verify that all valves, vents and drains are open. N/A (AIR VENTED) GB 12/31/88

8.4.4 Amount of Filler material repacked into tendon. 4 1/2 (gal) + 1/4 COATED = 4 3/4 TOTAL GB 12/31/88

8.4.5 Filler Temperature at the pump 190 °F GB 12/31/88

8.4.6 Filler Installation Pressure N/A psi GB 12/31/88

8.4.7 Ambient Temperature (T1) 54 °F GB 12/31/88

8.4.8 Date Filler Cap Installed 12/24/88 GB 12/24/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs TWO PASSES
N/A Ft-lbs

Torque Wrench used TW-382 GB 12/24/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
N/A ft-lbs

Torque Wrench used TW-382 GB 12/31/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECTION FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/23/88
TENDON NO.: 12H18 TENDON END/BUTTRESS NO.: FIELD/BUTT #2 SURVEILLANCE 10TH YR
OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE N
(9.4.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.10) DURING DETENSIONING N/A
(9.10.1) Water Detected N/A Yes No Quantity _____ Sample Taken Yes No
Comments _____

(11.) OWNER/AGENT NOTIFIED N/A Yes No DATE _____
CONDITION: OBSERVABLE ___ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No
(12.2) SAMPLES STORED AT N/A

QC Signoff [signature] Level III Date 2/23/88
QC Review [signature] Level II Date 4/20/88
Title Q.C. Inspector

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 12H18 — CB 12/23/88

8.1.2 Remove the Tendon Filler Cap.
(Field End) — CB 12/23/88
Shop End — N/A CB 12/23/88

8.1.3 Volume of Sheathing Filler Removed: 1½ gal. — CB 12/23/88

8.1.4 Ambient Air Temperature (T1): 48 °F — CB 12/23/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — CB 12/23/88

B. Inside Containment Temperature (T2) N/A °F. — CB 12/23/88

C. Average Temperature (T3) N/A °F. — CB 12/23/88

D. Desired Filler Material Level N/A ". — CB 12/23/88

E. Actual Fill Material Level N/A ". — CB 12/23/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No X — CB 12/23/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A X — CB 12/23/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No X — CB 12/23/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — N/A CB 12/23/88
(Field End) — CB 12/23/88

M. Reed 12/23/88
Independent Verifier Date

ARKANSAS UNIT 2
10TH YR TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. 12H18

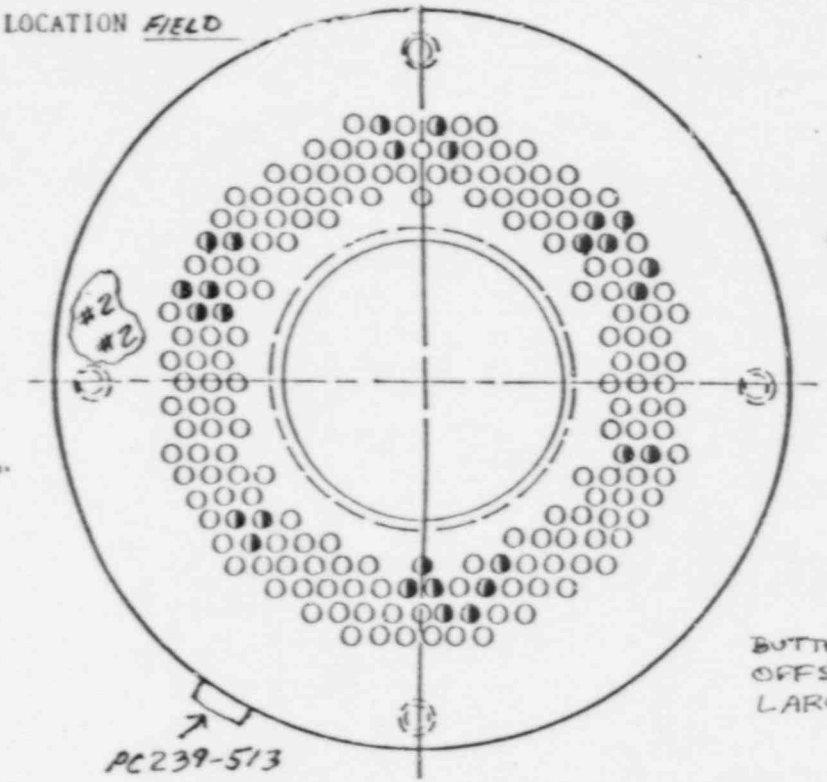
LOCATION FIELD

BY [signature]

DATE 3/23/88

APPROVED BY [signature]

DATE 4/20/88



FILLER COVERAGE

CAP	80%
BUTTONHEADS	100%
ANCHOR HEAD	80%
SHIMS	80%
BEARING PLATE	80%

CORROSION LEVEL

BUTTONHEADS	#1
ANCHOR HEAD	#1 + 2 SEE AREA
SHIMS	1
BEARING PLATE	1

SHIM STACK 5.6" (½, ½, ½, ½, ½, 3)

BUTTONHEADS OFFSIZE ARE LARGE - GNG-003 GAUGE

LEGEND
- ◊ OFF-SIZE BUTTONHEAD
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ● DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING < .006"
#5 .006" < PITTING < .010"

ATTACHMENT 5
DATA SHEET

Page 4 of 5

ARKANSAS NUCLEAR ONE

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE

PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE

NO: 2402.048

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REVISION 2 DATE 02/12/88
CHANGE DATE

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12H18
FIELD

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. CB 12/23/88

B. Containment Temperature (T2) N/A °F. CB 12/23/88

C. Average Temperature (T3) N/A °F. CB 12/23/88

8.3.2 Tendon repacked with heated Filler material? CB 12/23/88
Yes N/A No N/A

Amount of filler material repacked into tendon (Gal) N/A CB 12/23/88

Filler Temperature at the Pump N/A °F. CB 12/23/88

Filler Cap Installed. N/A CB 12/23/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A CB 12/25/88

8.4.2 Attach pumping unit hose to tendon. N/A CB 12/25/88

8.4.3 verify that all valves, vents and drains are open. N/A (AIR VENTED) CB 12/25/88

8.4.4 Amount of Filler material repacked into tendon. 3 1/2 (gal) + 1/4 COATED = 3 3/4 TOTAL CB 12/25/88

8.4.5 Filler Temperature at the pump 168 °F CB 12/25/88

8.4.6 Filler Installation Pressure N/A psi CB 12/25/88

8.4.7 Ambient Temperature (T1) 68 °F CB 12/25/88

8.4.8 Date Filler Cap Installed 2/23/88 CB 12/23/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs
N/A Ft-lbs
Torque Wrench used TW-382 CB 12/23/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
N/A ft-lbs
Torque Wrench used TW-382 CB 12/25/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/25/88
TENDON NO.: 31436 TENDON END/BUTTRESS NO.: SHOP / BUTT 3 SURVEILLANCE 10TH YR
OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes [No] Quantity ____ Sample Taken Yes No
Comments _____

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes [No] Quantity ____ Sample Taken Yes No
Comments _____

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes [No] Quantity ____ Sample Taken Yes No
Comments _____

(9.10) DURING DETENSIONING N/A
(9.10.1) Water Detected N/A Yes No Quantity ____ Sample Taken Yes No
Comments _____

(11.) OWNER/AGENT NOTIFIED N/A Yes No DATE _____
CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No
(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 2/25/88
QC Review M. Lee Level II Date 4/20/88
Title R.C. Inspector

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 31H36 — CB 2/25/88

8.1.2 Remove the Tendon Filler Cap.
Field End N/A CB 2/25/88
Shop End CB 2/25/88

8.1.3 Volume of Sheathing Filler Removed: 2 gal. — CB 2/25/88

8.1.4 Ambient Air Temperature (T1): 56 °F — CB 2/25/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — CB 2/25/88

B. Inside Containment Temperature (T2) N/A °F. — CB 2/25/88

C. Average Temperature (T3) N/A °F. — CB 2/25/88

D. Desired Filler Material Level N/A ". — CB 2/25/88

E. Actual Filler Material Level N/A ". — CB 2/25/88

8.1.6 Color Comparison

A. Tan Colored? Yes ____ No X — CB 2/25/88

B. Tan Colored after 24 hours?
Yes ____ No ____ N/A X — CB 2/25/88

Sample Submitted because of Tan Colored Filler Material. Yes ____ No X — CB 2/25/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End CB 2/25/88
Field End N/A CB 2/25/88

R. Lesh 2/25/88
Independent Verifier Date

31436
SHOP

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or (Field) end) CB 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

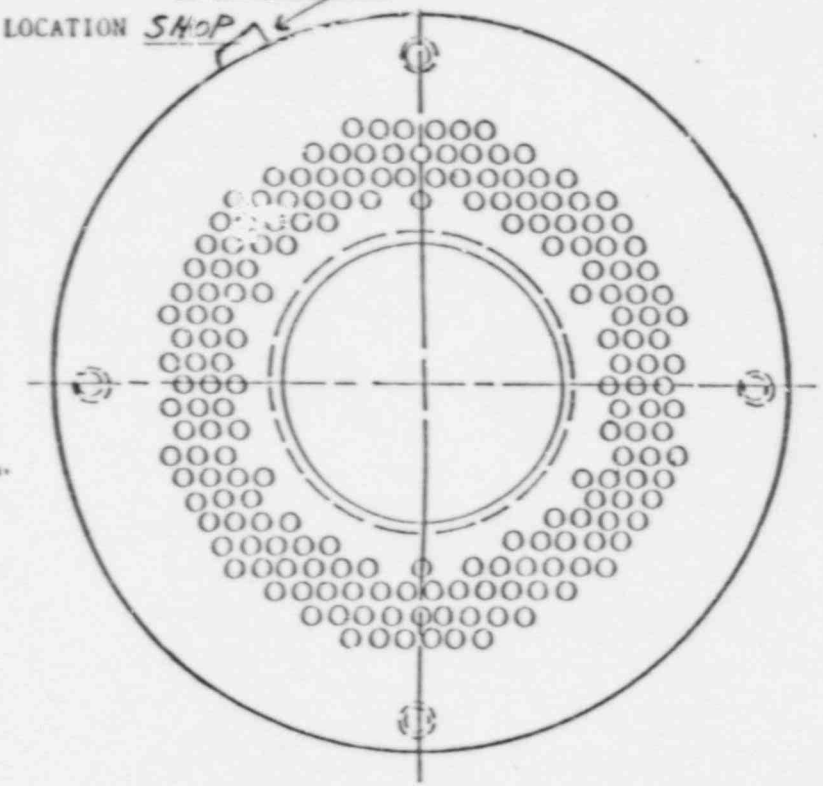
8.2.1 Clean the filler material away from the stressing plate and the Buttonheads
Amount Removed (Gal.) 1/2 CB 12/25/88

1/4 GAL GREASE COATED AROUND ANCHORAGE COMPONETS
CB 2/25/88

ARKANSAS UNIT 2
10-Yr TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. 31436 PC234-221
LOCATION SHOP

BY [signature]
DATE 2/25/88
APPROVED BY [signature]
DATE 4/20/88



FILLER COVERAGE

CAP	80
BUTTONHEADS	100
ANCHOR HEAD	95
SHIMS	80
BEARING PLATE	100

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1
SHIMS	1
BEARING PLATE	1

SHIM STACK 5.6 (½, 1, 1, 3)

GNB GAUGE 064

ATTACHMENT 5
DATA SHEET

LEGEND
- ◊ OFF-SIZE BUTTONHEAD
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ● DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

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ARKANSAS NUCLEAR ONE

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE
PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE
NO: 2402.043
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31H36
SHOP

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. CB 12/25/88

B. Containment Temperature (T2) N/A °F. CB 12/25/88

C. Average Temperature (T3) N/A °F. CB 12/25/88

8.3.2 Tendon repacked with heated Filler material? CB 12/25/88
Yes N/A No N/A

Amount of filler material repacked into tendon (Gal) N/A CB 12/25/88

Filler Temperature at the Pump N/A °F. CB 12/25/88

Filler Cap Installed. N/A CB 12/25/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A CB 12/25/88

8.4.2 Attach pumping unit hose to tendon. N/A CB 12/25/88

8.4.3 verify that all valves, vents and drains are open. N/A (AIR VENTED) CB 12/25/88

8.4.4 Amount of Filler material repacked into tendon. 4 (gal) + ¼ COATED = 4¼ TOTAL CB 12/25/88

8.4.5 Filler Temperature at the pump 182 °F CB 12/25/88

8.4.6 Filler Installation Pressure N/A psi CB 12/25/88

8.4.7 Ambient Temperature (T1) 56 °F CB 12/25/88

8.4.8 Date Filler Cap Installed 12/25/88 CB 12/25/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs TWO PASSES
N/A Ft-lbs
Torque Wrench used TW-382 CB 12/25/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
N/A ft-lbs
Torque Wrench used TW-382 CB 12/26/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 8.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/27/88

TENDON NO.: 3H36 TE: M END/BUTTRESS NO. FIELD/BUTT #1 SURVEILLANCE 10+ YR

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected Yes [No] Quantity _____ Sample Taken N/A Yes No

Comments _____

(9.7) IN GREASE CAN

(9.7.1) Water Detected [Yes] No Quantity APPROX. 2 oz Sample Taken [Yes] No

Comments _____

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No

Comments _____

(9.10) DURING DETENSIONING N/A

(9.10.1) Water Detected Yes No Quantity _____ Sample Taken Yes No

Comments _____

(11.) OWNER/AGENT NOTIFIED Yes [No] – DATE NOT ON 2-7-88 YES ON 2/29/88 CA

CONDITION: OBSERVABLE X SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED [Yes] No

(12.2) SAMPLES STORED AT PSC TRAILER

QC Signoff _____ Level III Date 2/27/88

QC Review M. Ledo Level II Date 4/20/88

Title Q.C. Inspector

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 31H36 — CB 2/27/88

8.1.2 Remove the Tendon Filler Cap.
(Field End) — CB 2/27/88
Shop End — N/A CB 2/27/88

8.1.3 Volume of Sheathing Filler Removed: 2 gal. — CB 2/27/88

8.1.4 Ambient Air Temperature (T1): 62 °F — CB 2/27/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — CB 2/27/88

B. Inside Containment Temperature (T2) N/A °F. — CB 2/27/88

C. Average Temperature (T3) N/A °F. — CB 2/27/88

D. Desired Filler Material Level N/A". — CB 2/27/88

E. Actual Filler Material Level N/A". — CB 2/27/88

8.1.6 Color Comparison — JUST AROUND BUTTONHEADS

A. Tan Colored? Yes X No _____ — CB 2/27/88

B. Tan Colored after 24 hours?
Yes _____ No X N/A _____ — CB 3/1/88

Sample Submitted because of Tan Colored Filler Material. Yes X No _____ — CB 3/10/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — N/A CB 2/27/88
(Field End) — CB 2/27/88

M. Ludt 2/27/88
Independent Verifier Date

31436
FIELD

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) CB 3/19/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 CB 12/27/88

1/4 GAL. GREASE COATED AROUND ANCHORAGE COMPONETS CB 2/27/88

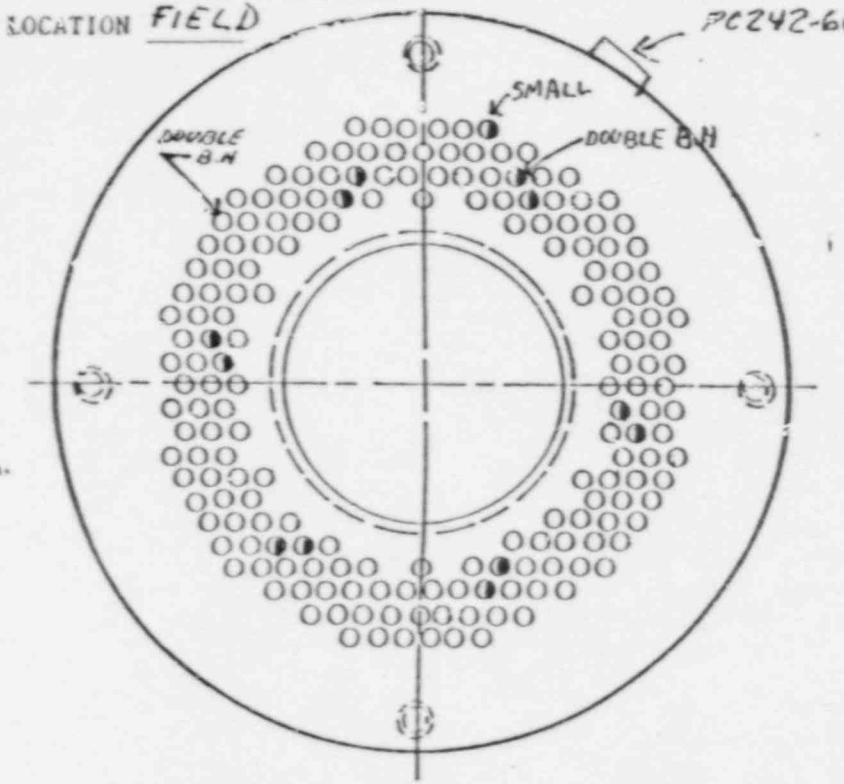
ARKANSAS UNIT 2

10+4 YR TENDON SURVEILLANCE

TENDON END ANCHOR SKETCH

TENDON NO. 31H36

LOCATION FIELD



BY CBrooks

DATE 2/27/88

APPROVED BY WM Lee

DATE 4/20/88

FILLER COVERAGE

CAP	~~80~~ 50 CB 2/27/88
BUTTONHEADS	50
ANCHOR HEAD	50
SHIMS	50
BEARING PLATE	50

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1
SHIMS	1
BEARING PLATE	1

GNG GAUGE 064
SHIM STACK (.2, 1, 1, 3)
5.3

OTHER OFF-SIZE BUTTONHEADS ARE LARGE

LEGEND

- ◐ OFF-SIZE BUTTONHEAD
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ● DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE

THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL

#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING < .006"
#5 .006" < PITTING < .010"

ATTACHMENT 5
DATA SHEET

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ARKANSAS NUCLEAR ONE

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE

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31H36 FIELD END

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. — CB 12/29/88

B. Containment Temperature (T2) N/A °F. — CB 12/29/88

C. Average Temperature (T3) N/A °F. — CB 12/29/88

8.3.2 Tendon repacked with heated Filler material? Yes N/A No N/A — CB 12/29/88

Amount of filler material repacked into tendon (Gal) N/A — CB 12/29/88

Filler Temperature at the Pump N/A °F. — CB 12/29/88

Filler Cap Installed. — N/A CB 12/29/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. — N/A CB 12/29/88

8.4.2 Attach pumping unit hose to tendon. — N/A CB 12/29/88

8.4.3 verify that all valves, vents and drains are open. N/A (AIR VENTED) — CB 12/29/88

8.4.4 Amount of Filler material repacked into tendon. 5 (gal) + 1/4 COATED = 5 1/4 TOTAL — CB 12/29/88

8.4.5 Filler Temperature at the pump 162 °F — CB 12/29/88

8.4.6 Filler Installation Pressure N/A psi — CB 12/29/88

8.4.7 Ambient Temperature (T1) 76 °F — CB 12/29/88

8.4.8 Date Filler Cap Installed 2/27/88 — CB 12/27/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs TWO PASSES
N/A Ft-lbs
Torque Wrench used TW-382 — CB 12/27/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
N/A ft-lbs
Torque Wrench used TW-382 — CB 12/29/88

PSC Precision Surveillance Corporation		CALCULATION NO:
	SAFETY RELATED / NON-SAFETY RELATED	PAGE OF

TO: MIKE COOMBS - ANO

DATE: 2-29-88

SUBJECT: UNIT 2 TENDON SURVEILLANCE
PROCEDURE 2402.048 REV. 2
ATTACHMENT 7 - INSPECT FOR
WATER - SECTION 11

PER PSC PROCEDURE SQ6.1 SECTION 11 OF ATTACHMENT 7 OF ANO PROCEDURE 2402.048 REV. 2 "THE OWNER OR HIS AGENT SHALL BE FORMALLY NOTIFIED WHEN WATER, REGARDLESS OF QUANTITY, HAS BEEN DETECTED DURING THE IN-SERVICE INSPECTION."

THIS IS TO NOTIFY YOU THAT WATER WAS FOUND IN THE GREASE CAN OF TENDON 31H36 - FIELD END - BUTTRESS 1 - APPROX. 2 oz. WAS FOUND AND COLLECTED.

PER SECTION 10.1 OF THE ABOVE MENTIONED PROCEDURE THIS WATER IS DEFINED AS "OBSERVABLE MOISTURE."

ANY QUESTIONS OR COMMENTS PLEASE NOTIFY.

C. BROOKS
MGR, Q.C./PSC

PREPARED BY	DATE	REVIEWED BY	DATE

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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ATTACHMENT 7

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INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/27/88

TENDON NO.: 32H50 TENDON END/BUTTRESS NO.: SHOP/BUTT 3 SURVEILLANCE 10th YR

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No

Comments _____

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No

Comments _____

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No

Comments _____

(9.10) DURING DETENSIONING N/A

(9.10.1) Water Detected N/A Yes No Quantity _____ Sample Taken Yes No

Comments N/A

(11.) OWNER/AGENT NOTIFIED N/A Yes No DATE _____

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff [signature] Level III Date 2/27/88

QC Review M. Lud Level II Date 4/20/88

Title QC Inspector

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 32H50 — CB 12/27/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A CB 12/27/88
Shop End — CB 12/27/88

8.1.3 Volume of Sheathing Filler Removed: 2 gal. — CB 12/27/88

8.1.4 Ambient Air Temperature (T1): 80 °F — CB 12/27/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — CB 12/27/88

B. Inside Containment Temperature (T2) N/A °F. — CB 12/27/88

C. Average Temperature (T3) N/A °F. — CB 12/27/88

D. Desired Filler Material Level N/A". — CB 12/27/88

E. Actual Filler Material Level N/A" — CB 12/27/88

8.1.6 Color Comparison

A. Tan Colored? Yes ____ No X — CB 12/27/88

B. Tan Colored after 24 hours?
Yes ____ No ____ N/A X — CB 12/27/88

Sample Submitted because of Tan Colored Filler Material. Yes ____ No X — CB 12/27/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — CB 12/27/88
Field End — N/A CB 12/27/88

M. Ledo, 12/27/88
Independent Verifier Date

32H50
SHOP END

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or ~~Field~~ end) CB 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

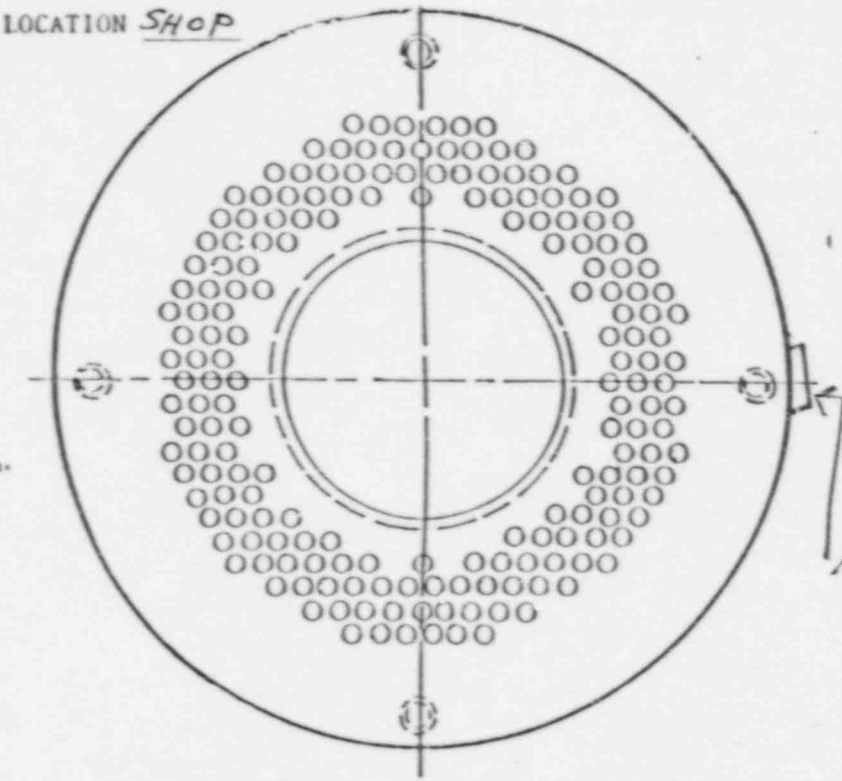
8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 CB 3/27/88

1/4 GAL. GREASE COATED ON ANCHORAGE COMPONETS CB 3/27/88

ARKANSAS UNIT 2
10th YR TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. 32H50
LOCATION SHOP

BY A Brooks
DATE 2/27/88
APPROVED BY W. Ladd
DATE 4/20/88



FILLER COVERAGE

CAP	80
BUTTONHEADS	100
ANCHOR HEAD	80
SHIMS	80
BEARING PLATE	80

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1
SHIMS	1
BEARING PLATE	1

RC233-209

SHIM STACK 6.2" (3,3)
GNB GAUGE #064

LEGEND
- OFF-SIZE BUTTONHEAD
- BUTTONHEAD WITH SPLIT
- WIRE REMOVED PREVIOUSLY
- DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ATTACHMENT 5
DATA SHEET

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ARKANSAS NUCLEAR ONE

PROCEDURE/WORK PLAN TITLE:
TENDON SURVEILLANCE PROCEDURE

PLANT MANUAL SECTION:
MECHANICAL MAINTENANCE

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32450 SHOP

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. — CB 12/27/88

B. Containment Temperature (T2)

N/A °F.

C. Average Temperature (T3) N/A °F. — CB 12/27/88 CB 12/27/88

8.3.2 Tendon repacked with heated Filler material?
Yes N/A No N/A — CB 12/27/88

Amount of filler material repacked into tendon (Gal) N/A — CB 12/27/88

Filler Temperature at the Pump N/A °F. — CB 12/27/88

Filler Cap Installed. — N/A CB 12/27/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. — N/A CB 12/29/88

8.4.2 Attach pumping unit hose to tendon. — N/A CB 12/29/88

8.4.3 verify that all valves, vents and drains are open. N/A (AIR VENTED) — CB 12/29/88

8.4.4 Amount of Filler material repacked into tendon. 2 (gal) + 1/4 COATED = 2 1/4 — CB 12/29/88

8.4.5 Filler Temperature at the pump 166 °F — CB 12/29/88

8.4.6 Filler Installation Pressure N/A psi — CB 12/29/88

8.4.7 Ambient Temperature (T1) ~~76~~ 68 °F CB 12/29/88 — CB 12/29/88

8.4.8 Date Filler Cap Installed 2/27/88 — CB 12/27/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs TWO PASSES
N/A Ft-lbs
Torque Wrench used TW-382 — CB 12/27/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
N/A ft-lbs
Torque Wrench used TW-382 — CB 2/29/88

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/24/88
TENDON NO.: 32H50 TENDON END/BUTTRESS NO.: FIELD/BUTT 2 SURVEILLANCE 10th YR
OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No
Comments _____

(9.10) DURING DETENSIONING N/A
(9.10.1) Water Detected N/A Yes No Quantity _____ Sample Taken Yes No
Comments _____

(11.) OWNER/AGENT NOTIFIED N/A Yes No DATE _____
CONDITION: OBSERVABLE ____ SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No
(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 2/24/88
QC Review M. Ledd Level II Date 4/20/88
Title C.I. Inspector

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 32H50 — CM 12/24/88

8.1.2 Remove the Tendon Filler Cap.
Field End — CM 12/24/88
Shop End — CM 12/24/88

8.1.3 Volume of Sheathing Filler Removed: 2½ gal. — CM 12/24/88

8.1.4 Ambient Air Temperature (T1): 58 °F — CM 12/24/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — CM 12/24/88

B. Inside Containment Temperature (T2) N/A °F. — CM 12/24/88

C. Average Temperature (T3) N/A °F. — CM 12/24/88

D. Desired Filler Material Level N/A". — CM 12/24/88

E. Actual Filler Material Level N/A". — CM 12/24/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No X — CM 12/24/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A X — CM 12/24/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No X — CM 12/24/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — N/A CM 12/24/88
Field End — CM 12/24/88

M. Ledd 12/24/88
Independent Verifier Date

32H50
FIELD
END

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or ~~Field end~~) ~~CB~~ 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

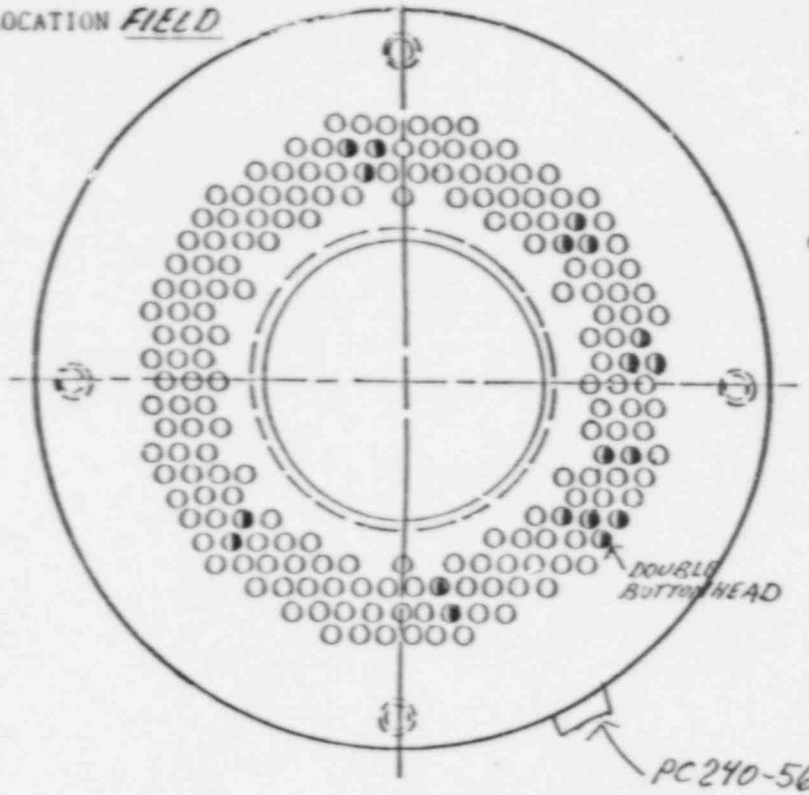
8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/2 CB 2/24/88

1/4 GAL. USED TO COAT ANCHORAGE COMPONETS CB 2/24/88

ARKANSAS UNIT 2
10th YR TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. 32H50
LOCATION FIELD

BY [signature]
DATE 2/24/88
APPROVED BY [signature]
DATE 4/20/88



FILLER COVERAGE

CAP	80 %
BUTTONHEADS	100 %
ANCHOR HEAD	100 %
SHIMS	100 %
BEARING PLATE	100 %

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1
SHIMS	1
BEARING PLATE	1

SHIM STACK 6.1" (3,3)

OFF SIZE BUTTONHEADS MARKED LARGE

LEGEND
- ◐ OFF-SIZE BUTTONHEAD
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ◑ DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ATTACHMENT 5
DATA SHEET

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PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE
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CHANGE DATE

32H50
FIELD

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. CB 2/24/88

B. Containment Temperature (T2)

N/A °F. CB 2/24/88

Average Temperature (T3) N/A °F. CB 2/24/88

8.3.2 Was tendon repacked with heated Filler material?

Yes N/A No N/A CB 2/24/88

8.3.3 Amount of filler material repacked into tendon (Gal) N/A CB 2/24/88

Filler Temperature at the Pump N/A °F. CB 2/24/88

Filler Cap Installed. N/A CB 2/24/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A CB 2/24/88

8.4.2 Attach pumping unit hose to tendon. N/A CB 2/24/88

8.4.3 verify that all valves, vents and drains are open. (AIR VENTED) N/A CB 2/24/88

8.4.4 Amount of Filler material repacked into tendon. 3 1/2 (gal) + 1/4 COATED = 3 3/4 TOTAL CB 2/24/88

8.4.5 Filler Temperature at the pump 130 °F CB 2/24/88

8.4.6 Filler Installation Pressure N/A psi CB 2/24/88

8.4.7 Ambient Temperature (T1) 58 °F CB 2/24/88

8.4.8 Date Filler Cap Installed 2/24/88 CB 2/24/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs TWO PASSES
N/A Ft-lbs

Torque Wrench used TW-382 CB 2/24/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
N/A ft-lbs

Torque Wrench used TW-382 CB 2/25/88

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO Unit 2 DATE: 2/24/88

TENDON NO.: 3D104 TENDON END/BUTTRESS NO.: SHOP SURVEILLANCE 4th

OTHER TENDON END LOCATION INFO West of Buttress 1

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.10) DURING DETENSIONING

(9.10.1) Water Detected Yes No Quantity _____ Sample Taken Yes No

Comments (N/A)

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)

(12.2) SAMPLES STORED AT _____

QC Signoff M. Lee Level II Date 2/24/88

QC Review [signature] Level III Date 3/22/88

Title MGR, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 3D104 — MZ 12/24/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A MZ 12/24/88
Shop End — MZ 12/24/88

8.1.3 Volume of Sheathing Filler Removed: 3 gal. — MZ 12/24/88

8.1.4 Ambient Air Temperature (T1): 58 °F — MZ 12/24/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — MZ 12/24/88

B. Inside Containment Temperature (T2) N/A °F. — MZ 12/24/88

C. Average Temperature (T3) N/A °F. — MZ 12/24/88

D. Desired Filler Material Level N/A ". — MZ 12/24/88

E. Actual Filler Material Level N/A ". — MZ 12/24/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ — MZ 12/24/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ — MZ 12/24/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ — MZ 12/24/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — MZ 12/24/88
Field End — N/A MZ 12/24/88

[signature] 12/24/88
Independent Verifier Date

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3D104
Shop End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop) or Field end) CB 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

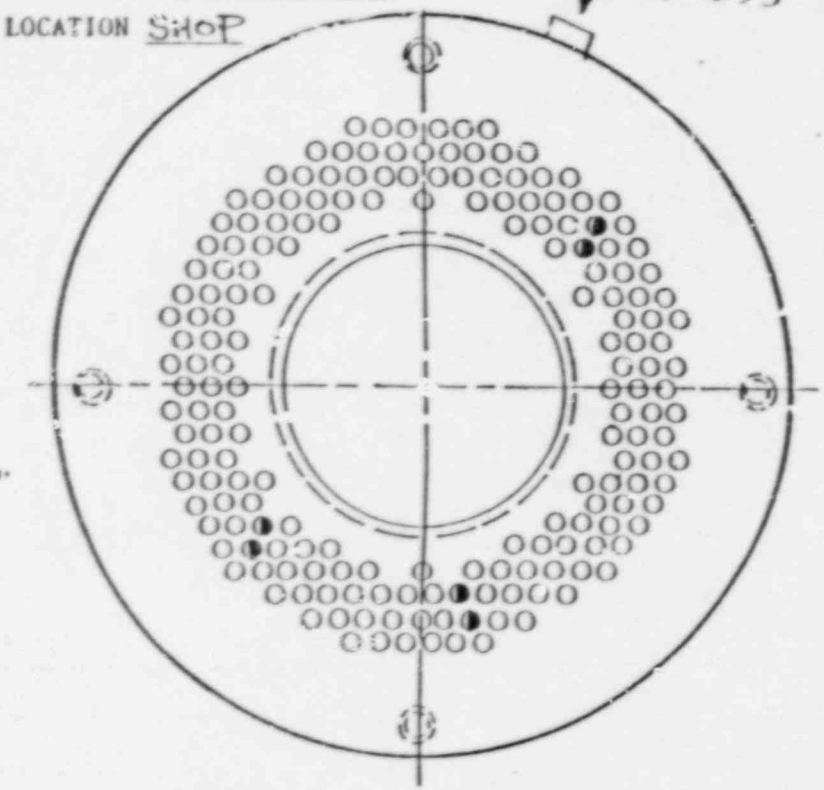
8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 AMZ 12/24/87

1/2 Gal. Cold packed
Around Anchorage Components AMZ 12/24/87

ARKANSAS UNIT 2
10th Yr TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. 3D104
LOCATION SHOP

PC233-18 (1) {112 Arc stamped}



BY M. Lee
DATE 2/24/88
APPROVED BY [illegible]
DATE 3/22/88

FILLER COVERAGE	
CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

CORROSION LEVEL	
BUTTONHEADS	1
ANCHOR HEAD	1 (mill scale)
SHIMS	1
BEARING PLATE	1

Shim Stack 4 5/8" (1", 3/8", 3/16", 3")
Go/No-Go #GNG-003
Bearing Plate PC224AR251

ATTACHMENT 5
DATA SHEET

LEGEND
- ◊ OFF-SIZE BUTTONHEAD found to be large
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ● DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

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ARKANSAS NUCLEAR ONE
PLANT MANUAL SECTION: MECHANICAL MAINTENANCE
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NO: 2402.048
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3D104 SHOP End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. — N/A MZ 2/24/88

B. Containment Temperature (T2) N/A °F. — N/A MZ 2/24/88

C. Average Temperature (T3) N/A °F. — MZ 2/24/88

8.3.2 Tendon repacked with heated Filler material? Yes N/A No N/A — MZ 2/24/88

Amount of filler material repacked into tendon (Gal) N/A — MZ 2/24/88

Filler Temperature at the Pump N/A °F. — MZ 2/24/88

Filler Cap Installed. — N/A MZ 2/24/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. — N/A MZ 2/25/88

8.4.2 Attach pumping unit hose to tendon. — N/A MZ 2/25/88

8.4.3 verify that all valves, vents and drains are open. (Air Vented) — N/A MZ 2/25/88

8.4.4 Amount of Filler ma repacked into tendon. 3½ (gal) + ½ Gal. Coated = 4 Total — MZ 2/25/88

8.4.5 Filler Temperature at the pump 180 °F — MZ 2/25/88

8.4.6 Filler Installation Pressure N/A psi — MZ 2/25/88

8.4.7 Ambient Temperature (T1) 54 °F — MZ 2/25/88

8.4.8 Date Filler Cap Installed 2/24/88 — MZ 2/24/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs } Two Risers
50 Ft-lbs

Torque Wrench used TW-321 — MZ 2/24/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
50 ft-lbs

Torque Wrench used TW-321 — MZ 2/25/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
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PROJECT: ANO Unit 2 DATE: 2/23/88
TENDON NO.: 3D104 TENDON END/BUTTRESS NO.: Field End SURVEILLANCE 4th
OTHER TENDON END LOCATION INFO ~~Anch~~ of Buttress 3
SOUTH EB 2/24/88

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.10) DURING DETENSIONING
(9.10.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____
CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)
(12.2) SAMPLES STORED AT _____

QC Signoff M. Lee Level II Date 2/23/88
QC Review [signature] Level III Date 3/22/88
Title MGR, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 3D104 — MZ 12/23/88

8.1.2 Remove the Tendon Filler Cap.
(Field End)
Shop End
MZ 12/23/88
N/A

8.1.3 Volume of Sheathing Filler Removed: 3 1/2 gal. MZ 12/23/88

8.1.4 Ambient Air Temperature (T1): 49 °F MZ 12/23/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. MZ 12/23/88

B. Inside Containment Temperature (T2) N/A °F. MZ 12/23/88

C. Average Temperature (T3) N/A °F. MZ 12/23/88

D. Desired Filler Material Level N/A". MZ 12/23/88

E. Actual Filler Material Level N/A". MZ 12/23/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ MZ 12/23/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ MZ 12/23/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ MZ 12/23/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End
(Field End)
N/A
MZ 12/23/88

[signature] 12/23/88
Independent Verifier Date

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3D104
FIELD End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing ;
(Shop or Field end) ~~03~~ 3/10/88

A. Testing Results:
Sat X Unsat _____ ~~03~~ 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X ~~03~~ 4/19/88

8.2 Inspection of the Anchorage Components

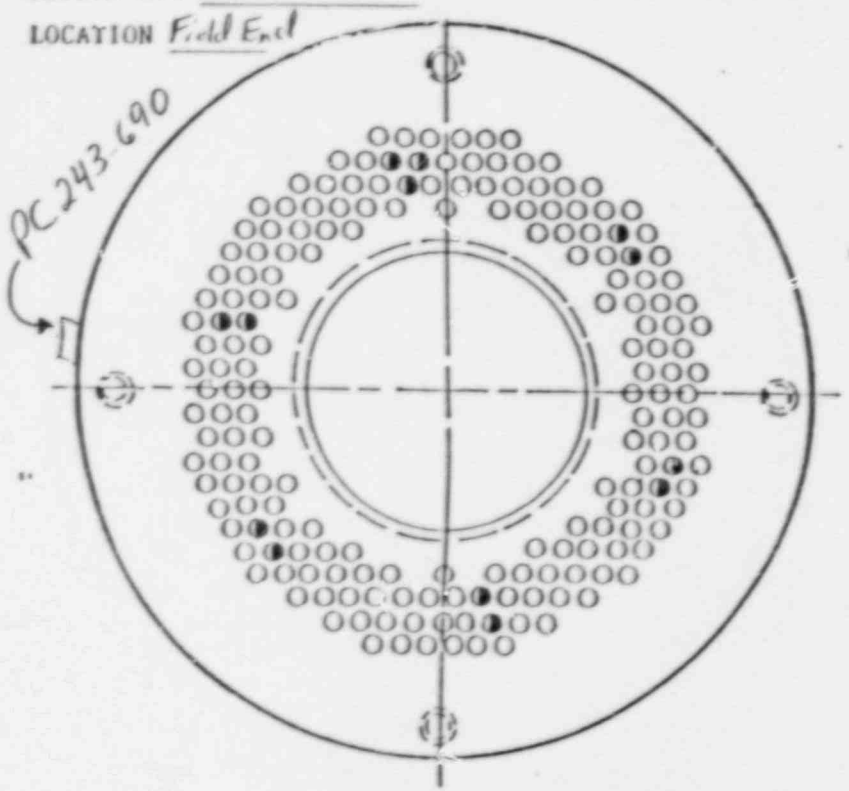
8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 DML 12/23/88

1/4 Gal. Cold Packed
Around Anchorage components DML 2/23/88

ARKANSAS UNIT 2
10th YR TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. 3D104
LOCATION Field End

BY M. L. [illegible]
DATE 2/23/88
APPROVED BY [illegible]
DATE 3/22/88



FILLER COVERAGE

CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1 (Base mill finish)
SHIMS	1
BEARING PLATE	1

Shim Stack 4 7/8" (1", 1/4", 1/2", 3")
Go/No-Go # GNG-003

ATTACHMENT 5
DATA SHEET

LEGEND
- ◊ OFF-SIZE BUTTONHEAD Found TO BE LARGE
- ◐ BUTTONHEAD WIRE SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ◍ DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✕ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING ≤ .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

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ARKANSAS NUCLEAR ONE
PLANT MANUAL SECTION: MECHANICAL MAINTENANCE
PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE
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5D104 FIELD

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. MZ, 2/23/88

B. Containment Temperature (T2) N/A °F. MZ, 2/23/88

C. Average Temperature (T3) N/A °F. MZ, 2/23/88

8.3.2 Tendon repacked with heated Filler material? Yes N/A No N/A MZ, 2/23/88

Amount of filler material repacked into tendon (Gal) N/A MZ, 2/23/88

Filler Temperature at the Pump N/A °F. MZ, 2/23/88

Filler Cap Installed. N/A MZ, 2/23/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ, 2/25/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ, 2/25/88

8.4.3 verify that all valves vents and drains are open. N/A (Air Vented) MZ, 2/25/88

8.4.4 Amount of Filler material repacked into tendon. 4 (gal) + ¼ Coated = 4 ¼ Total MZ, 2/25/88

8.4.5 Filler Temperature at the pump 198 °F MZ, 2/25/88

8.4.6 Filler Installation Pressure N/A psi MZ, 2/25/88

8.4.7 Ambient Temperature (T1) 54 °F MZ, 2/25/88

8.4.8 Date Filler Cap Installed 2/23/88 MZ, 2/23/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs, 50 Ft-lbs } Two passes

Torque Wrench used TW-321 MZ, 2/23/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs, 50 ft-lbs

Torque Wrench used TW-321 MZ, 2/25/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
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PROJECT: ANO Unit II DATE: 2/24/88
TENDON NO.: 2D219 TENDON END/BUTTRESS NO.: SHOP SURVEILLANCE 4th
OTHER TENDON END LOCATION INFO North of Buttress 3

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments N/A

(9.10) DURING DETENSIONING
(9.10.1) Water Detected Yes (No) Quantity ____ Sample Taken Yes No
Comments (N/A)

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE ____
CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)
(12.2) SAMPLES STORED AT ____

QC Signoff M. L. Lee Level II Date 2/24/88
QC Review [signature] Level III Date 3/22/88
Title MGR, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 2D219 — MZ 12/24/88

8.1.2 Remove the Tendon Filler Cap.
Field End — N/A MZ 12/24/88
Shop End — MZ 12/24/88

8.1.3 Volume of Sheathing Filler Removed: 2 3/4 gal. — MZ 12/24/88

8.1.4 Ambient Air Temperature (T1): 58 °F — MZ 12/24/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — MZ 12/24/88

B. Inside Containment Temperature (T2) N/A °F. — MZ 12/24/88

C. Average Temperature (T3) N/A °F. — MZ 12/24/88

D. Desired Filler Material Level N/A". — MZ 12/24/88

E. Actual Filler Material Level N/A". — MZ 12/24/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ — MZ 12/24/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ — MZ 12/24/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ — MZ 12/24/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — MZ 12/24/88
Field End — N/A MZ 12/24/88

MZ 12/24/88
Independent Verifier Date

2D219
SHOP END

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop) or Field end) 03 3/10/88

A. Testing Results:
Sat X Unsat _____ 03 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X 03 4/19/88

8.2 Inspection of the Anchorage Components

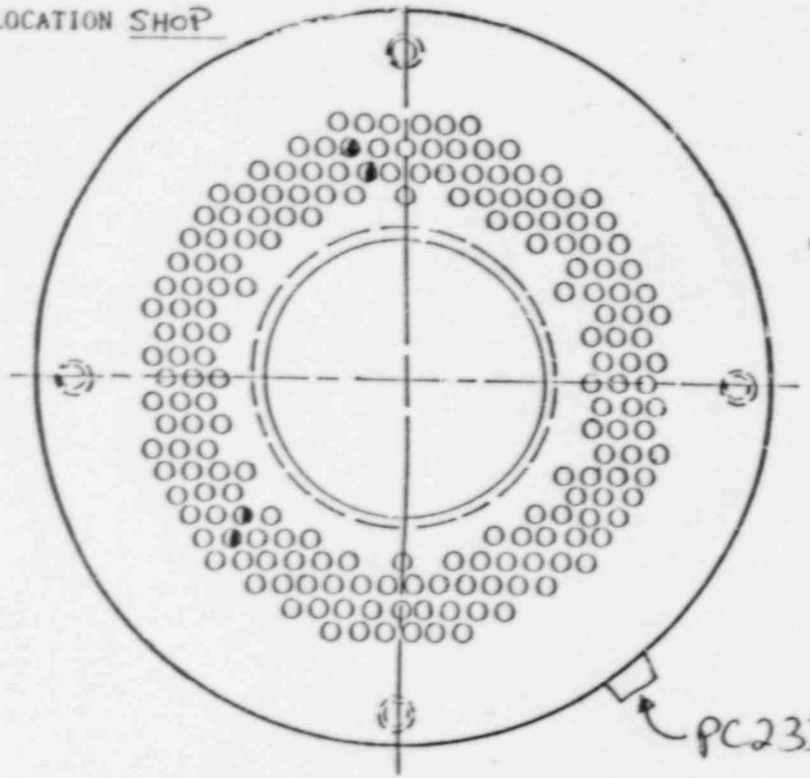
8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 MZ 2/24/88

Cold Packed 1/2 Gal. of 2090-P4 Around Anchorage Components MZ 2/24/88

ARKANSAS UNIT 2
10th Yr. TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. 2D219
LOCATION SHOP

BY M.L.D
DATE 2/24/88
APPROVED BY
DATE 3/22/88



FILLER COVERAGE

CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1 (Mill Scale)
SHIMS	1
BEARING PLATE	1

Shim Stack 4 7/8" (1", 1/4", 1/2", 3")
Go/No-Go # GNG-003

LEGEND
- ◐ OFF-SIZE BUTTONHEAD found to be large
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ◑ DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ⊠ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ATTACHMENT 5
DATA SHEET

2D219 SHOT

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. MZ 12/24/88

B. Containment Temperature (T2) N/A °F. MZ 12/24/88

C. Average Temperature (T3) N/A °F. MZ 12/24/88

8.3.2 Tendon repacked with heated Filler material?
Yes N/A No N/A MZ 12/24/88

Amount of filler material repacked into tendon (Gal) N/A MZ 12/24/88

Filler Temperature at the Pump N/A °F. MZ 12/24/88

Filler Cap Installed. N/A MZ 12/24/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 12/25/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 12/25/88

8.4.3 verify that all valves, vents and drains are open. (Air Vented) N/A MZ 12/25/88

8.4.4 Amount of Filler material repacked into tendon. 4 (gal) + ½ Gal. Coated = 4½ Total MZ 12/25/88

8.4.5 Filler Temperature at the pump 180 °F MZ 12/25/88

8.4.6 Filler Installation Pressure N/A psi MZ 12/25/88

8.4.7 Ambient Temperature (T1) 54 °F MZ 12/25/88

8.4.8 Date Filler Cap Installed 2/24/88 MZ 12/24/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs, 50 Ft-lbs } Two Passes
Torque Wrench used TW-321 MZ 12/24/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs, 50 ft-lbs
Torque Wrench used TW-321 MZ 12/25/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
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PROJECT: ANO Unit 2 DATE: 2/25/88

TENDON NO.: 2D219 TENDON END/BUTTRESS NO.: Field SURVEILLANCE 4TH

OTHER TENDON END LOCATION INFO South of Buttress 2

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No

Comments N/A

(9.10) DURING DETENSIONING

(9.10.1) Water Detected Yes No (N/A) Quantity _____ Sample Taken Yes No

Comments

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)

(12.2) SAMPLES STORED AT _____

QC Signoff M. Lord Level II Date 2/25/88

QC Review [signature] Level III Date 3/22/88

Title MGR, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 2D219 — MK 12/25/88

8.1.2 Remove the Tendon Filler Cap:
(Field End) — MK 12/25/88
Shop End — N/A MK 12/25/88

8.1.3 Volume of Sheathing Filler Removed: 2 3/4 gal. — MK 12/25/88

8.1.4 Ambient Air Temperature (T1): 58 °F — MK 12/25/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — MK 12/25/88

B. Inside Containment Temperature (T2) N/A °F. — MK 12/25/88

C. Average Temperature (T3) N/A °F. — MK 12/25/88

D. Desired Filler Material Level N/A". — MK 12/25/88

E. Actual Filler Material Level N/A". — MK 12/25/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ — MK 12/25/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ — MK 12/25/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ — MK 12/25/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — N/A MK 12/25/88
(Field End) — MK 12/25/88

MB 12/25/88
Independent Verifier Date

2D219
Field end

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) CB 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

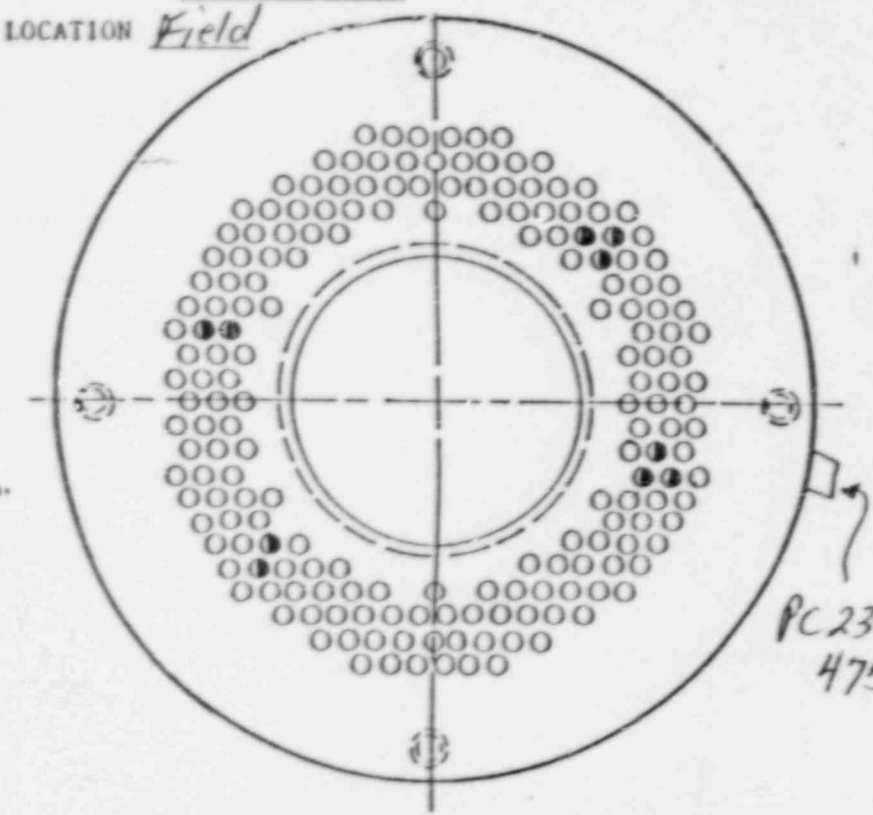
8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 ML 12/25/88

1/4 Gal. Cold Packed
Around Anchorage Components ML 2/25/88

ARKANSAS UNIT 2
10th Year TENDON SURVEILLANCE
TENDON END ANCHOR SKETCH

TENDON NO. 2D219
LOCATION Field

BY M. Leo
DATE 2/25/88
APPROVED BY [signature]
DATE 3/22/88



FILLER COVERAGE

CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

CORROSION LEVEL

BUTTONHEADS	1
ANCHOR HEAD	1 (Mill Scale)
SHIMS	1
BEARING PLATE	1

PC239-475 Shim Stack 4 15/16" (1", ½", ¼", 3")
60/20-60 # GNG-003

LEGEND
- ◐ OFF-SIZE BUTTONHEAD found to be large
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ◉ DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ATTACHMENT 5
DATA SHEET

Page 4 of 5

ARKANSAS NUCLEAR ONE
PLANT MANUAL SECTION: MECHANICAL MAINTENANCE
PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE
NO: 2402.048
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2D219
Field End

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. MZ 12/25/88

B. Containment Temperature (T2) N/A °F. MZ 12/25/88

C. Average Temperature (T3) N/A °F. MZ 12/25/88

8.3.2 Tendon repacked with heated Filler material? Yes N/A No N/A MZ 12/25/88

Amount of filler material repacked into tendon (Gal) N/A MZ 12/25/88

Filler Temperature at the Pump N/A °F. MZ 12/25/88

Filler Cap Installed. N/A MZ 12/25/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 12/25/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 12/25/88

8.4.3 verify that all valves, vents and drains are open. N/A (Air Vented) MZ 12/25/88

8.4.4 Amount of Filler material repacked into tendon. 3 3/4 (gal) + 1/4 Coated = 4 total MZ 12/25/88

8.4.5 Filler Temperature at the pump 175 °F MZ 12/25/88

8.4.6 Filler Installation Pressure N/A psi MZ 12/25/88

8.4.7 Ambient Temperature (T1) 54 °F MZ 12/25/88

8.4.8 Date Filler Cap Installed 2/25/88 MZ 12/25/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs } two passes
50 Ft-lbs }
Torque Wrench used TW-321 MZ 12/25/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
N/A ft-lbs
Torque Wrench used TW-382 CM 12/26/88

ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO Unit 2 DATE: 2/23/88
TENDON NO.: 1D327 TENDON END/BUTTRESS NO.: Shop End SURVEILLANCE 4th
OTHER TENDON END LOCATION INFO ~~North~~ of Buttress 3
SOUTH eb 2/24/88

(9.4) DURING LOOSENING OF GREASE CAN
(9.4.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.7) IN GREASE CAN
(9.7.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.8) AROUND TENDON ANCHORAGE
(9.8.1) Water Detected Yes (No) Quantity _____ Sample Taken Yes No
Comments N/A

(9.10) DURING DETENSIONING
(9.10.1) Water Detected Yes No Quantity _____ Sample Taken Yes No
Comments (N/A)

(11.) OWNER/AGENT NOTIFIED Yes No (N/A) DATE _____
CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No (N/A)
(12.2) SAMPLES STORED AT _____

QC Signoff M. Ladd Level II Date 2/23/88
QC Review [illegible] Level III Date 3/22/88
Title MGR, Q.C.

ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 1D327 — MZ 12/23/88

8.1.2 Remove the Tendon Filler Cap.
Field End N/A MZ 12/23/88
(Shop End) MZ 12/23/88

8.1.3 Volume of Sheathing Filler Removed: 3 gal. MZ 12/23/88

8.1.4 Ambient Air Temperature (T1): 44 °F MZ 12/23/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. MZ 12/23/88

B. Inside Containment Temperature (T2) N/A °F. MZ 12/23/88

C. Average Temperature (T3) N/A °F. MZ 12/23/88

D. Desired Filler Material Level N/A ". MZ 12/23/88

E. Actual Filler Material Level N/A ". MZ 12/23/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No ✓ MZ 12/23/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A ✓ MZ 12/23/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No ✓ MZ 12/23/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
(Shop End) MZ 12/23/88
Field End N/A

Independent Verifier — 2/23/88 Date

1D327 Shop End

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or Field end) CB 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Cal.) 1/4 MZ 12/23/88

1/2 Gal. Cold Packed
Around Anchorage components MZ 2/23/88

ARKANSAS UNIT 2

10 Yr. Year TENDON SURVEILLANCE

TENDON END ANCHOR SKETCH

TENDON NO. 1D327

LOCATION Shop End

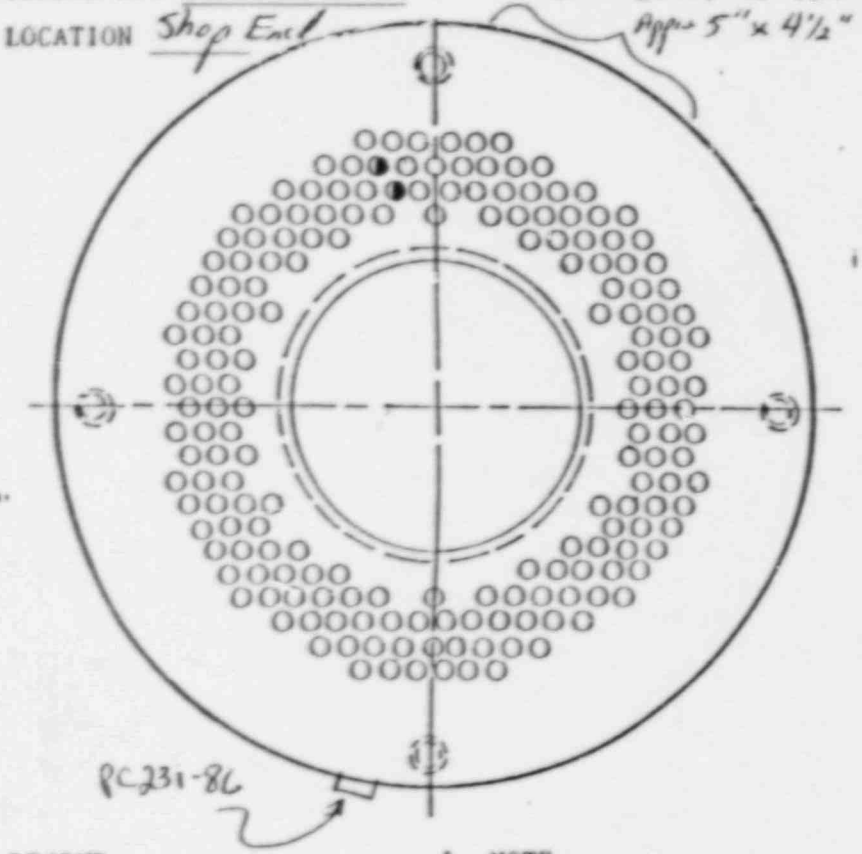
Note: Level 2 corrosion Appx 5" x 4½" (Very light rust)

BY M. Lee

DATE 2/23/88

APPROVED BY [illegible]

DATE 3/22/88



FILLER COVERAGE	
CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

CORROSION LEVEL	
BUTTONHEADS	#1
ANCHOR HEAD	1 1/2 (See Note)
SHIMS	1
BEARING PLATE	1

Shim Stack 4 3/4" (1", 3/8", 1/4", 3")

Go/NoGo #GNG-003

ATTACHMENT 5
DATA SHEET

LEGEND

- ◊ OFF-SIZE BUTTONHEAD found to be large
- ● BUTTONHEAD WITH SPLIT
- ● WIRE REMOVED PREVIOUSLY
- ● DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- ✖ MISSING WIRE

NOTE
THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL
#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

D105 of 111

1D327 Shop end

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. MZ 12/23/88

B. Containment Temperature (T2) N/A °F. MZ 12/23/88

C. Average Temperature (T3) N/A °F. MZ 12/23/88

8.3.2 Tendon repacked with heated Filler material? Yes N/A No N/A MZ 12/23/88

Amount of filler material repacked into tendon (Gal) N/A MZ 12/23/88

Filler Temperature at the Pump N/A °F. MZ 12/23/88

Filler Cap Installed. N/A MZ 12/23/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A MZ 12/25/88

8.4.2 Attach pumping unit hose to tendon. N/A MZ 12/25/88

8.4.3 verify that all valves, vents and drains are open. N/A (Air Vented) MZ 12/25/88

8.4.4 Amount of Filler material repacked into tendon. 4½ (gal) + ½ Gal. Coated = 5 Total MZ 12/25/88

8.4.5 Filler Temperature at the pump 200 °F MZ 12/25/88

8.4.6 Filler Installation Pressure N/A psi MZ 12/25/88

8.4.7 Ambient Temperature (T1) 54 °F MZ 12/25/88

8.4.8 Date Filler Cap Installed 2/23/88 MZ 12/23/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs / 50 Ft-lbs } To Press

Torque Wrench used TW-321 MZ 12/23/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs / 50 ft-lbs

Torque Wrench used TW-321 MZ 12/24/88

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048
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ATTACHMENT 7

INSPECTION FOR WATER IN THE TENDON VOID,
IN THE GREASE CAN AND AROUND THE TENDON ANCHORAGES

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
JANUARY 15, 1988
Page 1 of 1
Revision 0

PROJECT: ANO DATE: 2/23/88

TENDON NO.: 10327 TENDON END/BUTTRESS NO.: FIELD/NEAR BUTT #2 SURVEILLANCE 10th YR

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAP

(9.4.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No

Comments _____

(9.7) IN GREASE CAP

(9.7.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No

Comments _____

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes [No] Quantity _____ Sample Taken Yes No

Comments _____

(9.10) DURING DETENSIONING N/A

(9.10.1) Water Detected N/A Yes No Quantity _____ Sample Taken Yes No

Comments _____

(11.) OWNER/AGENT NOTIFIED N/A Yes No DATE _____

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 2/23/88

QC Review M. Ford Level II Date 4/20/88

Title QC Inspector

PLANT MANUAL SECTION: MECHANICAL MAINTENANCE	PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE	NO: 2402.048

ARKANSAS NUCLEAR ONE

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ATTACHMENT 5
DATA SHEET

8.1 Sheathing Filler Inspection

8.1.1 Tendon Number 10327 — CB 12/23/88

8.1.2 Remove the Tendon Filler Cap.
Field End — CB 12/23/88
Shop End — N/A CB 12/23/88

8.1.3 Volume of Sheathing Filler Removed: 2½ gal. — CB 12/23/88

8.1.4 Ambient Air Temperature (T1): 44 °F — CB 12/23/88

8.1.5 Filler Material Level (Vertical Tendons)

A. Ambient Temperature (T1) N/A °F. — CB 12/23/88

B. Inside Containment Temperature (T2) N/A °F. — CB 12/23/88

C. Average Temperature (T3) N/A °F. — CB 12/23/88

D. Desired Filler Material Level N/A ". — CB 12/23/88

E. Actual Filler Material Level N/A ". — CB 12/23/88

8.1.6 Color Comparison

A. Tan Colored? Yes _____ No X — CB 12/23/88

B. Tan Colored after 24 hours?
Yes _____ No _____ N/A X — CB 12/23/88

Sample Submitted because of Tan Colored Filler Material. Yes _____ No X — CB 12/23/88

INDEPENDENT VERIFICATION

An Independent Verifier shall ensure that all the samples are correctly labeled indicating the correct tendon and which end of the tendon the sample was taken from.

8.1.5 One quart sample taken.
Shop End — N/A CB 12/23/88
Field End — CB 12/23/88

M. Lee — 12/23/88
Independent Verifier — Date

10327
FIELD END

ATTACHMENT 5
DATA SHEET

Sample Submitted for Testing :
(Shop or ~~Field~~ end) CB 3/10/88

A. Testing Results:
Sat X Unsat _____ CB 4/19/88

B. Second Sample Submitted:
Yes _____ No X
2nd Sample Testing Results:
Sat _____ Unsat _____
N/A X
Filler Material Require Replacement?
Yes _____ No X CB 4/19/88

8.2 Inspection of the Anchorage Components

8.2.1 Clean the filler material away from the stressing Plate and the Buttonheads
Amount Removed (Gal.) 1/4 CB 3/23/88

1/4 GAL COLD PACKED AROUND ANCHORAGE COMPONETS CB 3/23/88

ARKANSAS UNIT 2

10TH YR TENDON SURVEILLANCE

TENDON END ANCHOR SKETCH

TENDON NO. 1D327

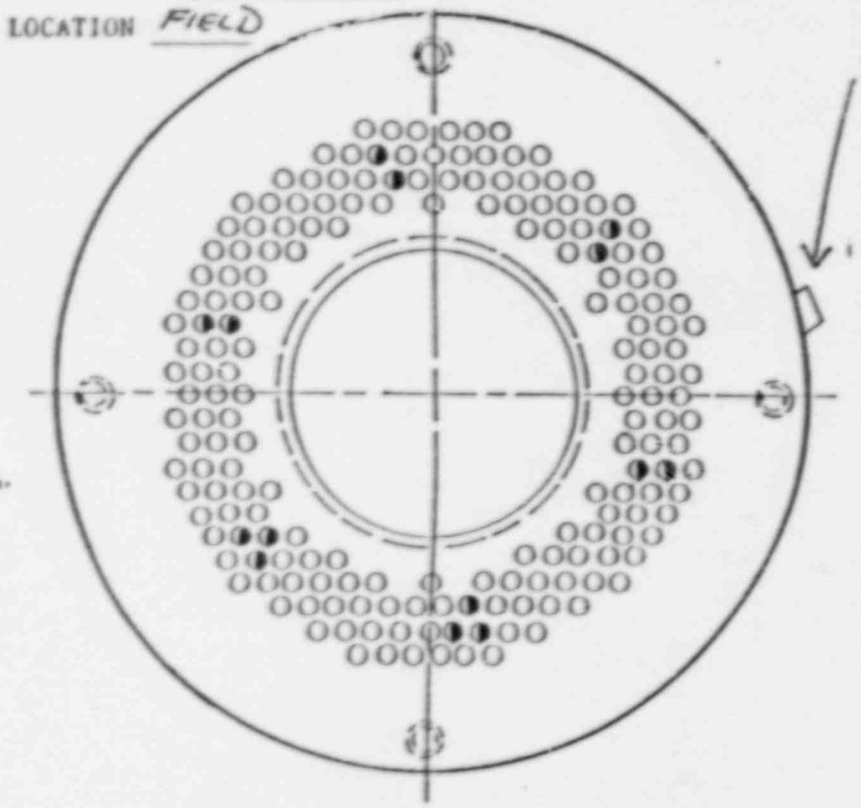
LOCATION FIELD

BY [signature]

DATE 2/23/88

APPROVED BY [signature]

DATE 4/20/88



FILLER COVERAGE

CAP	100%
BUTTONHEADS	100%
ANCHOR HEAD	100%
SHIMS	100%
BEARING PLATE	100%

CORROSION LEVEL

BUTTONHEADS	#1
ANCHOR HEAD	#1
SHIMS	#1
BEARING PLATE	#1

SHIM STACK 4.7" (1", 3/8", 1/4", 3")

OFF-SIZE BUTTONHEADS FOUND WERE LARGE GNG 003 GAUGE

ATTACHMENT 5
DATA SHEET

LEGEND

- OFF-SIZE BUTTONHEAD
- BUTTONHEAD WITH SPLIT
- WIRE REMOVED PREVIOUSLY
- DISCONTINUOUS WIRE REMOVED THIS SURVEILLANCE
- MISSING WIRE

NOTE

THE LOCATION OF THE ANCHOR HEAD MK NUMBER SHALL BE INDICATED ON THE SKETCH TO DEFINE BUTTONHEAD ORIENTATION.

LEGEND FOR CORROSION LEVEL

#1 BRIGHT METAL, NO VISIBLE OXIDATION
#2 REDDISH BROWN - NO PITTING
#3 0 < PITTING < .003"
#4 .003" < PITTING ≤ .006"
#5 .006" < PITTING ≤ .010"

ARKANSAS NUCLEAR ONE

PLAN MANUAL SECTION: MECHANICAL MAINTENANCE

PROCEDURE/WORK PLAN TITLE: TENDON SURVEILLANCE PROCEDURE

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10327
FIELD END

ATTACHMENT 5
DATA SHEET

8.3 Vertical Tendon Repacking

8.3.1 Average Temperature (T3)

A. Ambient Temperature (T1) N/A °F. CB 12/23/88

B. Containment Temperature (T2)

N/A °F. CB 12/23/88

C. Average Temperature (T3) N/A °F. CB 12/23/88

8.3.2 Tendon repacked with heated Filler material?
Yes N/A No N/A CB 12/23/88

Amount of filler material repacked into tendon (Gal) N/A CB 12/23/88

Fill Temperature at the Pump N/A °F. CB 12/23/88

Filler Cap Installed. N/A CB 12/23/88

8.4 Dome and Hoop Repacking

8.4.1 Purge pumping hose of old filler material. N/A CB 12/25/88

8.4.2 Attach pumping unit hose to tendon. N/A CB 12/25/88

8.4.3 verify that all valves, vents and drains are open. N/A (AIR VENTED) CB 12/25/88

8.4.4 Amount of Filler material repacked into tendon. 5 (gal) + 1/4 COATED = 5¼ TOTAL CB 12/25/88

8.4.5 Filler Temperature at the pump 160 °F AMZ 12/25/88

8.4.6 Filler Installation Pressure N/A psi CB 12/25/88

8.4.7 Ambient Temperature (T1) 68 °F CB 12/25/88

8.4.8 Date Filler Cap Installed 2-23-88 CB 12/23/88

8.5 Tendon Resealing

8.5.1 Install the filler caps.

Final torque value of the tendon filler caps: 50 Ft-lbs (TWO PASSES)
N/A Ft-lbs

Torque Wrench used TW-382 CB 12/23/88

8.5.2 Tendon filler cap retorqued after 24 hours.

Final Torque Value: 50 ft-lbs
N/A ft-lbs

Torque Wrench used TW-382 CB 12/25/88

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

APPENDIX E - Material Certification

VISCOR

LUBRICANTS SINCE 1892

PRODUCT INFORMATION

E 1 OF 2

CUSTOMERS PURCHASE ORDER NO. 533

BATCH NO. 01258

PSC approved obrooks 1/29/88

QUALITY CONTROL SPECIFICATION SHEET
VISCOR INDUSTRIAL NO. 16A

PHYSICAL PROPERTIES		TEST RESULTS	REQUIRED
Pounds per Gallon @ 60°F		6.45	6.3 - 6.6
Specific Gravity @ 60°F	ASTM D-287	0.774	0.75 - 0.79
Flash Point	ASTM D-56	105	100 -106
Residual Odor		mild	mild
Sulfur H_2S/Doctor	ASTM D-130	1A	1B max
Aromatics Volume %		6.5	7.5 max
CHEMICAL PROPERTIES			
Water Soluble Chlorides	ASTM D-512	1.0	2 ppm Max.
Water Soluble Nitrates	ASTM D-992	1.4	4 ppm Max.
Water Soluble Sulfides	APHA No. 427C (15th Edition)	0.8	2 ppm Max.

This certifies compliance with the specifications or requirements used by customer's Purchase Order.

BY John M. Adelli
CONTROL CHEMIST

DATE 1/26/88

TENNECO

Viscosity Oil
A Tenneco Company
Chicago, Illinois U.S.A.

E2 OF 2

TENNECO

Viscosity Oil
A Tenneco Company

3200 South Western
Chicago, Illinois 60608
(312) 847-0224
TWX: 910-221-0245

PETROLIA, PA

Job Order No. 533

Lot No. 7-7518

PSC approved
EB 1/29/88

QUALITY CONTROL SPECIFICATION SHEET
VISCONORUST 2090P-4 CASING FILLER
NUCLEAR GRADE

PHYSICAL PROPERTIES	METHOD	RESULTS	REQUIRED
Pound per gallon @ 60°F (15.5°C)		7.5	7.3-7.8
Specific Gravity @ 60°F (15.5°C)	ASTM D-287	0.90	0.88-0.94
Congealing Point, °F (°C)	ASTM D-938	147	135-MAX. (57-63
Flash Point °F (°C)	ASTM D-92	425	420 (215) min.
Viscosity SUS @ 210°F (98.9°C)	ASTM D-88	156	150-300
ASTM Consistency (cone penetration) @ 77°F (25°C)	ASTM D-937	178	170-200
Total Base No. (Modified)	ASTM D-974	60.5	35 min.
Water Content (% by Wt.)	ASTM D-95	0.1	0.4 Max.
CHEMICAL PROPERTIES			
Water Soluble Chlorides	ASTM D-512	1.0	2 ppm max.
Water Soluble Nitrates	ASTM D-992	2.0	4 ppm max.
Water Soluble Sulfides	APHA No. 427 (15th Ed.) Methylene Blue	1.0	2 ppm max.

This certifies compliance with the Specifications or requirements covered by Customer's Purchase Order.

BY John Kelly
CONTROL CHEMIST

DATE 1-26-88

21286

Ten Year Visual Tendon Surveillance of the Arkansas Nuclear One - Unit 2 Primary Reactor Containment Building

APPENDIX F - Equipment Calibrations or Gauge Calibrations

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: CALIBRATION DATA SHEET | FORM NO. 1303.154B

REV. # 1 PC #

INSTRUMENT ID #: GNG-003 DESCRIPTOR: Go, No-Go Gages

SERIAL #: Accuracy ± As Specified Test Equipment Used: See JP.

Gage P/N No.	Function	Desired Reading	Micrometer Reading Before Cal.	Micrometer Reading After Cal.	Tolerance
GNG 003	'Go' Gage	.3906 in	0.3905 in	Same	+.0000 -.0005
	'No-Go' Gage	.3594 in	0.3594 in	↓	+.0005 -.0000

Remarks:

Calibration Performed By: Raymond Ryals Date: 6-29-88

Calibrated Due Date: 6-29-89

Reviewed By: Jack R. Kelley Date: 6-29-88

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: MICROMETER TORQUE WRENCH | FORM NO. 1303.130B

CALIBRATION DATA SHEET | REV. # 4 PC #

Instrument ID#: TW- 382

Serial #: 06860057206

Accuracy ± 4% Right, 6% Left

Descriptor: ___ . ___
___ Torque Wrench

Test Equipment Used: TT-005

7.2.5 Calibration Check of Micrometer Type Torque Wrenches						
Percent of Range	Torque Wrench Setting	Before Cal STD Torq	Before Cal % Error	After Cal STD Torq	After Cal % Error	Acceptance Tolerance
20%	20 Ft Lbs	21.5	7.5	20.5	2.5	± 4%
40%	40	41.5	3.75	40	0	± 4%
60%	60	60.5	.83	59	1.66	± 4%
80%	80	80	0	79	1.25	± 4%
100%	100	100	0	98	2.0	± 4%
7.2.7 Calibration Torque Wrench for Left Hand Torque						
20%	20 Ft Lbs	22	10.0	20	0	± 6%
40%	40	42	5.0	40	0	± 6%
60%	60	61	1.66	59	1.66	± 6%
80%	80	80	0	78	2.5	± 6%
100%	100	100	0	98.5	1.5	± 6%

Remarks: TO- 755662

Calibration Performed By: [signature] Date: 4-28-88

Calibration Due Date: 7-27-88

Reviewed By: [signature] Date: 5-1-88

☒ Out-of-Calibration Report Required Date: 4-28-88

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ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: CALIBRATION DATA SHEET

FORM NO. 1303.154B

REV. 0 PC 0

INSTRUMENT ID #: GMG 003

DESCRIPTOR: Go, No-Go Gages

SERIAL #:

Accuracy ± As Specified

Test Equipment Used: See JO

Gage P/N No.	Function	Desired Reading	Micrometer Reading		Tolerance
			Before Cal.	After Cal.	
GNG 001	'Go' Gage	.1396	.1390	Stayed	±.0005 in
GNG 002	'No-Go' Gage	.1594	.1594	↓	±.0005 in

Remarks: JO # 746005

Calibration Performed By: [signature] Date: 2-15-88

Calibrated Due Date: 2-15-89

Reviewed By: [signature] Date: 2-15-88

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: CALIBRATION DATA SHEET | FORM NO. 1303.154B | REV. # 1 | PC #

Page 1 of 1

INSTRUMENT ID #: GNG-064 DESCRIPTOR: Go, No-Go Gages

SERIAL #: Accuracy ± As Specified Test Equipment Used:

Gage P/N No.	Function	Desired Reading	Micrometer Reading		Tolerance
			Before Cal.	After Cal.	
PG-3193-1	'Go' Gage	.3906 in	.3903 in	Same	+.0000 -.0005 in
PG-3193-1	'No-Go' Gage	.3594 in	.3597 in	↓	+.0005 -.0000 in

Remarks: J.O. # 751345

Calibration Performed By: Raymond Myers Date: 2-23-88

Calibrated Due Date: 2-23-89

Reviewed By: Clifford R. Parker Date: 2-24-88

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: CALIBRATION DATA SHEET | FORM NO. 1303.154B | REV. # 1 | PC #

Page 1 of 1

INSTRUMENT ID #: GNG 064 DESCRIPTOR: PG-3193-1

SERIAL #: Go, No-Go Gages

Accuracy ± As Specified Test Equipment Used: SMI 003, SBM-001

Gage P/N No.	Function	Desired Reading	Micrometer Reading Before Cal.	Micrometer Reading After Cal.	Tolerance
PG-3193-1	'Go' Gage	.3906 in	.3906 in	Same	+.0000 -.0005 in
PG-3193-1	'No-Go' Gage	.3594 in	.3594 in	↓	+.0005 -.0000 in

Remarks:

Calibration Performed By: Raymond Kyle Date: 6-2-88

Calibrated Due Date: 6-2-89

Reviewed By: Jack L. Lucas Date: 6-8-88

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: MICROMETER TORQUE WRENCH | FORM NO. 1303.130B

CALIBRATION DATA SHEET | REV. 04 PC 0

Instrument ID#: TW-320 | Descriptor: 0-200 FT/L Torque Wrench

Serial #: 12#20055574 | Test Equipment Used: TT-005

Accuracy ± 4% Right, 6% Left

7.2.5 Calibration Check of Micrometer Type Torque Wrenches						
Percent of Range	Torque Wrench Setting	Before Cal STD Torq	Before Cal % Error	After Cal STD Torq	After Cal % Error	Acceptance Tolerance
20%	40	40	0	SAME	SAME	± 4%
40%	80	80	0			± 4%
60%	120	121	.8			± 4%
80%	160	160	0			± 4%
100%	200	201	.5			± 4%
7.2.7 Calibration Torque Wrench for Left Hand Torque						
20%	40	39	2.5	SAME	SAME	± 6%
40%	80	78.5	1.8			± 6%
60%	120	119	.8			± 6%
80%	160	159	.6			± 6%
100%	200	199	.5			± 6%

Remarks: ~~SEE 70~~ - 741740 APTech check

Calibration Performed By: [signature] Date: 10-23-87

Calibration Due Date: 1-12-88

Reviewed By: [signature] Date: 10-23-87

☐ Out-of-Calibration Report Required Date: N/A

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MIL = MICROMETER TORQUE WRENCH

CALIBRATION DATA SHEET

[redacted]

Instrument ID#: TW 220

Description: [redacted]

Serial #: 12250055579

Torque Wrench

Accuracy ± 4% Right, 6% Left

Test Equipment Used: T1600

7.2.5 Calibration Check of Micrometer Type Torque Wrenches

Percent of Range	Torque Wrench Setting	Before Cal STD Torque	Before Cal % Error	After Cal STD Torque	After Cal % Error	Acceptable Tolerance
20%	40 FT-Lbs	42	5%	40	0%	± 4%
40%	80 FT-Lbs	88	10%	81	1.25%	± 4%
60%	120 FT-Lbs	127	5.83%	123	2.5%	± 4%
80%	160 FT-Lbs	167	4.375%	159	0.625%	± 4%
100%	200 FT-Lbs	204	2%	203	1.5%	± 4%

7.2.7 Calibration Torque Wrench for Left Hand Torque

20%	40 FT-Lbs	45	12.5%	38.5	3.75%	± 6%
40%	80 FT-Lbs	85	6.25%	79	1.25%	± 6%
60%	120 FT-Lbs	124	3.33%	118	0.83%	± 6%
80%	160 FT-Lbs	164	2.5%	157	1.875%	± 6%
100%	200 FT-Lbs	207	3.5%	200	0%	± 6%

Remarks: [redacted]

Calibration Performed By: [redacted] Date: [redacted]

Calibration Due Date: [redacted]

Reviewed By: [redacted] Date: 3-2-84

☐ Out-of-Calibration Report Required Date: 3-2-84

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ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: MICROMETER TORQUE WRENCH | FORM NO. 1303.130B

CALIBRATION DATA SHEET | REV. # 4 PC #

Instrument ID#: TW-321 | Descriptor: Snap-on Torque Wrench

Serial #: | Test Equipment Used: TT-005

Accuracy ± 4% Right, 6% Left

7.2.5 Calibration Check of Micrometer Type Torque Wrenches

Percent of Range	Torque Wrench Setting	Before Cal STD Torq	Before Cal % Error	After Cal STD Torq	After Cal % Error	Acceptance Tolerance
20%	40 Ft. lbs.	41	2.5	SAME	SAME	± 4%
40%	80	82	2.5			± 4%
60%	120	123	2.5			± 4%
80%	160	163	1.87			± 4%
100%	200	202	1			± 4%
7.2.7 Calibration Torque Wrench for Left Hand Torque						
20%	40 Ft. lbs.	40	0	SAME	SAME	± 6%
40%	80	80	0			± 6%
60%	120	122	1.6			± 6%
80%	160	162	1.25			± 6%
100%	200	204	2			± 6%

Remarks: J.C.# 747351

Calibration Performed By: [signature] Date: 12-30-87

Calibration Due Date: 3-29-88

Reviewed By: [signature] Date: 12-30-87

☐ Out-of-Calibration Report Required Date: N/A

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: MICROMETER TORQUE WRENCH | FORM NO. 1303.130B

CALIBRATION DATA SHEET | REV. # 4 PC #

Instrument ID#: TW- 321

Serial #: 12853054804

Accuracy ± 4% Right, 6% Left

30-200 Ft Lbs

Descriptor: Torque Wrench

Test Equipment Used:

7.2.5 Calibration Check of Micrometer Type Torque Wrenches						
Percent of Range	Torque Wrench Setting	Before Cal		After Cal		Acceptance Tolerance
		STD Torq	% Error	STD Torq	% Error	
20%	40 Ft Lbs	40	0	SAME	SAME	± 4%
40%	80	81	1.25			± 4%
60%	120	124	3.33			± 4%
80%	160	164	2.5			± 4%
100%	200	207	3.5			± 4%
7.2.7 Calibration Torque Wrench for Left Hand Torque						
20%	40	41	2.5	SAME	SAME	± 6%
40%	80	80	0			± 6%
60%	120	123	2.5			± 6%
80%	160	163	1.87			± 6%
100%	200	205	2.5			± 6%

Remarks: JO-753759

Calibration Performed By: [signature] Date: 3-31-88

Calibration Due Date: 6-29-88

Reviewed By: [signature] Date: 3-31-88

☐ Out-of-Calibration Report Required Date: N/A

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ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: MICROMETER TORQUE WRENCH | FORM NO. 1303.130B

CALIBRATION DATA SHEET | REV. # 4 PC #

Instrument ID#: TW-382 | Descriptor: QJR 2100D

Serial #: 0686005706 | Torque Wrench

Accuracy ± 4% Right, 6% Left | Test Equipment Used: TT-005

7.2.5 Calibration Check of Micrometer Type Torque Wrenches						
Percent of Range	Torque Wrench Setting	Before Cal STD Torq	Before Cal % Error	After Cal STD Torq	After Cal % Error	Acceptance Tolerance
20%	20 Ft. lbs	20	0	Same	Same	± 4%
40%	40	40	0			± 4%
60%	60	59	1.6			± 4%
80%	80	80	0			± 4%
100%	100	99	1			± 4%
7.2.7 Calibration Torque Wrench for Left Hand Torque						
20%	20 Ft. lbs.	20	0	Same	Same	± 6%
40%	40	41	2.5			± 6%
60%	60	60	0			± 6%
80%	80	80	0			± 6%
100%	100	100	0			± 6%

Remarks: J.O. # 743836

Calibration Performed By: [signature] Date: 1-29-88

Calibration Due Date: 4-28-88

Reviewed By: [signature] Date: 2-1988

☐ Out-of-Calibration Report Required Date: N/A

Task # 3259