Joseph M. Farley Nuclear Plant
Unit 2 Containment Post-Tensioning System
Five-Year Inservice Inspection

Volume 1 – Report

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September 1985

Alabama Power

the southern electric system

18790-5

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1.0 INTRODUCTION

This report documents the five-year Containment Building tendon surveillance for the Joseph M. Farley Nuclear Plant - Unit 2. This was the third in a series of surveillances required at one, three, and five years and every five years thereafter. The first and second surveillances followed approximately one and three years respectively, after the initial containment Structural Integrity Test. The post-tensioning system was supplied by INRYCO, Inc.

During the containment inspection performed prior to the Integrated Leakage Rate Test of the Containment Building during the Unit 2 third refueling outage, it was discovered that the grease can for the shop end of vertical tendon V17 was deformed. The grease can for the field end was removed and the field anchorhead was observed to be failed allowing the tendon to become fully detensioned. As a result of this discovery, Alabama Power Company initiated an inspection and repair program to determine if other problems existed. Several other cracked or broken vertical field anchorheads were found and replaced. All vertical field anchorheads were removed, inspected and replaced with new or acceptable used anchorheads. Details of the inspection and repair program are discussed in LER 85-005-01 which was submitted to the NRC on August 12, 1985. As discussed in this LER, the inspection and repair program results demonstrated that containment structural integrity was maintained.

The Unit 2 Five-Year Surveillance was performed upon completion of the vertical tendon inspection and repair program and was conducted in accordance with Farley Nuclear Plant Surveillance Test Procedure FNP-2-STP-609.0, Revision 3, and the INRYCO, Inc., procedures for complete refill of tendon voids.[9] The test procedures incorporate the requirements of the plant Technical Specifications, and the U. S. Nuclear Regulatory Commission Regulatory Guide 1.35, Revision 2 for the second containment of a two-unit site.[2] The visual inspection of the 170-wire BBRV buttonhead post-tensioning system consisted of a visual examination of the tendon end anchorage, hardware, and surrounding concrete, and a laboratory analysis of the sheathing filler samples.

2.0 VISUAL TEST DESCRIPTION

The objective of the inservice tendon surveillance program is to provide a systematic means of assessing the continued integrity of the prestressed, post-tensioned containment structure.

To implement the Unit 2 five-year visual surveillance program, a tendon sample composed of 21 tendons was chosen. The individual tendons were randomly selected in accordance with the requirements of reference 1. The initial sample tendons were representatively distributed in the containment wall and dome. Due to its location near the main steam safety and atmospheric dump vents, and the resulting danger to personnel during plant operation, sample tendon D202 was replaced by alternate sample tendon D117. The vertical tendons inspected document the as-left conditions of the repair program and serve as the basis for future surveillance activity.

The inspected tendons were vertical tendons V4, V28, V52, V79, and V100; dome tendons D109, D119, D117, D227, D307, and D319; and hoop tendons H1DE, H3EF, H13FD, H17EF, H21DE, H26FD, H28DE, H31EF, H42FD, and H45DE.

Each tendon was inspected in accordance with reference 1, except as noted, and consisted of the following steps:

- The sheathing filler for all vertical tendons and hoop tendons H1DE and H13EF was drained under the repair and inspection program. These tendons were sampled using INRYCO procedures.[10] The sheathing filler for the remaining hoop and dome tendons was drained from the sample tendon and the end caps were removed as required. A general description of the filler, the total amount (gal) of filler removed, and the absence or presence of water was recorded. Two 1-quart grease samples were taken from each end for lab analysis.

- The anchorage assemblies were cleaned with solvent to expose the bare metal surfaces. Anchorhead numbers and shim stack heights were recorded.

- Results of a visual examination of buttonheads for corrosion (as defined in section 3.2), missing buttonheads, and damaged wires were recorded.

- The anchorheads were visually examined in place for cracks and corrosion levels were recorded.

- Shim corrosion levels were recorded. Shims were visually examined for any cracks.

- Results of the bearing plate examinations for corrosion and damage were recorded.

- The anchorage area concrete was checked for significant cracks and any other irregularities.

- Tendon end caps were replaced using new gaskets.

- Tendons were regreased using the INRYCO procedures listed in reference 9.

The acceptance criteria by which the inspection data was evaluated is summarized below.

- Anchorage assembly components may not be pitted by corrosion.

- The number of ineffective wires in a tendon may not exceed eight. An ineffective wire is defined as one that is missing, unseated, or has a buttonhead with splits summing to greater than 0.12 in. A wire is also classified as ineffective if the buttonhead is judged on the basis of shape, size, or general appearance to be marginal in its load-carrying ability. If a tendon has more than eight wires classified as ineffective per the foregoing criteria, adjacent tendons are inspected.

- Sheathing filler samples may not have water contents exceeding 10 percent of dry weight and must have positive reserve alkalinities. The concentrations of chlorides, nitrates, and sulfides may not exceed 10 ppm (5 ppm for new material). Anchorage components and sheathing filler samples not meeting the acceptance criteria must be evaluated by the owner or his authorized representative.

3.0 SUMMARY OF DATA

The results of the inspection are summarized in tables 3-1 through 3-4 and discussed in the following paragraphs. Original data are reproduced in Volume 2.

3.1 SHEATHING FILLER APPEARANCE AND COVERAGE

For all vertical tendons and hoop tendons H1DE and H13FD, the original sheathing filler was drained during the inspection and repair program. Following anchorhead replacement, the end anchorage components were "cold-packed" by hand coating with new sheathing filler. As a part of this inspection and repair program, grease samples were only collected at the field ends of the vertical tendons. No samples were collected for the shop ends. Additionally, no sample was availabe for the field end of V52. The sheathing filler samples obtained under the inspection and repair program were collected using the INRYCO procedures listed in reference 10.

A visual inspection of the filler material was conducted on the remaining hoop tendons and all dome tendons as each anchorage grease cap was removed. The sheathing filler material varied in color from tan to black; however, the majority of anchorages were covered with dark brown sheathing filler. Various amounts of black preservative were found. This black preservative is known to be Visconorust 1601 Amber, a coating used by the tendon manufacturer to prevent any corrosion prior to installation.[7] The shop anchorage of tendon H3EF had filler with a frothy appearance. This texture indicates that the grease temperature was greater than 300°F upon pumping into the void. The satisfactory results of the visual inspection indicated that the grease was providing sufficient protection. The consistency of filler material from all anchorages ranged from a highly viscous lubricant to a light lubricating grease. The variety of colors and textures found is consistent with previous surveillances. The presence of the black preservative is considered normal and is compatible with the sheathing filler, Visconorust 2090 P-4, nuclear grade. This same sheathing filler has been used for regreasing operations in all surveillances.

Two ounces of water were found in the shop end cap of vertical tendon V52. This moisture was condensation. The end anchorage was left cold packed from the repair program and had not yet been fully regreased. The water vapor in the void condensed on the interior surface of the grease can and on the cold packed anchorage. The water did not penetrate the filler coverage and was not allowed into the trumplate opening. The shop end of H3EF contained traces of moisture in uncollectable quantities. Moisture was present in the grease can and on the lower portion of the shims. Water was also noted as dripping slowly from the grease hole and shim gap. No moisture was observed on the anchorhead. This moisture is also suspected to be condensation which collected since the original tendon installation. Traces of water were detected when the bolts were loosened on the field end of D227. No moisture was observed on the anchorage or in the grease can. This moisture was probably trapped between the bearing plate and the gasket retainer plate. The water escaped when the bolts were loosened.

The laboratory analysis of the filler material from tendons H3EF and D227 does not show excessive water content. This confirms that it was free moisture and not in solution with the sheathing filler. There was no evidence of abnormal or progressive corrosion due to the water found in the tendon end caps.

Except for the shop end of D307 and the field end of H21DE, all anchorages were fully covered with sheathing filler. The sheathing filler level on these two tendons was below the top of the anchorage. The portions of these anchorages above the filler were coated with a sufficient coating of grease for corrosion protection. This portion of these anchorages exhibited no rust or progressive corrosion. This exposure is not considered detrimental to the anchorages' ability to perform its design function.

Following the visual inspection, all tendons were regreased using approved INRYCO procedures for tendon regreasing.[9] The vertical tendons were pumped from the field end (gallery). Grease and air were allowed to flow from the shop end (dome) until the exit temperature of the grease reached a minimum of 120°F. Hoop tendons were greased from both ends. Hot grease was pumped into the grease can until a 10°F minimum rise from ambient grease temperature was obtained from the auxiliary vent plug. In all cases the exit temperature was greater than 100°F. Dome tendons were pumped from one end. Hot grease was pumped in until a 10°F minimum rise from ambient grease temperature was achieved and after 20 gallons had exited the void at the opposite end. The exit location was capped and pumping continued until a 50 psi rise in pressure over pumping pressure was achieved. The exit temperature for all surveillance dome tendons was in excess of 110°F.

3.2 CORROSION OF ANCHORAGE COMPONENTS

The levels of anchorage component corrosion fell in the acceptable A, B, and C categories as defined in reference 1 and summarized below.

A - Bright metal and no visible oxidation
B - Reddish-brown metal with no pitting
C - Metal having patches of red oxide with no pitting
D - Metal having patches of red oxide with pitting
E - Heavy rusting with substantial pitting
F - Conditions more severe than E

Buttonheads, shims, and anchorheads were predominantly in the A and/or B category. The B-level corrosion appears to be old, nonprogressive and probably existed at installation. Bearing plates not only had A and B levels of corrosion, but C levels were also visible. The vast majority of levels B and C appeared to be discolored, crusty oxide layers. These layers had bonded to the painted bearing plate surface from the interior side of the gasket retainer plate. Removal of the crust from the bearing plate revealed intact paint beneath. Edges of the bearing plates exposed to the weather were exhibiting C levels of corrosion extending through the paint into the bearing plate. This weathering is consistent on all hoop end anchorages examined. This same type corrosion is also apparent at the bolt hole locations. Vertical and dome tendons generally did not exhibit this weathering.

Upon inspection, it was found that the H13FD (shop) and D109 (shop) bearing plates were not painted. The sheathing filler appears to be providing adequate corrosion protection for the plates since there was no significant corrosion present.

3.3 BUTTONHEAD CONDITION

The examination of the tendon end anchorages covered 7140 buttonheads and vacant positions. The field end of V52 had one missing buttonhead. Records from the repair program show one buttonhead failed after stressing. Missing buttonheads were noted on H3EF, H26FD and D117. The buttonheads were not located in the grease cap. The original stressing cards indicate H26FD and D117 each lost an effective wire during stressing. Since the buttonhead for H3EF was not found in the end cap, it is suspected that the buttonhead failed after stressing but before the installation of the end cap. There were no indications of abnormal degradation of the buttonheads on any anchorage.

There were three buttonheads with splits greater than 0.12 inches in width. The individual splits ranged from 0.125 to 0.15 inches in width. Both splits on the field end of D119 were noted on the original buttonheading card. The remaining split was found on tendon H3EF but was not noted on the original buttonheading card, which documented only a sample inspection required during installation. There were no indications to suggest that the buttonhead splits were progressive in nature nor was there any reason to believe that the splits had not occurred during the buttonheading process. INRYCO previously confirmed that split widths cannot increase while a wire is under tension. The counterbore in the anchorhead puts the surface of the buttonhead into circumferential compression that reduces split width.[7] These wires remain stressed even though the wires were considered as ineffective.

Three buttonheads were found unseated. They were gripped with pliers and twisted to determine if the wires were broken a short distance from the unseated ends. The buttonheads were gripped with channel-lock pliers and rotated, with increasing torque, and released. All the buttonheads returned to their original positions, indicating that the wires are probably continuous, but have also been considered as ineffective.

Eleven wires were found double buttonheaded. This condition is considered to be a misshaped head; however, all double buttonheads were seated, of an acceptable diameter, and were considered to have adequate load-carrying capacity. These wires were considered effective.

3.4 ANCHORAGE ASSEMBLY AND CONCRETE CONDITION

Anchorage assemblies (anchorheads, shims and bearing plates) were visually examined in place for cracks, deterioration, and any other deleterious condition. No cracks were observed on any anchorage component. All anchorages observed appear to be in a stable condition.

The concrete adjacent to the tendon end anchorages was examined for cracks exceeding 0.01 inches in width and for any other abnormal condition. No cracks greater than 0.01 inches in width were found nor was there any other abnormal condition visible.

3.5 SHEATHING FILLER ANALYSIS

The sheathing filler chemical analysis reports indicate that all filler (as-found and new) is well within the acceptable ranges as outlined in reference 1. Amounts of chloride, nitrates, and sulfides found in the as-found filler are 1 ppm or less, well below the 10 ppm allowed. The maximum water content (1.3 percent) found in the as-found filler is considerably less than a maximum of 10 percent of dry weight. Neutralization numbers ranged from a low of 22.3 to a high of 69.8, with a minimum of zero required. The neutralization numbers were consistent with those of previous surveillances.

Sheathing filler analysis reports for both new and as-found filler are summarized in tables 3-3 and 3-4. Copies of the new sheathing filler certifications and as-found sheathing filler analysis reports may be found in Volume 2.

3.6 COMPARISON WITH PREVIOUS SURVEILLANCES

Tendon D227 was included in the Three-Year Surveillance and the Five-Year Surveillance. Data from the inspections is included in Table 3-5. By comparing the data collected, it can be seen that this tendon shows no signs of progressive corrosion or abnormal degradation. The five-year inspection did not note B level corrosion on the shop end shims; however, the five-year data does indicate that the corrosion present is not progressing. The five-year data also did not note C level corrosion on the bearing plate as the three-year data did. Since the bearing plate corrosion has generally been attributed to corrosion transferred to the bearing plate paint from the gasket retainer plate, the C level corrosion was considered to have been removed during anchorage asssembly clean-up. The three-year data noted one split greater than 0.06". The criteria for denoting splits during the five-year inspection was 0.12"; therefore, since the split noted during the three-year inspection was approximately 0.065", it was not required to be reported by the five-year inspection. All other data collected coincides. By comparing the data collected during the three-year inspection and the five-year inspection, it can be seen that tendon D227 is in the same condition as it was left at the three-year inspection and shows no signs of progressive corrosion or abnormal degradation.

TABLE 3-1

END ANCHORAGE EXAMINATION SUMMARY

		Anchorage Corrosion Levels				Buttonheads				
Tendon	End	Buttonheads	Anchor Heads	Shims	Bearing Plate	Missing	Split ≧ 0.12"	Unseated	Misshaped	Anchorage Assembly Cracks
V4	F	A	A	A, B	A, B, C	None	None	None	None	None
	S	A	A	A	A, B, C	None	None	None	None	None
V28	F	A	A, B	A	A, B, C	None	None	None	None	None
	S	A	A	A	A, B	None	None	None	None	None
V52	F	A	A	A	A, B	1	None	None	None	None
	S	A	A	A, B	A, B, C	None	None	None	None	None
V79	F	A	A	A	A, B, C	None	None	None	1	None
	S	A	A	A, B	A, B	None	None	None	None	None
V100	F	A	A	A	A, B	None	None	None	1	None
	S	A, B	A	A, B	A, C	None	None	None	None	None
H1DE	F	A	A, B	A	A	None	None	None	None	None
	S	A	A	A, B	B, C	None	None	None	None	None
H21DE	F	A	A, B	A	A, B	None	None	None	None	None
	S	A	A	A, B	A, B, C	None	None	None	None	None
H28DE	F	A	A	A	A, B, C	None	None	None	2	None
	S	A	A	A, B	A, B, C	None	None	None	None	None

F = Field
S = Shop

TABLE 3-1

TND ANCHORAGE EXAMINATION SUMMARY

		Anchorage Corrosion Levels				Buttonheads				
Tendon	End	Buttonheads	Anchor Heads	Shims	Bearing Plate	Missing	Split ≥0.12"	Unseated	Misshaped	Anchorage Assembly Cracks
H45DE	F	A	A, B	A, B	A, B, C	None	None	None	1	None
	S	A	A	A	A, B, C	None	None	None	None	None
H3EF	F	A	A	A	A, B	None	1	None	None	None
	S	A	A	A	A, B	1	None	None	None	None
H17EF	F	A	A	A	A, B, C	None	None	None	None	None
	S	A	A	A, B	A, B, C	None	None	None	None	None
H31EF	F	A	A	A	A, B, C	None	None	None	1	None
	S	A	A, B	A, B	A, B, C	None	None	None	None	None
H13FD	F	A	A	A	A	None	None	None	None	None
	S	A	A	A	A, B	None	None	1	None	None
H26FD	F	A	A	A, B	A, B, C	2	None	None	1	None
	S	A	A	A	A, B, C	None	None	None	None	None
H42FD	F	A	A, B	A, B	A, B, C	None	None	None	2	None
	S	A	A	A, B	A, B, C	None	None	2	None	None
D109	F	A	A, B	A, B	A, B, C	None	None	None	1	None
	S	A	A	A, B	A, B, C	None	None	None	None	None

F = Field
S = Shop

TABLE 3-1

END ANCHORAGE EXAMINATION SUMMARY

		Anchorage Corrosion Levels				Buttonheads				
Tendon	End	Buttonheads	Anchor Heads	Shims	Bearing Plate	Missing	Split ≧0.12"	Unseated	Misshaped	Anchorage Assembly Cracks
D119	F	A	A	A	A, B, C	None	2	None	1	None
	S	A	A	A	A, B	None	None	None	None	None
D117	F	A	A	A	A, B, C	1	None	None	None	None
	S	A	A, B	A	A, B	None	None	None	None	None
D227	F	A	A	A, B	A, B, C	None	None	None	None	None
	S	A	A	A	A, B	None	None	None	None	None
D307	F	A	A, B	A, B	A, B	None	None	None	None	None
	S	A	A	A	A, B	None	None	None	None	None
D319	F	A	A	A, B	A, B	None	None	None	None	None
	S	A	A	A	A, B	None	None	None	None	None

F = Field
S = Shop

TABLE 3-2

SHEATHING FILLER SUMMARY

Inspection			Regreasing		
Tendon	End	Filler Moisture/Color	Container Temp. °F	Exit Temp. °F	Viscosity Batch No.
V4	S	None/New	-	148	5-6202
	F	None/New	171	-	
V28	S	None/New	-	140	5-6202
	F	None/New	171	-	
V52	S	2 Ounces/New	-	142	5-6202
	F	None/New	171	-	
V79	S	None/New	-	145	5-6202
	F	None/New	171	-	
V100	S	None/New	-	120	5-5928
	F	None/New	169	-	•
H1DE	S	None/Brown[A]	220	108	5-5526
	F	None/New	180	120	5-5526
H21DE	S	None/Brown	193	130	5-5526
	F	None/Brown	190	120	5-5526
H28DE	S	None/Brown	180	122	5-6359
	F	None/Brown[A]	15[illegible]	124	5-6359
H45DE	S	None/Brown	[illegible]	160	5-6359
	F	None/Brown[A]	[illegible]	150	5-6359
H3EF	S	Traces/Brown[B]	210	120	5-5526
	F	None/Tan	220	120	5-5526
H17EF	S	None/Brown[A]	172	120	5-5526
	F	None/Brown[A]	185	150	5-5526

A = Small amount of black preservative
B = Grease surface frothy
C = New "cold pack" grease mixed with black preservative
D = Predominantly black preservative

TABLE 3-2

SHEATHING FILLER SUMMARY

Inspection			Regreasing		
Tendon	End	Filler Moisture/Color	Container Temp. °F	Exit Temp. °F	Viscosity Batch No.
H31EF	S	None/Brown	220	134	5-6359
	F	None/Brown	215	142	5-6359
H13FD	S	None/Brown	185	150	5-5526
	F	None/New	160	120	5-5526
H26FD	S	None/Brown	182	140	5-6359
	F	None/Brown	220	122	5-6359
H42FD	S	None/Brown	160	132	5-6359
	F	None/Brown[A]	190	136	5-6359
D109	S	None/Brown[A]	184	-	5-6359
	F	None/Brown[C]	-	140	
D119	S	None/Brown	210	-	5-6359
	F	None/Black[D]	-	152	
D117	S	None/Brown	184	-	5-6359
	F	None/Brown[D]	-	130	
D227	S	None/Brown	190	-	5-5526/ 5-6359
	F	None/Brown[A]	-	112	
D307	S	None/Brown	184	-	5-6359
	F	None/Brown[A]	-	142	
D319	S	None/Brown	178	-	5-6359
	F	None/Brown[A]	-	124	

TABLE 3-3

SHEATHING FILLER ANALYSIS SUMMARY:
SURVEILLANCE TENDON SAMPLES

Tendon	End	Chloride (PPM)	Nitrate* (PPM)	Sulfide* (PPM)	Water (%)	Neutralization Number
V4	F	1	1	1	0.5	45.8
V28	F	1	1	1	1.2	56.4
V79	F	1	1	1	0.5	60.8
V100	F	1	1	1	0.2	48.5
H1DE	S	1	1	1	0.3	44.1
	F	1	1	1	0.5	44.6
H21DE	S	1	1	1	0.2	45.8
	F	1	1	1	0.1	48.5
H28DE	S	1	1	1	0.2	46.9
	F	1	1	1	0.2	56.4
H45DE	S	1	1	1	0.3	54.7
	F	1	1	1	0.4	48.5
H3EF	S	1	1	1	1.3	46.9
	F	1	1	1	0.2	49.7
H17EF	S	1	1	1	0.5	48.0
	F	1	1	1	0.3	54.7

*An indicated concentration of 1 PPM represents a true concentration of 0 to 1 PPM.

TABLE 3-3

SHEATHING FILLER ANALYSIS SUMMARY:
SURVEILLANCE TENDON SAMPLES

Tendon	End	Chloride (PPM)	Nitrate* (PPM)	Sulfide* (PPM)	Water (%)	Neutralization Number
H31EF	S	1	1	1	0.3	51.3
	F	1	1	1	0.3	48.5
H13FD	S	1	1	1	0.2	43.5
	F	1	1	1	0.4	44.6
H26FD	S	1	1	1	0.3	42.4
	F	1	1	1	0.4	61.4
H42FD	S	1	1	1	0.4	58.6
	F	1	1	1	0.2	67.0
D109	S	1	1	1	0.1	62.5
	F	1	1	1	0.2	45.1
D117	S	1	1	1	0.2	59.2
	F	1	1	1	0.2	59.7
D119	S	1	1	1	0.2	60.8
	F	1	1	1	0.5	22.3
D227	S	1	1	1	0.1	55.2
	F	1	1	1	0.1	63.6
D307	S	1	1	1	0.1	69.8
	F	1	1	1	0.7	65.3
D319	S	1	1	1	0.2	58.0
	F	1	1	1	0.1	59.2

*An indicated concentration of 1 PPM represents a true concentration of 0 to 1 PPM.

TABLE 3-4

NEW SHEATHING FILLER ANALYSIS SUMMARY:

BATCH NUMBER ANALYSIS

Viscosity Batch No.	Chloride (PPM)	Nitrate* (PPM)	Sulfide* (PPM)	Water (%)	Neutralization Number
5-5526	1	2	1	0.6	48.7
5-5928	1	2	1	0.1	52.0
5-6202	1	2	1	0.2	51.0
5-6359	1	2	1	0.2	49.8

*An indicated concentration of 1 PPM represents a true concentration of 0 to 1 PPM.

TABLE 3-5

COMPARISON WITH PREVIOUS SURVEILLANCES

			Anchorage Corrosion Levels				Buttonheads				
Tendon	End	Surveil-lance #	Buttonheads	Anchor Heads	Shims	Bearing Plate	Missing	Splits	Unseated	Misshaped	Anchorage Assembly Cracks
D227	F	3-Year	A	A	A, B	A, B, C	None	1	None	None	None
	S	3-Year	A	A	A, B	A, B, C	None	None	None	None	None
D227	F	5-Year	A	A	A, B	A, B, C	None	None	None	None	None
	S	5-Year	A	A	A	A, B	None	None	None	None	None

4.0 CONCLUSIONS AND RECOMMENDATIONS

The condensation found in the shop grease can of vertical tendon V52 was a result of the repair and replacement program. This moisture was removed and the tendon regreased as quickly as possible to prevent further condensation. The traces of mositure found in hoop tendon H3EF was suspected to be condensation which collected since initial installation. This moisture was also removed and the anchorage regreased as quickly as possible.

Corrosion of the anchorage components within the end caps appeared to be that which existed at initial sheathing filler injection. There was no evidence to suggest that this corrosion was progressive or had affected the integrity of the tendon. The weathered condition of the bearing plates perimeters is confined to the areas where the scalers, used to trim the concrete around the bearing plate, strayed onto the bearing plate. These areas are not considered detrimental to the integrity of the bearing plate. Corrosion of the areas surrounding the bolt holes is not significant; however, it should be considered during future surveillance activity. Also, detailed measures should be established to ensure complete sealing of the grease can.

Areas of the bearing plate outside the end cap circumference had A, B, and C levels of corrosion. The vast majority of this corrosion appeared to have been transferred from the interior side of the gasket retainer plate. The gasket retainer plates, which are not an inspection item, are neither painted nor galvanized. Their function is only to provide a form for the gasket during installation of the grease can. The corrosion of these retainer plates is obviously progressive, particularly on those anchorages exposed to the elements. Gasket retainer plate condition was noted in some of the data. Approximately 17% were found to have C level corrosion.

The acceptance criteria for any one tendon requires that if the number of ineffective wires exceeds eight, then the two adjacent tendons must be inspected. The total number of ineffective wires found in all tendons inspected during this surveillance was 11; 5 missing buttonheads, 3 splits greater than 0.12 inches, 3 unseated buttonheads. The misshaped buttonheads were all double buttonheads, seated and considered effective. No individual tendon had more than eight ineffective wires. Since the test results are within this acceptance criteria all tendons examined are acceptable.

Based upon the results of these inspections, the results of the repair and inspection program, and the laboratory analysis of the sheathing filler it is concluded that the post-tensioning system is performing its intended design function. Within the scope of this surveillance, the system exhibits no signs of abnormal degradation. It is in essentially an as-installed condition. Reduction of the sample population in accordance with the plant Technical Specifications should be evaluated prior to the ten-year surveillance contingent upon the results of the inspection program as outlined in the LER.

5.0 REFERENCES

1. Farley Nuclear Plant Surveillance Test Procedure, FNP-STP-609.0, Revision 3, Containment Tendon Surveillance Test.

2. Nuclear Regulatory Commission (NRC) Regulatory Guide 1.35, Revision 2, Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containment Structures.

3. INRYCO, Field Installation and Quality Control Manual, U-201851H.

4. Joseph M. Farley Nuclear Plant Unit 2, Vendor Drawings:

U-205865B	U-205874A	U-208051D	U-208144C
205866A	208806A	208053F	208145C
205867	207808B	208136B	208234
205870A	207811A	208138B	208235
205872B	208049D	208140B	208238

5. Joseph M. Farley Nuclear Plant Unit 1 and 2 Final Safety Analysis Report, paragrpah 3.8.1.7.3.

6. Farley Nuclear Plant, Technical Specifications 3/4.6.1.6.1.

7. Containment One-Year Tendon Surveillance Report - Unit 2, Volume 1.

8. Containment Three-Year Tendon Surveillance Report - Unit 2, Volume 1.

9. INRYCO, Inc., Procedure SQ 12.6, Grease Vertical Tendon - Full Refill; Procedure SQ 12.7; Grease Horizontal Tendon - Final Refill; Procedure SQ 12.8, Grease Dome Tendon - Final Refill.

10. INRYCO, Inc., Procedure SQ 7.3, Grease Samples - Acquire and Evaluate; Procedure SQ 7.4, Grease Samples - Acquire and Evaluate Minimum Quantity.

Joseph M. Farley Nuclear Plant
Unit 2 Containment Post-Tensioning System
Five-Year Inservice Inspection

Volume 2 – Data

Prepared by:

Southern Company Services, Inc.
September 1985

Alabama Power

the southern electric system

Table of Contents

FNP-0-AP-52

WORK AUTHORIZATION

AUTHORIZATION № 30283

(1) Item No. FNP-2-STP-609.0 TPNS Q2 T37 (TENDONS)

(2) Inoperable Yes☐ No☒ LCO Yes☐ No☒ Transient Fire Load Analysis Required Yes☐ No☒

(3) Clearance No.: N/A

RWP No.:

Flame Permit No.: N/A

(4) Released David McCoy (RELEASING INDIVIDUAL) 5-10-85 (DATE) 0927 (TIME)

(5) Results: (Include Material Issue Number if applicable)

Test Completed Satisfactory. Procedure Completes Requirements for 5-Year Tendon Surveillance on Unit 2.

David Hatthie 8/7/85

(6) Post Test(s) Completed N/A

RW [illegible] (RELEASING INDIVIDUAL) 8-8-85 1002

(7) Functional Accepted R W [illegible] (RELEASING INDIVIDUAL) 8-8-85 (DATE) 1002 (TIME)

(8) Manhours used: Account No.

Reviewed: David Hatthie

Form 5-657 Rev. 2

Gen. Rev. 2

VOLUME 7

FNP-2-STP-609.0
November 4, 1983
Revision 3

FARLEY NUCLEAR PLANT

SURVEILLANCE TEST PROCEDURE

FNP-2-STP-609.0

SAFETY RELATED

CONTAINMENT TENDON SURVEILLANCE TEST

Approved:

Robert G. Berryhill
Systems Performance & Planning Superintendent

Date Issued: 5-10-85

Diskette #STP-88

FARLEY NUCLEAR PLANT
SURVEILLANCE TEST REVIEW SHEET

SURVEILLANCE TEST NO.	TECHNICAL SPECIFICATION REFERENCE
FNP-2-STP-609.0	4.6.1.6.1

TITLE	MODE(S) REQUIRING TEST:
CONTAINMENT TENDON SURVEILLANCE TEST	1,2,3,4

TEST RESULTS (To be completed by test performer)

PERFORMED BY JOSEPH M. HALL DATE/TIME 6/15/85 0800

COMPONENT OR TRAIN TESTED (if applicable) TENDONS

[X] ENTIRE STP PERFORMED

[ ] PARTIAL STP PERFORMED: [X] For Surveillance Credit

[ ] Not for Surveillance Credit

REASON FOR PARTIAL:

TEST COMPLETED: [X] Satisfactory [ ] Unsatisfactory

[X] The following deficiencies occurred:

Grease sample analysis not available for shop end of tendons V4, V28, V79, V100 or for the shop and field end of V52 due to the tendon repair program. Tendons were drained of grease prior to surveillance testing.

[X] Corrective action taken or initiated:

Grease analysis included for new grease currently in tendons listed above.

PERFORMING GROUP REVIEW

REVIEWED BY David Hartline DATE 8/8/85

[X] Procedure properly completed and satisfactory

[X] Comments: Surveillance conducted in accordance with tendon inspection and repair program. Additional information available with INRYCO procedures.

SYSTEMS PERFORMANCE GROUP REVIEW — SCREENED BY Jimmy Reed DATE 8-8-85 — REVIEWED BY _____ DATE _____

[ ] Satisfactory and Approved

[ ] Comments:

FIGURE 3

INSPECTION SUMMARY

VERTICAL TENDONS

TDON #	INSPECTION COMPLETED	DATE / TIME	BY	RESULTS / COMMENTS
V-4 SHOP	✓	5-11-85 1530	JMH	NO MOISTURE, GOOD SHIMS, COLD PACKED
V-4 FIELD	✓	5-11-85 0940	SDL	NO MOISTURE, GOOD SHIMS, NEW FILL GREASE
V-28 SHOP	✓	5-11-85 1530	JMH	NO MOISTURE, GOOD SHIMS, COLD PACKED
V-28 FIELD	✓	5-11-85 1215	SDL	NO MOISTURE, GOOD SHIMS, NEW FILL GREASE
V-52 SHOP	✓	5-11-85 1520	SDL	2 OZ WATER FOUND, GOOD SHIMS, 'D' GASKET R
V-52 FIELD	✓	5-11-85 1115	JMH	NO MOISTURE, 1 B'HEAD MISSING
V-79 SHOP	✓	5-11-85 1500	JMH	NO MOISTURE, GOOD SHIMS, 'D' GASKET R
V-79 FIELD	✓	5-11-85 1100	SDL	1 'DBL' B'HEAD, GOOD SHIMS NO MOISTURE
V-100 SHOP	✓	5-11-85 1440	SDL	NO MOISTURE, GOOD SHIMS COLD PACKED.
V-100 FIELD	✓	5-11-85 1030	JMH	NO MOISTURE, GOOD SHIMS, 1 DBL B'HEAD

HOOP TENDONS

TDON #	INSPECTION COMPLETED	DATE / TIME	BY	RESULTS / COMMENTS
1 DE SHOP	'E' ✓	5-30-85 0900	LNS	NO MOISTURE, 3/8" SHIM GAP
1 DE FIELD	'D' ✓	5-29-85 1356	JMH	NO MOISTURE,
21 DE SHOP	'E' ✓	5-30-85 1330	LNS	NO MOISTURE, 80% COVERAGE
21 DE FIELD	'D' ✓	5-29-85 1632	JMH	NO MOISTURE, GOOD SHIMS, GOOD GASKET R
28 DE SHOP	'E' ✓	5-30-85 1450	LNS	NO MOISTURE,
28 DE FIELD	'D' ✓	6-1-85 1030	LNS	NO MOISTURE, 1/2" SHIM GAP, 2 DBL B'HEADS
45 DE SHOP	'E' ✓	5-30-85 1630	LNS	NO MOISTURE,
45 DE FIELD	'D' ✓	5-31-85 1330	LNS	NO MOISTURE, 1/2" SHM GAP, 1 DBL B'HEAD
3 EF SHOP	'E' ✓	5-30-85 0914	JMH	MOISTURE FOUND, 1 MISSING B'HEAD, SHOP BUSHING NOT FULLY ENGAGED BY 3/16", PROBLEMS WITH SHIMS ADJACENT BEARING R.
3EF FIELD	'F' ✓	5-29-85 0915	JMH	NO MOISTURE, 1/2" SHIM GAP, 1 SPLIT > 0.12"

INSPECTION SUMMARY

HOOP TENDONS (CONT.)

TENDON #	INSPECTION COMPLETED	DATE / TIME	BY	RESULTS / COMMENTS
17 EF SHOP	'E' ✓	5-30-85 1130	LNS	NO MOISTURE.
17 EF FIELD	'F' ✓	5-29-85 1250	JMH	NO MOISTURE, GOOD SHIMS
31 EF SHOP	'E' ✓	5-31-85 0830	LNS	NO MOISTURE.
31 EF FIELD	'F' ✓	6-1-85 1500	LNS	NO MOISTURE, 1 DBL B'HEAD
13 FD SHOP	'F' ✓	5-29-85 1100	JMH	NO MOISTURE, GOOD SHIMS, 1 UNSEATED B'HEAD.
13 FD FIELD	'D' ✓	5-29-85 1507	JMH	NO MOISTURE, GOOD SHIMS
26 FD FIELD	'D' ✓	6-1-85 0815	LNS	NO MOISTURE, 1/2" SHIM GAP, 2 MISSING WIRES 1 DBL B'HEAD
26 FD SHOP	'F' ✓	5-31-85 1545	JMH	NO MOISTURE, BURR ON STARTER THREAD
42 FD FIELD	'D' ✓	5-31-85 1530	LNS	NO MOISTURE, 2 DOUBLE BUTTONHEADS
42 FD SHOP	'F' ✓	6-1-85 1315	LNS	NO MOISTURE, 11/16" SHIM GAP, 2 UNSEATED B'HEADS
	DOME TENDONS			
D-109 FIELD	AZ 345° 25' 39" ✓	6-10-85 0905	SDL	1 DBL B'HEAD. NO MOISTURE, GOOD SHIMS, METAL SHAVINGS FOUN
D-109 SHOP	AZ 204° 34' 21" ✓	6-10-85 1546	SDL	NO MOISTURE, 3/8" SHIM GAPS, UNPAINTED BEARING P
D-119 SHOP	AZ 176° 40' 38" ✓	6-10-85 0940	JMH	NO MOISTURE, GOOD SHIMS, METAL SHAVINGS FOUN
D-119 FIELD	AZ 13° 19' 22" ✓	6-8-85 0915	LNS	NO MOISTURE, BLACK GREASE, 2 SPLITS > 0.12 1 DBL B'HEAD
D-117 SHOP	AZ 182° 13' 27" ✓	6-10-85 0845	JMH	NO MOISTURE, 5/8" SHIM GAP, BUSHING NOT FULLY ENGAGE
D-117 FIELD	AZ 07° 46' 13" ✓	6-8-85 1015	LNS	NO MOISTURE, 1 MISSING BUTTONHEAD.
D-227 FIELD	AZ 213° 45' 11" ✓	6-10-85	SDL	POSSIBLE MOISTURE, GOOD SHIMS
D-227 SHOP	AZ 96° 14' 49" ✓	6-10-85 1500	JMH	NO MOISTURE, GOOD SHIMS, "WATER SPOTS" ON BUSHING
D-307 SHOP	AZ 99° 39' 55" ✓	6-10-85 1630	JMH	NO MOISTURE, GOOD SHIMS, BUSHING INDENTAT
D-307 FIELD	AZ 330° 20' 05" ✓	6-10-85 1030	SDL	NO MOISTURE, GOOD SHIMS
D-319 SHOP	AZ 133° 19' 22" ✓	6-10-85 1400	JMH	NO MOISTURE, GOOD SHIMS
D-319 FIELD	AZ 296° 40' 38" ✓	6-10-85 1306	SDL	NO MOISTURE, GOOD SHIMS

LIST OF EFFECTIVE PAGES

	REVISION NO.											
PAGE NO.	0	1	2	3	4	5	6	7	8	9	10	11
1				X								
2			X									
3				X								
4			X									
5				X								
6			X									
7			X									
8			X									
9				X								
10			X									
TABLE 1	X											
DATA SHEET I												
I				X								
2				X								
DATA SHEET 2	X											
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3a		X										
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APPENDIX A												
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B-7			X									
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B-9			X									
B-10				X								

PROCEDURE FOR CONTAINMENT TENDON SURVEILLANCE TESTING FOR FARLEY NUCLEAR PLANT - UNIT NO. 2

1.0 PURPOSE

This procedure provides instructions to perform the testing, analysis and data reporting of the containment post-tensioning system.

The containment structure, designed by Bechtel Power Corporation, has a shallow domed roof on cylindrical walls designed with a tendon arrangement of three (3) families of dome tendons 60° apart, three (3) families of hoop tendons encompassing 240° with buttresses 120° apart and vertical tendons equally spaced in two groups on either side of the concrete wall centerline.

2.0 REFERENCES

2.1 Nuclear Regulatory Commission (NRC) Regulatory Guide 1.35, Revision 2, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containment Structures".

2.2 Prestressing Report Unit 2 Containment Structure of Joseph M. Farley Nuclear Plant.

2.3 U-201851H Field Installation and Quality Control Manual, INRYCO No. 00312.

2.4 U-202216B Post Tensions Sequence, Inland-Ryerson Dwg. 505-48, Rev. C.

2.5 Farley Nuclear Plant Technical Specifications 3/4.6.1.6.1.

2.6 Final Safety Analysis Report Section 3.8.

2.7 Containment One Year Tendon Surveillance Report - FNP Unit 2, Bechtel Power Corp., August, 1981.

2.8 Containment Three Year Tendon Surveillance Report - FNP Unit 2, Southern Company Services, Inc., September, 1983.

3.0 TEST EQUIPMENT

3.1 Mechanical Equipment

(a) Two temporary access platforms with overhead support structures. This provides access to the tendons being inspected.

(b) Portable metal scaffolds as required.

(c) Grease pump, transmission lines, various fittings, etc., mounted on a storage tank or drum equipped with heating system to heat grease.

(d) Containers, such as 55-gallon drums, to hold bulk filler grease removed from end anchorages during inspection.

3.2 Electrical Equipment

(a) Electrical cables or heavy duty extension cords as necessary for lights and other miscellaneous power tools.

(b) Portable lights as necessary for illuminating tendon anchorage assemblies during check for corrosion and defects.

(c) Communications equipment for crews at each end of the tendon being inspected.

3.3 Measuring Devices

(a) Feeler gauges or wire gauges.

(b) Optical comparators for measuring crack widths in concrete.

(c) Temperature gauge which will cover a range from 140°F to 210°F.

3.4 Portable Tools

(a) Suitable wrenches to remove hold-down bolts.

(b) Come-along hoist, or similar device, as required.

(c) Small portable power tools, e.g., electric drill, saw, etc., as required.

(d) Bristle brushes as required to clean tendon anchorage area.

3.5 Miscellaneous Material

(a) Bulk filler grease (Viscono-rust 2090-P4, or latest compatible formulation, by Viscosity Oil Co.) to replace grease as necessary.

(b) Solvent for removing grease from around tendon anchorage and cleaning any stained concrete (Viscosity #16 solvent by Viscosity Oil Co., or equal as approved).

(c) New "O" Rings for tendon end caps.

(d) Clean rags for cleanup.

(e) Device suitable to scoop out bulk filler grease from around the anchorage assembly.

(f) Any other miscellaneous material and tools as required.

4.0 PREREQUISITES AND INITIAL CONDITIONS

Check that the following conditions exist:

4.1 All applicable equipment listed in Section 3 is available and ready to be used. Verify references listed in Section 2.0 are available for use.

4.2 The representative sample of tendons for the surveillance have been selected in accordance with Appendix A and listed on Table 1.

4.3 There is adequate access to all tendon end caps that are to be inspected.

BY DAVCON 4.4 The Preoperational Service and Inspection Checklist and the Load Test Checklist in Appendix B have been completed.

5-11-85

4.5 A testing laboratory has been contracted to perform the filler grease tests and is prepared to receive the grease samples.

4.6 Copies of the original stressing cards for the sample tendons are available.

4.7 All data sheets are properly completed with the tendon number, location and the last date stressed, anchor head numbers and previous shim thicknesses from the original stressing card.

BY INRYCO 4.8 All members of work crew are familiar with safety guidelines given in Appendix B.

5-11-85

5.0 INSTRUCTIONS FOR TENDON INSPECTION

5.1 General

(a) These instructions are typical for any given hoop, dome or vertical tendon inspection.

(b) Data results for the tendons inspected shall be documented on the data sheets as applicable.

(c) If the tendon inspection is not completed during a work shift, the anchorage area and the end caps shall be protected.

(d) During the testing program, the Test Coordinator shall be immediately notified of any significant defects.

5.2 Prerequisites and Initial Conditions are complete.

JMH / 5-11-85
Initial Date

5.3 Preparation and Inspection

(a) Position platforms, where required, at each end of the tendon to be inspected.

(b) Place collector can and/or protective cover under the tendon end cap to protect the adjacent areas from dripping of the sheathing filler.

NOTE: The entire column of grease may drain from a vertical tendon conduit. Sufficient receptacles shall be available to contain the drained grease.

If the grease is to be re-used, take sufficient precaution to prevent contamination.

(c) Remove the bolts holding the end cap to the bearing plate. End cap 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 medium viscous liquid.

(d) Remove the end cap and set it down with open end up to help reduce spillage of the bulk filler.

(e) Visually examine the condition of bulk filler grease. Note any variation in color, signs of moisture, evidence of voids or any other signs of deterioration. Standard of comparison will be fresh

bulk filler grease. Any deterioration of the grease will be noted on Data Sheet 1.

Look for any missing buttonheads in the bulk filler material and document findings.

(f) Obtain two samples of sheathing filler from each end of the tendon for laboratory examination per section 6.0.

(g) Remove any remaining bulk filler from tendon anchorage area and clean up by using bristle brushes, solvent and rags as necessary. Care should be taken to neither increase the effects of corrosion nor damage the steel (for instance, scratch it).

(h) Record the amount of bulk filler grease removed.

(i) Record the shim thickness and anchor end number as found.

(j) Inspect the anchorage assembly for any buttonhead problems such as corrosion, missing, broken, damaged or unseated buttonheads, cracks or splits, or improperly formed buttonheads (e.g., double buttonheads). The width of all buttonhead splits shall be measured with a feeler gauge or wire gauge. Document individual buttonheads with splits greater than .12".

Inspect the anchor head, shims and bearing plate for corrosion and cracks.

Document the results on Data Sheets 2, 3a, 3b, 4a - 4b as applicable.

(k) Visually examine the concrete in the area surrounding the tendon anchorage assembly. Using an optical comparator or feeler gauges, as necessary, measure and record on Data Sheet 2 the width, length and location of any cracks wider than 0.010 inches. Use grid paper as necessary to identify crack patterns and widths.

(l) Using the criteria in Section 7.3, determine if an inspection of the adjacent tendons is required.

5.4 Tendon Restoration

(a) Reinstall end caps, using the following steps:

1. Remove the "O" rings from the end caps, clean the end caps and bearing plate surfaces with rags and solvent and wipe dry.

2. Install new "O" rings and secure them in place to the end cap flanges. Use grease if necessary to hold the "O" rings in the grooves.

3. Install bolts and tighten. (Use new bolts if required). Exercise caution to minimize or avoid bulk filler spillage. Install washers and nuts, tighten keeping even distribution of pressure on the gaskets.

(b) The tendon sheathing shall be refilled with sheathing filler. The sheathing filler shall be Viscosity Oil Company Visconorust 2090P-4 or latest compatible formulation.

1. The temperature of the filler in the drum or other heated container shall be between 140°F and 210°F (150°F is recommended). Record actual temperature.

2. The Test Coordinator shall determine if the filler which has been removed from the tendon may be re-used or if new grease is required. Document which type is used.

3. If five gallons or more have been removed from each tendon end, filler material shall be replaced by pumping through a hose attached to the grease cap filler plug. All available valves, vents and drains shall be used during this operation to avoid the entrapment of air in the sheath. Pumping shall continue until filler without any air bubbles or visible foreign substances have come out of the outlet or vent farthest from the pump.

4. If less than five gallons of filler have been removed at each tendon end, filler may be replaced by pumping or pouring into each end provided each end is vented to bleed out air.

5. Record amount of grease replaced.

6. The elapsed time between removal and replacement of sheathing filler from a tendon shall not exceed three weeks to avoid unnecessary exposure of the anchorage head.

(c) Move equipment to the next tendon to be inspected.

6.0 SHEATHING FILLER

(a) The samples of bulk filler taken from the ends of each tendon shall be placed in one-quart, clean containers (care should be taken not to contaminate the sample). Attach an identification tag to each container. One sample from each location will be shipped to the testing laboratory for testing. The samples should be packaged and shipped to prevent physical damage to the container which could result in contamination or loss of identification of the samples.

(b) Two samples shall also be taken and tested per section 7.1 from each opened drum of fresh bulk filler grease.

(c) The testing laboratory shall test each sample for chlorides, nitrates, sulphides, moisture content and neutralization number per Section 7.0 and record this information.

(d) The second sample from each tendon end and drum of fresh bulk filler grease will be kept as a back-up until the test results from the first sample are received and determined by the Test Coordinator to be satsifactory.

7.0 ACCEPTANCE CRITERIA

7.1 Sheathing Filler Testing

Samples of sheathing filler will be taken from each surveillance tendon and each opened drum of fresh bulk filler material for visual and laboratory

examinations. The filler material samples shall be analyzed in accordance with this specification.

If the following criteria are not met, an engineering evaluation shall be conducted to determine if corrective measures are necessary.

(a) Chlorides (Cl) - 10 ppm max. (5 ppm for new material) when tested in accordance with ASTM D512-67, Procedure for Determination of Water-Soluble Chlorides (Cl).

(b) Nitrates (NO_3) - 10 ppm max. (5 ppm for new material) when tested in accordance with ASTM D-992 Brucine Method for Determination of Water-Soluble Nitrates (NO_3).

(c) Sulfides (S) - 10 ppm max. (5 ppm for new material) when tested in accordance with American Public Health Association (APHA) Standard Method 428 for the Determination of Water-Soluble Sulfides (S).

(d) Water (H_2O) - 10% dry weight max. when tested in accordance with ASTM D-95.

(e) Neutralization Number - base number greater than zero when tested in accordance with ASTM D-974 modified for Visconnorust 2090 P4. Contact Viscosity Oil Co. for the modified test procedure.

7.2 Corrosion Inspection

(a) Anchorage assembly components in category a, b or c are acceptable.

Anchorage assembly components in category d, e or f should be further evaluated.

Definitions

1. Pit - a pit is defined as an indentation visible to the naked eye.

2. Degrees of Corrosion

a. Bulk filler material intact and bright metal, no visible oxidation.

b. Metal reddish brown color, no pitting.

c. Metal having patches of red oxide, removable but ready to start pitting.

d. Metal having patches of red oxide, not removable and/or leaving noticeable pits.

e. Metal having heavy rusting, dark red, and about to form an extremely hard crust which, when removed, leaves very noticeable pitting.

f. Conditions more severe than category (e).

7.3 Missing, Broken and/or Damaged Wires

(a) Missing, broken and/or damaged wire criteria is based on original quantity of 170 wires per tendon.

(b) All misshaped (improperly formed) and/or split buttonheads will be evaluated by the Owner or its authorized representative for any possible effect on the wire load-carrying capacity. The misshaped buttonheads and buttonheads with splits greater than .12 inches which are determined to have effect on the load-carrying capacity will be identified as defective buttonheads.

(c) The discontinuous and missing wires will be treated as ineffective wires for system evaluation. Discontinuous wires will be removed for examination and laboratory testing if conditions are feasible.

(d) If the total number of discontinuous and missing wires from 7.3.c plus defective buttonheads from 7.3.b exceed 8, the two adjacent tendons will be inspected.

If either adjacent tendon or more than one tendon in the surveillance sample set have more than 8 missing and/or defective buttonheads, an engineering

evaluation shall be conducted to determine if corrective measures are necessary.

8.0 EQUIPMENT REMOVAL AND STORAGE

8.1 All equipment will be removed and the area cleaned of any remaining materials.

8.2 Equipment will be stored in accordance with the guidelines for storage of equipment given in Appendix B.

9.0 REPORTS

9.1 Upon completion of all testing required by this procedure, a final report of the test program shall be prepared. The report shall include, but not be limited to:

(a) Tendon end anchor inspection results.

(b) Sheath filler analysis results.

The final report shall be submitted to the Systems Performance Supervisor within 60 days after completion of the testing program.

9.2 Failure of a tendon or parts of a tendon to meet the criteria set forth shall be evaluated by the Owner or its authorized representative. If the failure is determined to be an indication of possible abnormal degradation of the containment structure, the tendon shall be reported to the Commission pursuant to Technical Specification 6.9.1. This report shall include a description of the tendon condition, the condition of the concrete (especially at tendon anchorages), the inspection procedure, the tolerances on cracking, and the corrective actions taken.

TABLE 1
FARLEY NUCLEAR PLANT UNIT 2 CONTAINMENT TENDON SURVEILLANCE
5 YEARS AFTER S.I.T.

TENDON NO.	DATE START (5.3.c)	DATE COMPLETE (5.4.a)	DATE GREASE (5.4.b)	ADJACENT TENDON INSPECTION YES/NO	ADJACENT TENDON INSPECTION TENDON NOS.	INITIAL/DATE
Hoop (Select 10)						
1. 1 DE	5-30-85	5-30-85	5-31-85	No		JMH / 6-13-85
2. 21 DE	5-30-85	5-30-85	6-3-85	No		JMH / 6-13-85
3. 28 DE	5-30-85	5-30-85	6-4-85	No		JMH / 6-13-85
4. 45 DE	5-30-85	5-31-85	6-7-85	No		JMH / 6-13-85
5. 3 EF	5-29-85	5-30-85	5-31-85	No		JMH / 6-13-85
6. 17 EF	5-29-85	5-30-85	5-31-85	No		JMH / 6-13-85
7. 31 EF	5-31-85	6-1-85	6-6-85	No		JMH / 6-13-85
8. 13 FD	5-29-85	5-29-85	5-30-85	No		JMH / 6-13-85
9. 26 FD	5-31-85	6-1-85	6-8-85	No		JMH / 6-13-85
10. 42 FD	5-31-85	5-31-85	6-7-85	No		JMH / 6-13-85
11. 41 EF	ALTERNATE TENDON					
12.						
13.						
14.						
15.						
Dome (Select 6)						
1. D-109 B	6-10-85	6-10-85	6-13-85	No		JMH / 6-13-85
2. D-119 C	6-8-85	6-10-85	6-12-85	No		JMH / 6-13-85
3. D-202 T/B	INACCESSABLE TENDON					
4. D-227 B/T	6-10-85	6-10-85	6-15-85	No		JMH / 6-18-85
5. D-307 T	6-10-85	6-10-85	6-13-85	No		JMH / 6-13-85
6. D-319 C	6-10-85	6-10-85	6-14-85	No		JMH / 6-13-85
7. D-117 C	6-8-85	6-10-85	6-13-85	No		JMH / 6-13-85
Vertical (Select 5)						
1. V-4	5-11-85	5-11-85	5-15-85	No		JMH / 6-13-85
2. V-28	5-11-85	5-11-85	5-11-85	No		JMH / 6-13-85
3. V-52	5-11-85	5-11-85	5-15-85	No		JMH / 6-13-85
4. V-79	5-11-85	5-11-85	5-15-85	No		JMH / 6-13-85
5. V-100	5-11-85	5-11-85	5-13-85	No		JMH / 6-13-85
6. V-124	ALTERNATE TENDON					

DATA SHEET 1

TENDON NO. V-4 SDL 5-11-85 ~~FIELD~~ / SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
SDL 5-11-85 ~~GALLERY~~ DOME

2. Last Date Stressed 3-20-85

3. Anchor End Number from Stressing Card Field TFH 17
Shop FT 046 KA 062

4. Previous Shim Thickness from Stressing Card Field 9.0"
Shop 6.9"

5. Remove Tendon End Cap ~~3:50~~ MH / 15:30 / 5/11/85
Initials Time Date

6. Visual Examination of Bulk Filler Grease NEW CLEAN GREASE COLD PACKED BY INRYCO, GOOD COVERAGE, NO MOISTURE PRESENT
MH / 5/11/85
Initial/Date

7. Grease Sample Taken BY INRYCO MH / 5/11/85
Initial/Date

8. Bulk Filler Removed (Gal). 1/2 GAL & INRYCO DATA MH / 5/11/85
Initial/Date

9. Anchor End Number As Found KA 062 / FT046 MH / 5/11/85
Initial/Date

10. Shim Thickness As Found 6 13/16" MH / 5/11/85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

MH / 5/11/85
Initial/Date

DATA SHEET 1

TENDON NO. V-4 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SOL / 5-11-85
Initial/Date

13. Tendon End Caps Re-installed JMH / 5/11/85
Initial/Date

14. Tendon Re-greasing: BY INRYCO
Data transfered from procedure SQ 12.6

Date 5/15/85

Temperature of Grease in Bulk Container 171°F

Type Grease (New/Used) New

If New Grease, Drum No. Lot No. 5-6202

Amount of Grease Replaced (Gal.) Entire Tendon

DRH / 8/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-4
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: KA062/FT046
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

BEARING PLATE

Degree of Corrosion: A, B & C
Cracks: NONE

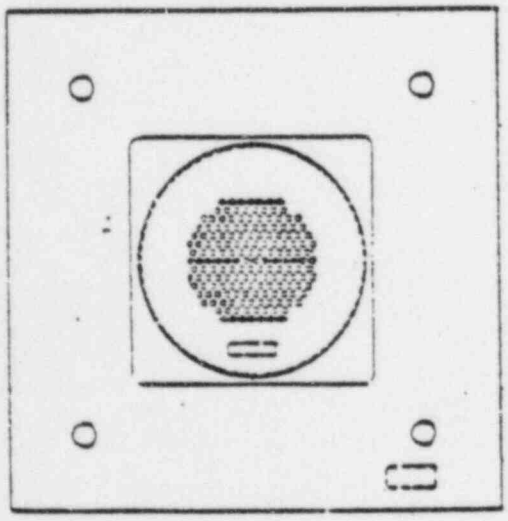
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE

REMARKS: GOOD TIGHT SHIM STACK (GAP < 1/4")
GASKET RETAINER PLATE HAS B & C CORROSION LEVEL.

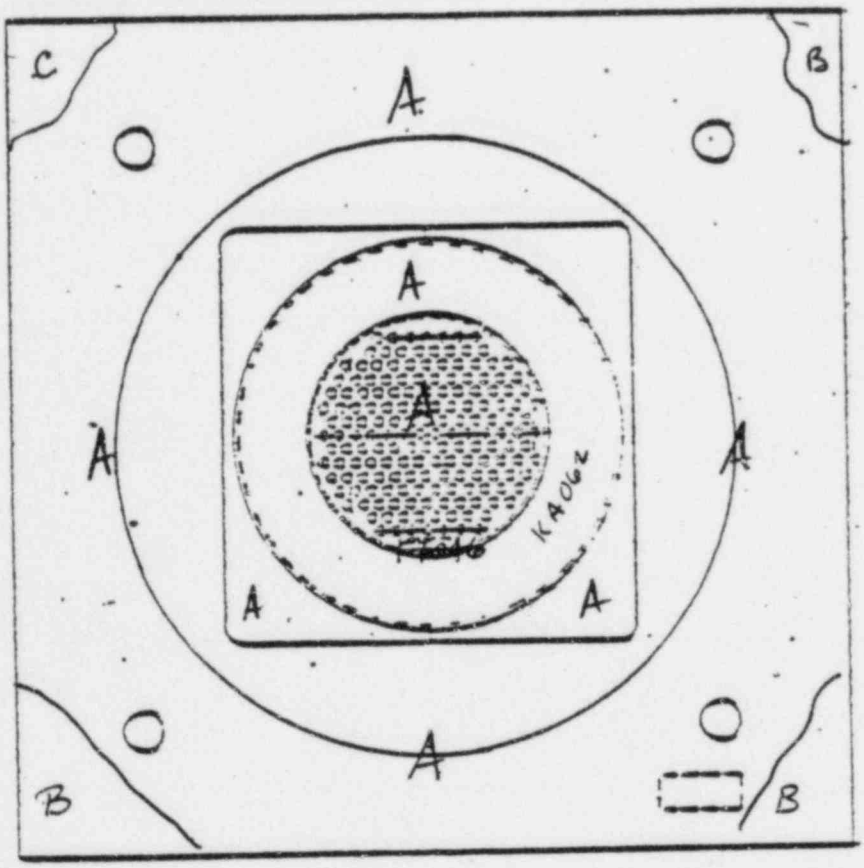
SKETCH



Date 5/4/85 Signature [illegible] M. Hall

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. V-4.



TO CONTAINMENT ℄

Date 5/11/85 Signature Joseph M. Hall

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

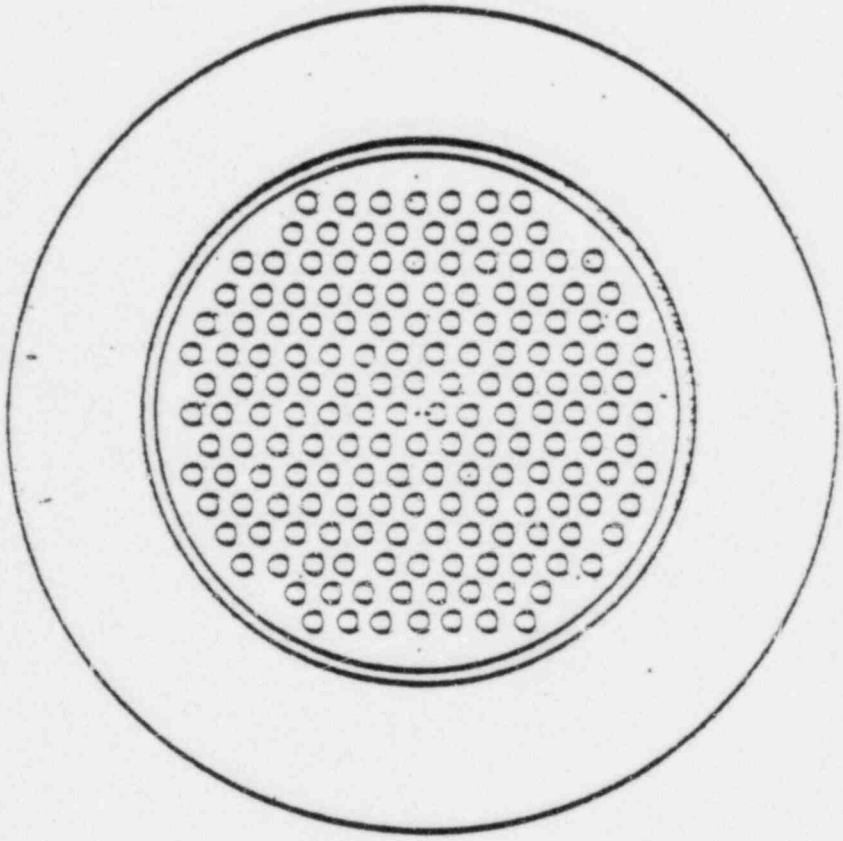
JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON V-4

Joseph M. Hall 15/11/85

SIGNATURE DATE



COMMENTS:

No MISSING, UNSEATED OR MISSHAPED BUTTONHEADS

No SPLITS > 0.12"

DATA SHEET 1

TENDON NO. V-4 (FIELD)/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

GALLERY

2. Last Date Stressed 3-20-85

3. Anchor End Number from Stressing Card — Field TFH-17 — Shop FT046 KA 062

4. Previous Shim Thickness from Stressing Card — Field 9.0" — Shop 6.9"

5. Remove Tendon End Cap — SDL / 0940 / 5-11-85 (Initials / Time / Date)

6. Visual Examination of Bulk Filler Grease FILLER HAD GOOD APPEARANCE (CAN FILLED BY INRYCO ON 3-22-85 UNTIL FULL GREASING OPERATION) NO MOISTURE, GOOD COVERAGE

SDL / 5-11-85 (Initial/Date)

7. Grease Sample Taken BY INRYCO — SDL / 5-11-85 (Initial/Date)

8. Bulk Filler Removed (Gal). 3 & SEE INRYCO DATA — SDL / 5-11-85 (Initial/Date)

9. Anchor End Number As Found TFH 17 — SDL / 5-11-85 (Initial/Date)

10. Shim Thickness As Found 8 15/16" — SDL / 5-11-85 (Initial/Date)

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

SDL / 5-11-85 (Initial/Date)

DATA SHEET 1

TENDON NO. V-4 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL / 5-11-85
Initial/Date

13. Tendon End Caps Re-installed SDL / 5-11-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO procedure SQ 12.6

Date (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

/
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-4

FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A

~~Number missing,~~ broken or damaged: 0

Cracks or splits: NONE

Number not properly formed: 0

ANCHOR HEAD

Number: TFH 17

Degree of Corrosion: A

Cracks: NONE

SHIMS

Degree of Corrosion: "A" WITH SMALL PATCHES OF "B"

Cracks: NONE

BEARING PLATE

Degree of Corrosion: "A" WITH "B" & "C"

Cracks: NONE

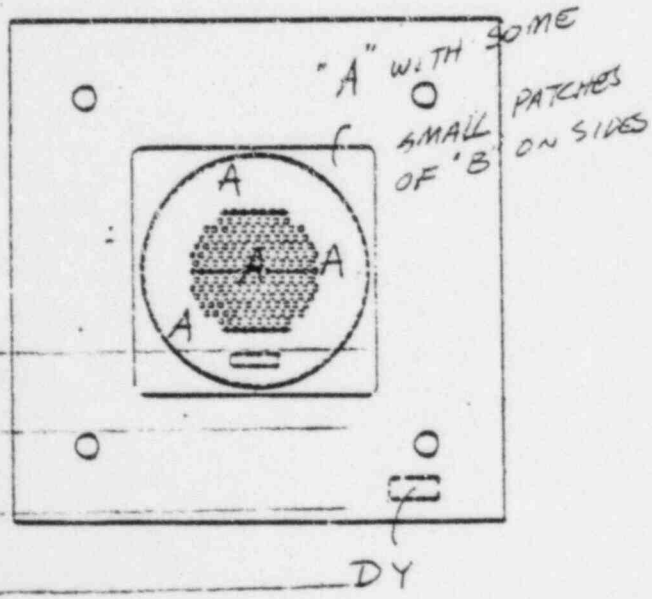
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE > 0.01"

REMARKS: ANCHORAGE LOOKS VERY GOOD, GOOD SHIM GAP, MOST OF BEARING PLATE CORROSION ON OUTSIDE EDGE, NEW RETAINER PLATE SEEMS TO HAVE BEEN INSTALLED DURING REPLACEMENT PROGRAM

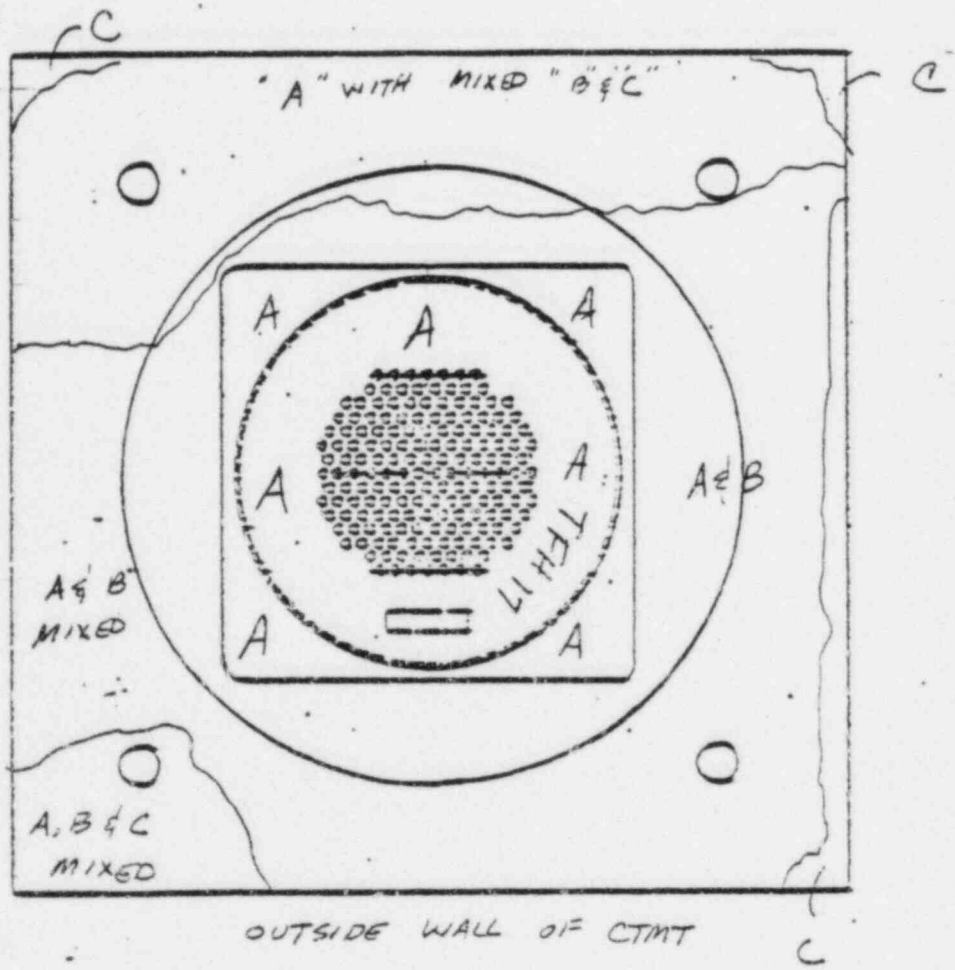
SKETCH



Date 5-11-95 Signature Steve D. Lowe

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. V-4



Date 5-11-85 Signature Steven D. Lowe

LEGEND FOR BUTTONHEADS

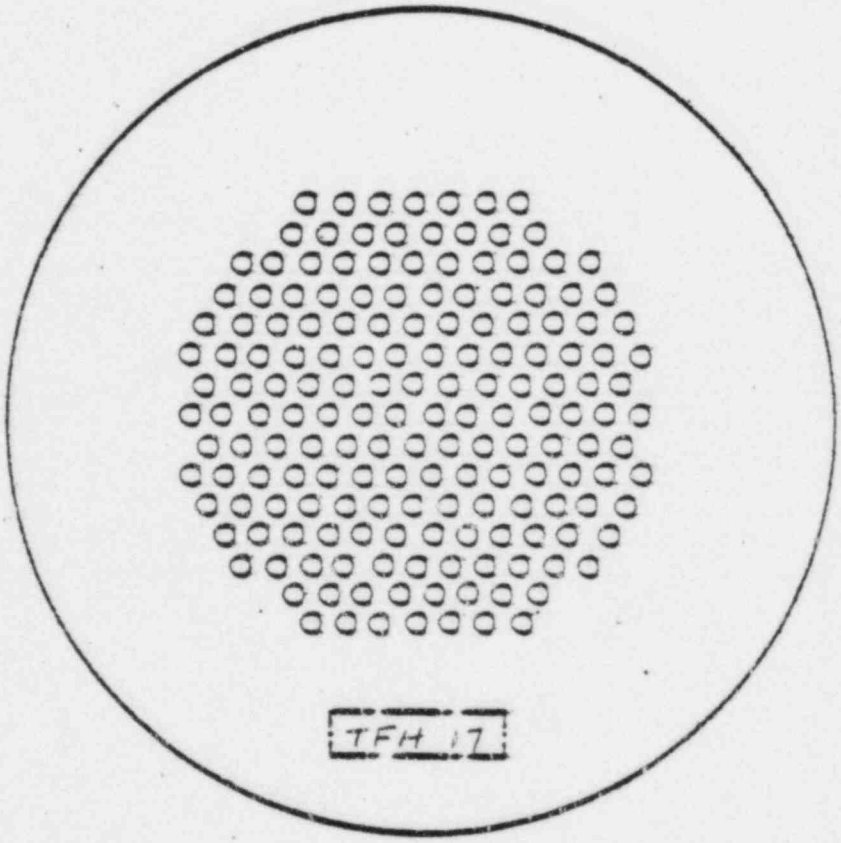
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

FIELD END

TENDON V-4

Steven D. Lowe 5-11-85
SIGNATURE DATE



COMMENTS:

BUTTONHEADS LOOK VERY GOOD

DATA SHEET 1

TENDON NO. V-28 ~~FIELD~~/SHOP END (Circle One) SDL 5-11-85

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

   DOME

2. Last Date Stressed 3-11-85

3. Anchor End Number from Stressing Card — Field TFF-13; Shop FT-047 KA-149

4. Previous Shim Thickness from Stressing Card — Field 7.35"; Shop 7.9"

5. Remove Tendon End Cap — MH (Initials) / 15:30 (Time) / 5/11/85 (Date)

6. Visual Examination of Bulk Filler Grease CLEAN NEW GREASE GOOD COVERAGE ON ASSEMBLY, CLEAN GREASE CAN; NO MOISTURE PRESENT — MH / 5/11/85 (Initial/Date)

7. Grease Sample Taken BY INRYCO — MH / 5/11/85 (Initial/Date)

8. Bulk Filler Removed (Gal). 1/2 GAL & SEE INRYCO DATA — MH / 5/11/85 (Initial/Date)

9. Anchor End Number As Found KA 149 / FT 047 — MH / 5/11/85 (Initial/Date)

10. Shim Thickness As Found 7 15/16" — MH / 5/11/85 (Initial/Date)

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

    Number of buttonheads: Missing 0; Misshaped 0; Splits > .12" 0

    MH / 5/11/85 (Initial/Date)

DATA SHEET 1

TENDON NO. V-28 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? SDL / 5-11-85
Initial/Date

13. Tendon End Caps Re-installed JMH / 5/11/85
Initial/Date

14. Tendon Re-greasing: PER INRYCO
Data transferred from procedure SQ 12.6

Date 5/15/85

Temperature of Grease in Bulk Container 171°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6202

Amount of Grease Replaced (Gal.) Entire Tendon

SBH / 8/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-28
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: KA149 / FT047
Degree of Corrosion: A / A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

BEARING PLATE

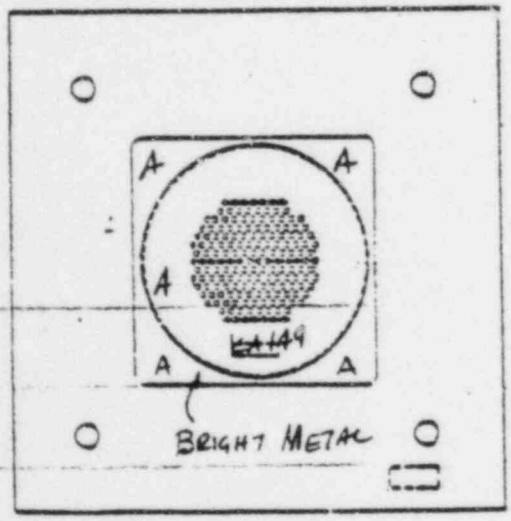
Degree of Corrosion: A & B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE VISABLE - CONCRETE IS HYPALON COATED.

REMARKS: GREASE SHIMS ADJACENT TO ANCHOR HEAD HAVE BEEN MACHINED .. BRIGHT SHINY METAL TIGHT SHIM STACK (GAP < 1/4") TWO GREASE SHIMS BUSHING FULLY ENGAGED ON ANCHOR ... GASKET RETAINER PLATE HAS LEVEL 'B' CORROSION OVERALL SOUND; OVERALL, ANCHORAGE

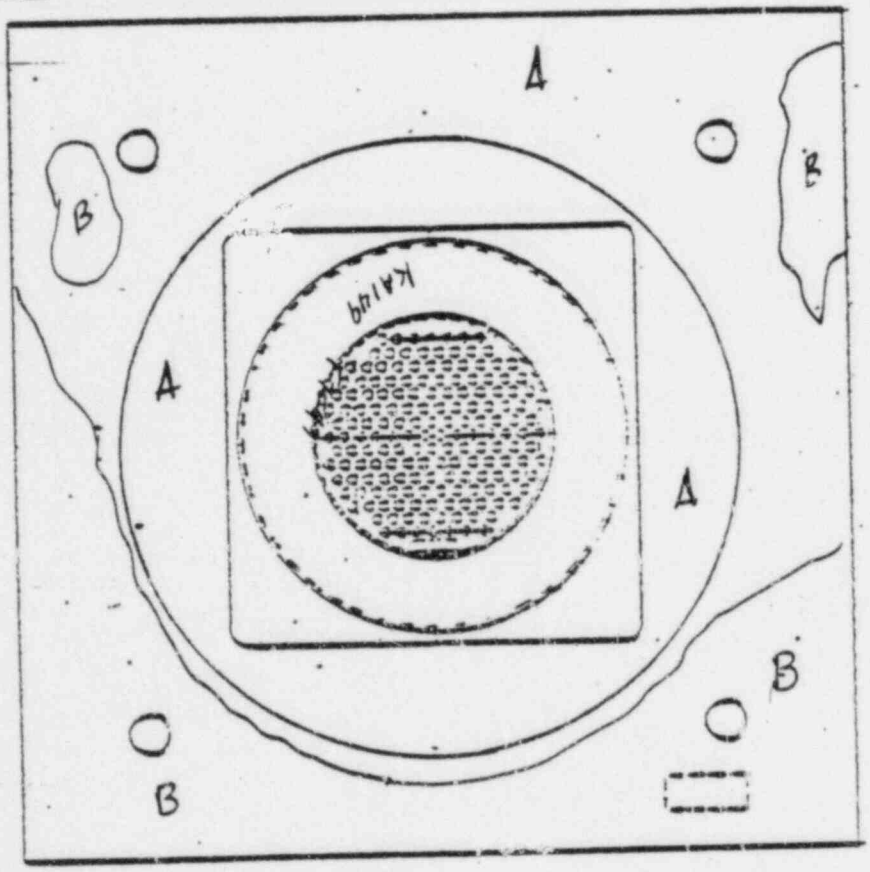
SKETCH



Date 5/11/85 Signature Joseph M. Hall

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. V-28.



TO ℄ CONTAINMENT

Date 5/11/85 Signature Joseph M. Hall

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

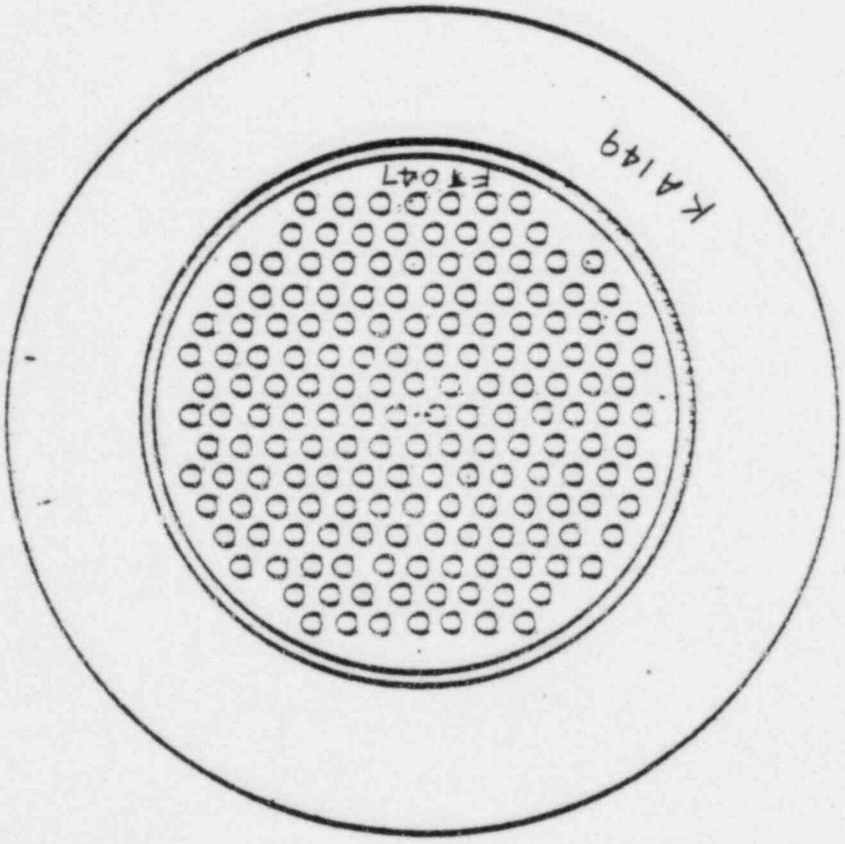
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON V-28

Joseph M. Hall 15/11/85
SIGNATURE DATE



COMMENTS:

NO MISSING, UNSEATED OR IMPROPERLY FORMED BUTTONHEADS ; NO SPLITS GREATER THAN 0.12"

DATA SHEET 1

TENDON NO. V-28 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

GALLERY

2. Last Date Stressed 3-11-85

3. Anchor End Number from Stressing Card Field TFF-13
Shop FT-047 KA-149

4. Previous Shim Thickness from Stressing Card Field 7.35"
Shop 7.9"

5. Remove Tendon End Cap SDL / 1215 / 5-11-85
Initials Time Date

6. ~~Visual~~ Examination of Bulk Filler Grease CLEAN, NEW GREASE IN CAN PER INRYCO 3-15-85 UNTIL FULLY GREASED, NO MOISTURE, ANCHORAGE WELL COATED
SDL / 5-11-85
Initial/Date

7. Grease Sample Taken BY INRYCO SDL / 5-11-85
Initial/Date

8. Bulk Filler Removed (Gal). 1 1/2 & SEE INRYCO DATA SDL / 5-11-85
Initial/Date

9. Anchor End Number As Found TFF-13 SDL / 5-11-85
Initial/Date

10. Shim Thickness As Found ~~7.38~~ SDL 5-11-85 7 3/8" SDL / 5-11-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0

SDL / 5-11-85
Initial/Date

DATA SHEET 1

TENDON NO. V-28 (FIELD) SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL / 5-11-85
Initial/Date

13. Tendon End Caps Re-installed SDL / 5-11-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO procedure SQ 12.6

Date (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

/
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-28

FIELD / SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A

~~Number missing,~~ broken or damaged: 0

Cracks or splits: 0

Number not properly formed: 0

ANCHOR HEAD

Number: TFF 13

Degree of Corrosion: "A" with very slight "B"

Cracks: NONE

SHIMS

Degree of Corrosion: A

Cracks: NONE

BEARING PLATE

Degree of Corrosion: A with B & C

Cracks: NONE

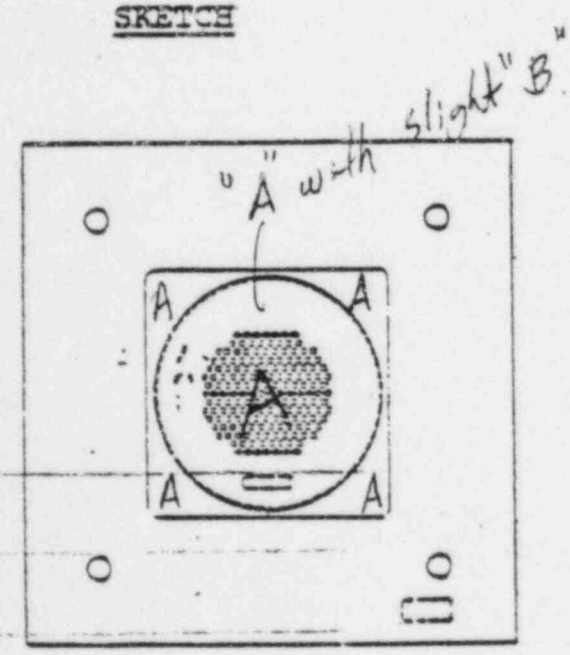
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE > 0.01"

REMARKS: ANCHORAGE LOOKS GOOD. SHIM GAPS GOOD, "B" CORROSION ON HEAD IS VERY SLIGHT AND APPEARS TO HAVE BEEN PRESENT AT INSTALLATION, "B" CORROSION IS NOT PROGRESS GASKET RETAINER PLATE IN GOOD CONDITION "A" LEVEL OF CORROSION

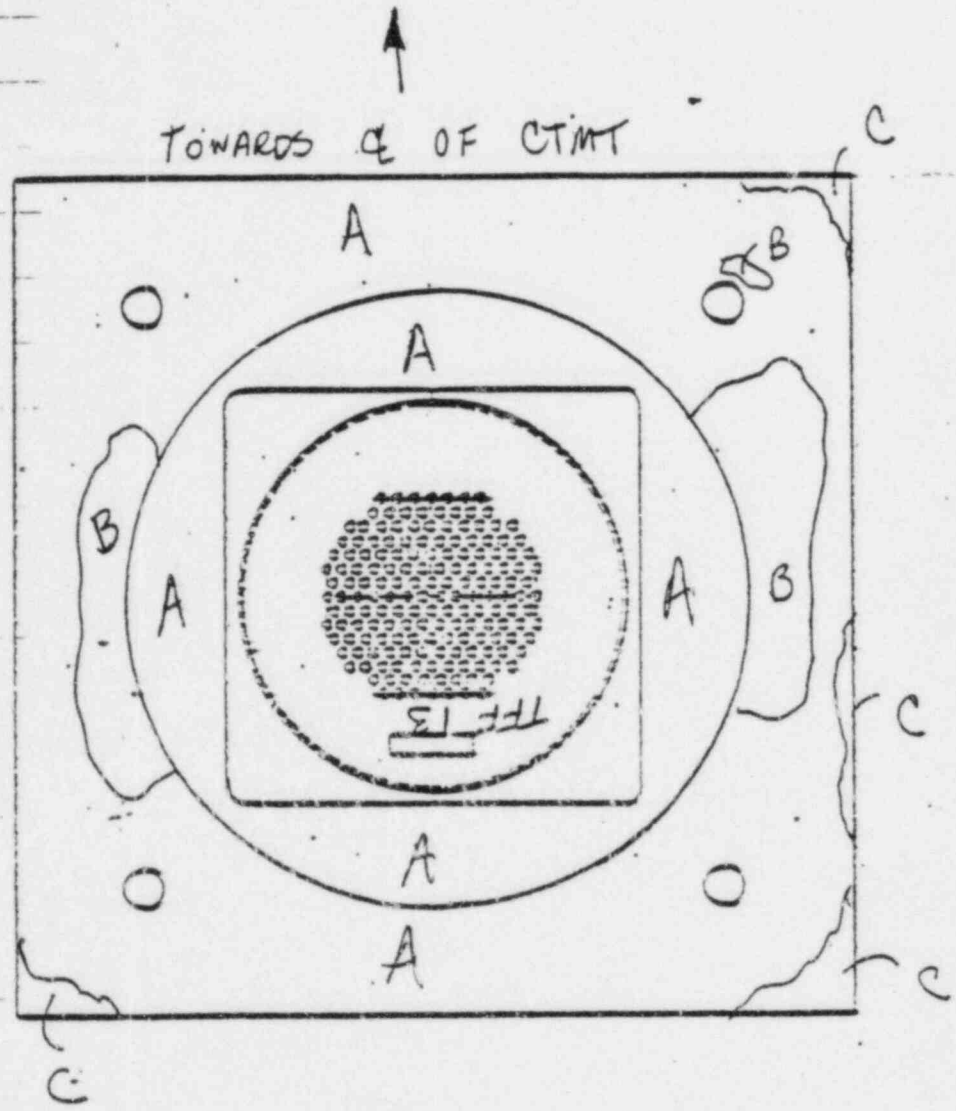
SKETCH



Date 5-11-85 Signature Steven D. Smith

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. V-28



Date 5-11-85 Signature Steven A. Lowe

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

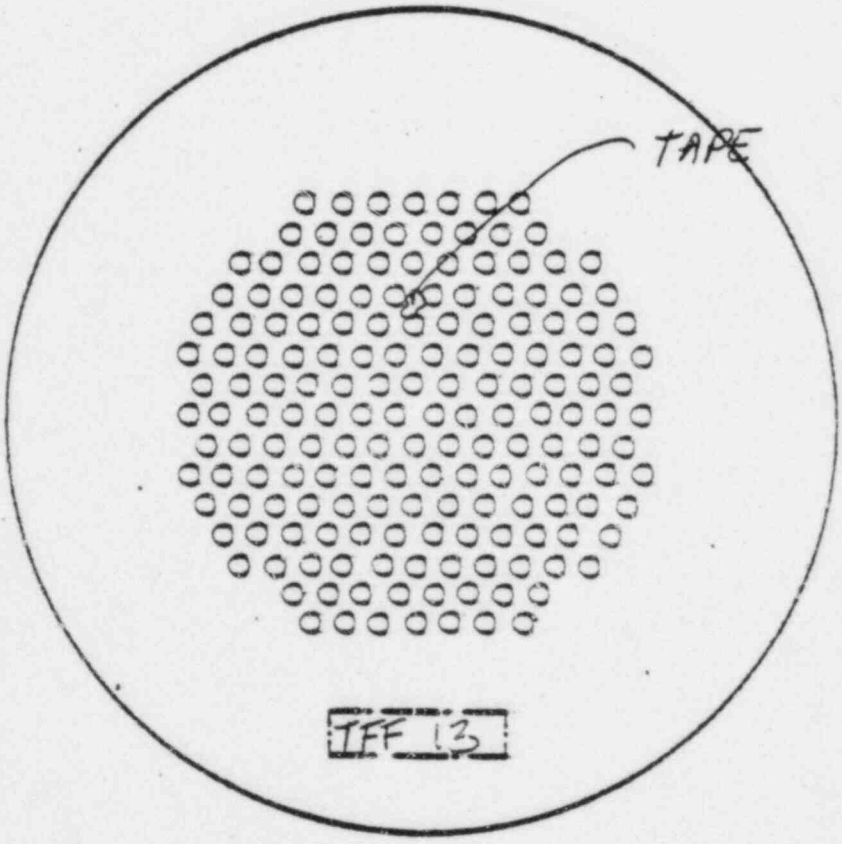
JOSEPH M. FARLEY NUCLEAR PLANT UNIT

FIELD END

TENDON V-28

Steven D. Lane 15-11-86

SIGNATURE DATE



COMMENTS:

FOUND SMALL PIECE OF TAPE - REMOVED ALL VISIBLE TAPE

DATA SHEET 1

TENDON NO. V-52 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

DOME

2. Last Date Stressed 3-22-85

3. Anchor End Number from Stressing Card Field HV 042
Shop FL 059 KA 083

4. Previous Shim Thickness from Stressing Card Field 7.30"
Shop 8.20"

5. Remove Tendon End Cap SDL / 1520 / 5-11-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease GOOD NEW GREASE, ANCHORAGE WELL COATED, CLEAR WATER (≈20z) ON BOTTOM SIDE PUDDLED IN RETAINER PLATE, NO MOISTURE ON ANCHORAGE, ANCHORAGE HAD BEEN COLD PACKED PER INRYCO PENDING FULL GREASING, VERY SMALL AMOUNT OF WATER IN CAN SDL / 5-11-85
Initial/Date

7. Grease Sample Taken BY INRYCO SDL / 5-11-85
Initial/Date

8. Bulk Filler Removed (Gal). 1/2 & SEE INRYCO DATA SDL / 5-11-85
Initial/Date
BUSHING KA 083

9. Anchor End Number As Found ANCHOR FL 059 SDL / 5-11-85
Initial/Date
SDL 5-11-85 ~~BUSHING KA 083~~

10. Shim Thickness As Found ~~ANCHOR FL 059~~ 8 1/4" SDL / 5-11-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

SDL / 5-11-85
Initial/Date

DATA SHEET 1

TENDON NO. V-52 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL / 5-11-85
Initial/Date

13. Tendon End Caps Re-installed SDL / 5-11-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO
Data transferred from procedure SQ 12.6

Date 5/15/85

Temperature of Grease in Bulk Container 171 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6202

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-52
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: KA 083 FL 059
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: "A" WITH SOME "B"
Cracks: NONE

BEARING PLATE

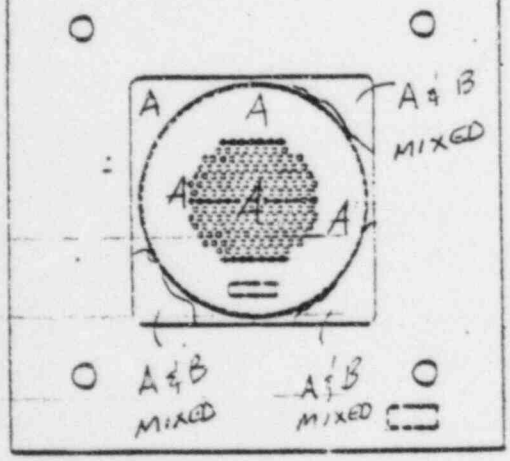
Degree of Corrosion: "A", "B", ONE SPOT OF "C"
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE > 0.01" VISIBLE

REMARKS: ANCHORAGE LOOKS GOOD, GOOD SHIM GAP, "B" CORROSION SEEMS TO HAVE BEEN TRANSFERED FROM RETAINER PLATE TO THE BEARING PLATE & CAN BE SCRAPED OFF WITH A SCREW DRIVER, "B" CORROSION HAS NOT PENETRATED PAINT, CORROSION ON SHIMS DOES NOT APPEAR PROGRESSIVE IN NATURE, CORROSION ON BOTTOM SIDE OF RETAINER PLATE IS GENERALLY "D"

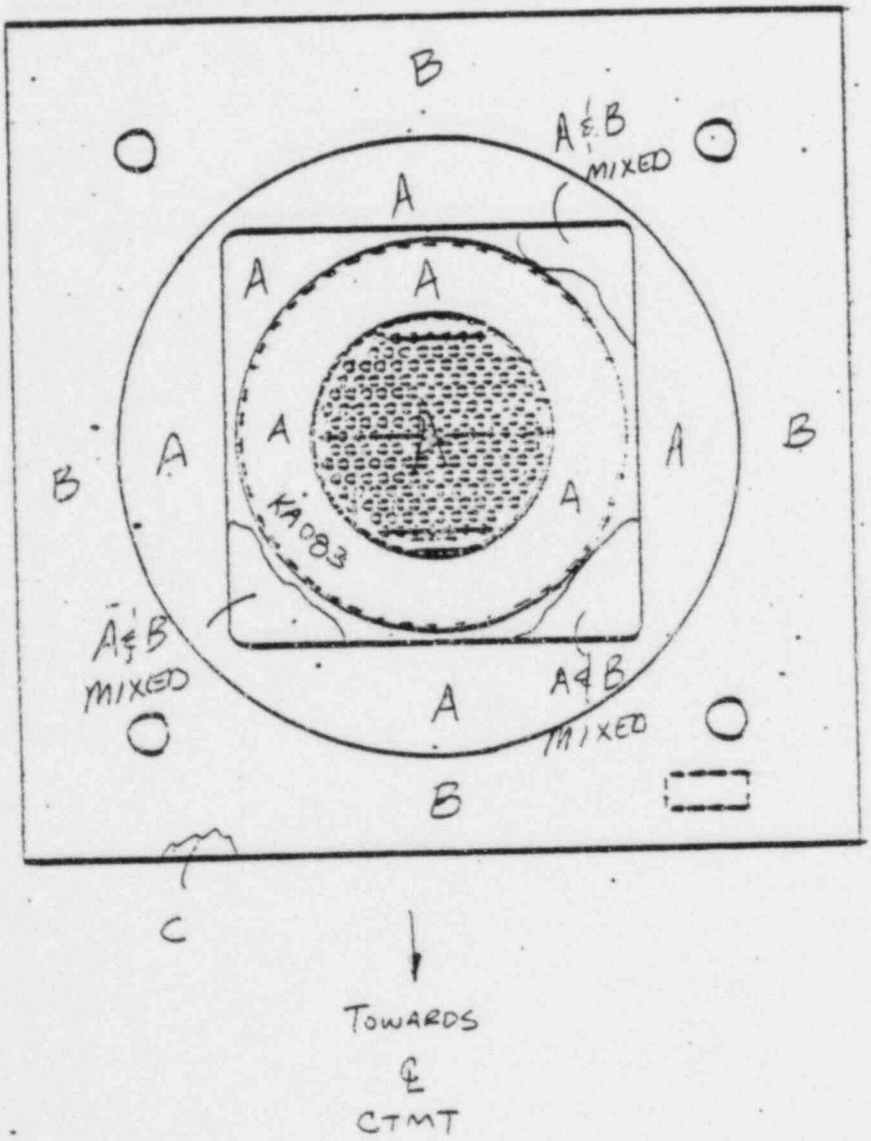
SKETCH



Date 5-11-85 Signature Steven D Howe

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. V-52.



Date 5-11-85 Signature Steven D. Lowe

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead ~~with~~ Split (Document the Split Size)

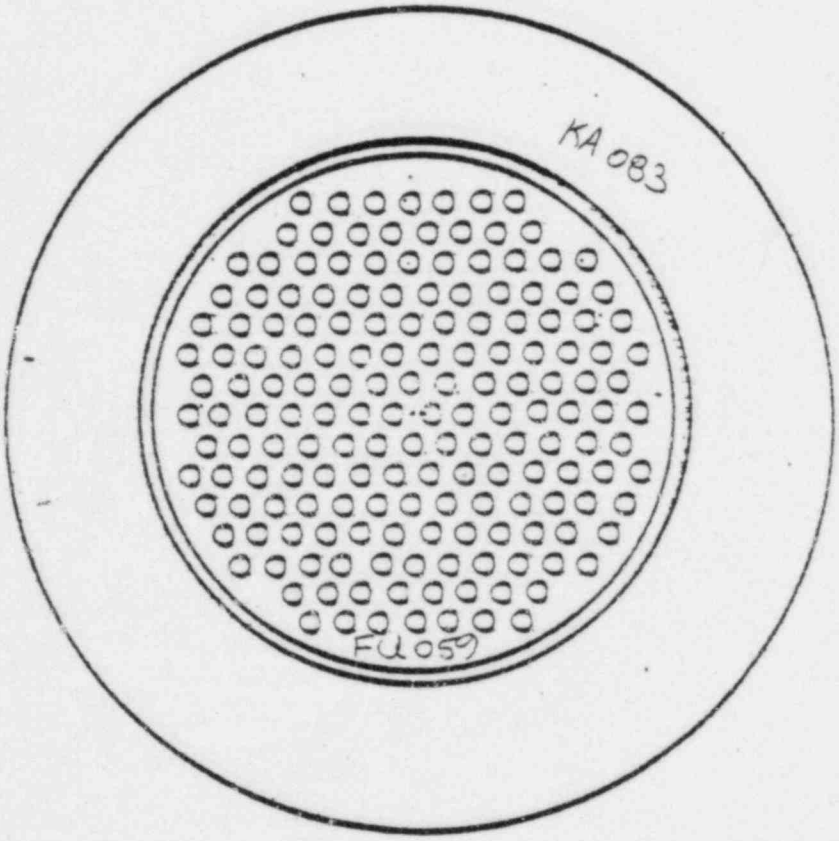
JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON V-52

Steven D. Lowe 15-11-85

SIGNATURE DATE



COMMENTS:

No SPLITS > 0.12"

DATA SHEET 1

TENDON NO. V-52 (FIELD)/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

GALLERY

2. Last Date Stressed 3-22-85

3. Anchor End Number from Stressing Card — Field HV 042 FU 059; Shop KA 083

4. Previous Shim Thickness from Stressing Card — Field 7.30" ~~FU~~ SOL 5-11-85; Shop 8.20"

5. Remove Tendon End Cap — JMH (Initials) / 11:15 (Time) / 5/11/85 (Date)

6. Visual Examination of Bulk Filler Grease NEW, CLEAN GREASE IN CAN, NO MOISTURE, BROWN GREASE FLOWING FROM SHIMS ... NO MOISTURE; GOOD CONSISTENCY ~~CONSIST~~

JMH / 5/11/85 Initial/Date

7. Grease Sample Taken PER INRYCO — JMH / 5/11/85 Initial/Date

8. Bulk Filler Removed (Gal). 4½ ± SEE INRYCO DATA — JMH / 5/11/84 Initial/Date

9. Anchor End Number As Found HV 042 — JMH / 5/11/85 Initial/Date

10. Shim Thickness As Found 7 3/16 — JMH / 5/11/85 Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads:		
	Missing	1
	Misshaped	0
	Splits > .12"	0

JMH / 5/11/85 Initial/Date

DATA SHEET 1

TENDON NO. V-52 (FIELD) SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SOL 15-11-85
Initial/Date

13. Tendon End Caps Re-installed JH 15/11/85
Initial/Date

14. Tendon Re-greasing: PER INRYCO procedure SQ126

Date (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

_____ /
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-52

FIELD / SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A

~~Number missing,~~ broken or damaged: 1

Cracks or splits: 0

Number not properly formed: 0

ANCHOR HEAD

Number: HV 042

Degree of Corrosion: A

Cracks: NONE

SHIMS

Degree of Corrosion: A

Cracks: NONE

BEARING PLATE

Degree of Corrosion: A & B

Cracks: NONE

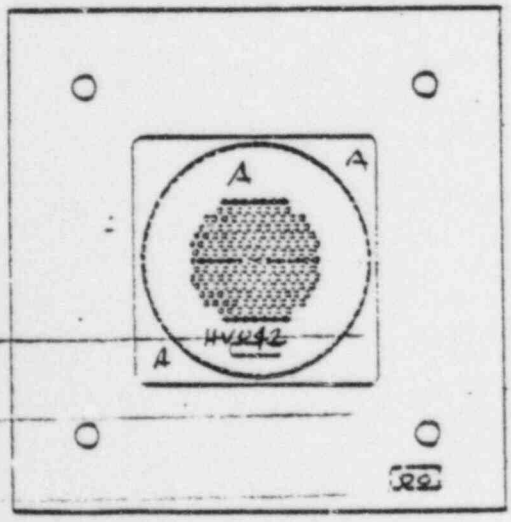
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE

REMARKS: TWO GREASE SHIMS. BUTTONHEADS IN GOOD SHAPE (VERY FEW SLIPS OBSERVED... NOT RECORDABLE) ANCHORHEAD RECENTLY GLASS BLASTED ... SHINY NEW APPEARANCE GASKET RETAINER PLATE HAS 'A' TYPE CORROSION

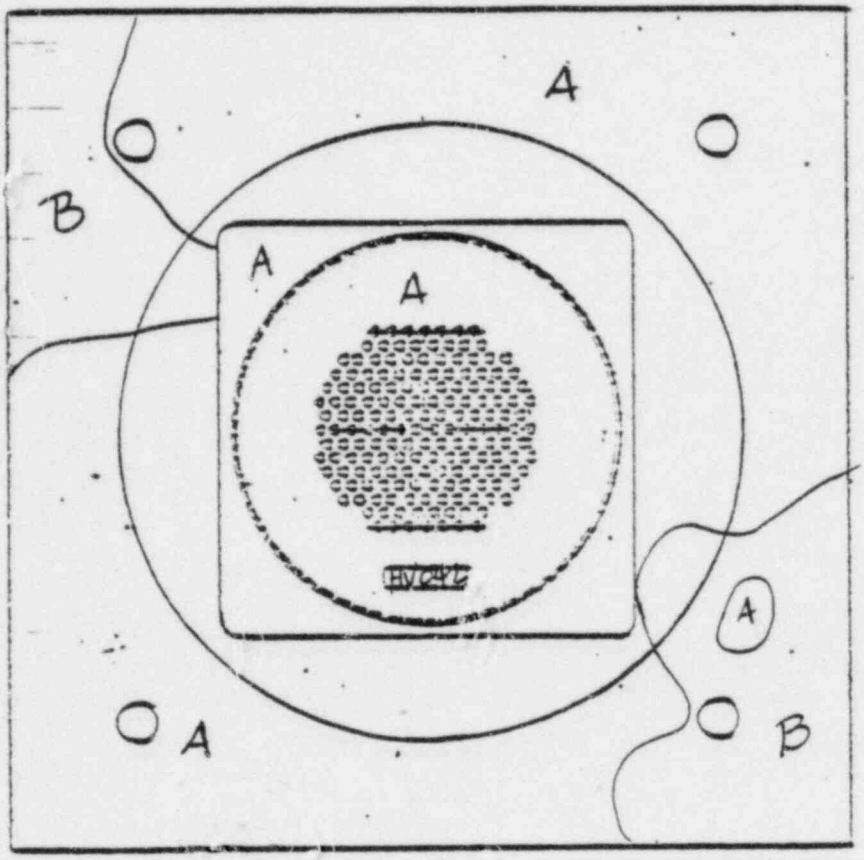
SKETCH



Date 5/11/85 Signature Joseph M. Hall

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. V-52



Date 5/11/85 Signature Joseph M. Hall

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

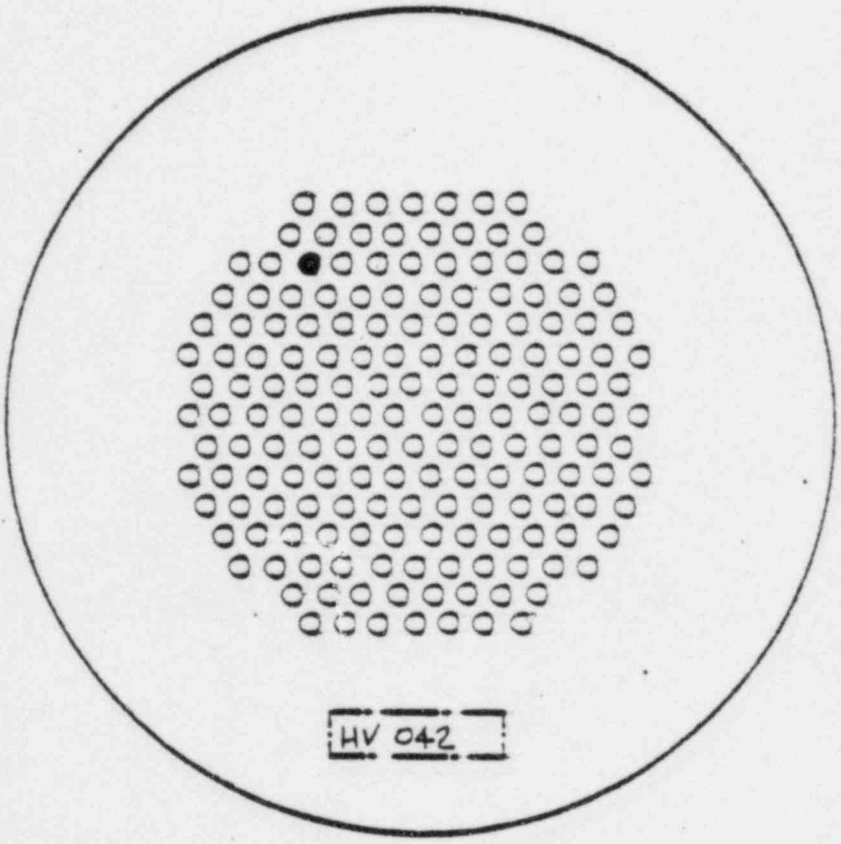
JOSEPH M. FARLEY NUCLEAR PLANT UNIT

FIELD END

TENDON V-52

Joseph M. Hall 15/11/85

SIGNATURE DATE



COMMENTS:

ONE MISSING BUTTONHEAD ... OVERALL BUTTONHEAD APPEARANCE IS ABOVE AVERAGE (BRIGHT SHINY METAL)

DATA SHEET 1

TENDON NO. V-79 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

DOME

2. Last Date Stressed 4-8-85

3. Anchor End Number from Stressing Card Field HP-095 FU 060 Shop HW 116

4. Previous Shim Thickness from Stressing Card Field 6.4" Shop 8.4"

5. Remove Tendon End Cap JMH (Initials) 1500 (Time) 5/11/85 (Date)

6. Visual Examination of Bulk Filler Grease NEW, COLD PACIC GREASE BY INRYCO, GREASE CAN CLEAN WITH NO MOISTURE PRESENT

JMH 5/11/85 Initial/Date

7. Grease Sample Taken BY INRYCO JMH 5/11/85 Initial/Date

8. Bulk Filler Removed (Gal). 1/2 GAL & INRYCO DATA JMH 5/11/85 Initial/Date

9. Anchor End Number As Found HW116 / FU 060 JMH 5/11/85 Initial/Date

10. Shim Thickness As Found 8 3/8" JMH 5/11/85 Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

JMH 5/11/85 Initial/Date

DATA SHEET 1

TENDON NO. V-79 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? SOL 15-11-85
Initial/Date

13. Tendon End Caps Re-installed JMH 15/11/85
Initial/Date

14. Tendon Re-greasing: BY INRYCO
Data transferred from procedure SQ 126

Date 5/15/85

Temperature of Grease in Bulk Container 171°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6202

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBK 1 8/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-79
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: HW116/FU060
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A WITH SMALL B
Cracks: NONE

BEARING PLATE

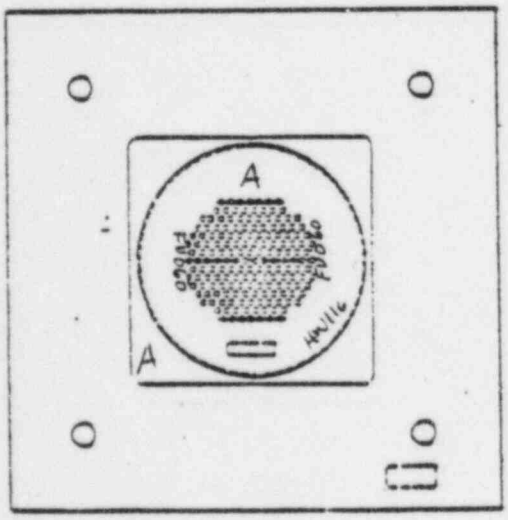
Degree of Corrosion: A & B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE VISABLE — HYPALON COATING ON CONCRETE

REMARKS: GOOD SHIM STACK GAP (<1/4") BUSHING FULLY ENGAGED GASKET RETAINER PL HAS OVERALL 'D' TYPE CORROSION LEVEL

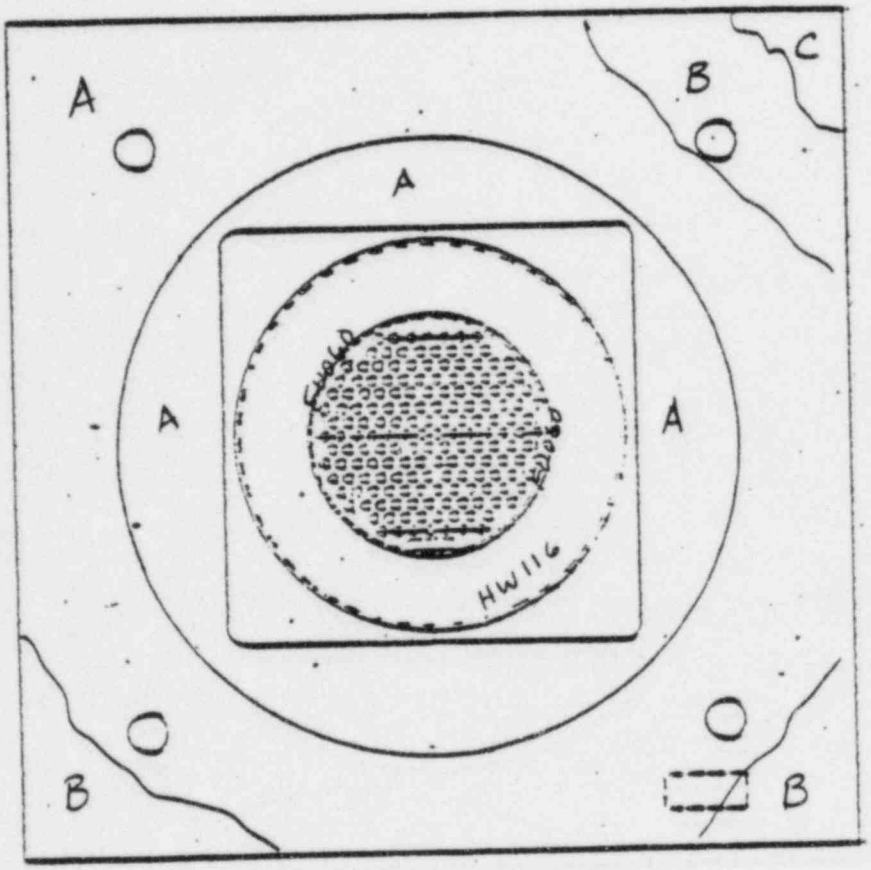
SKETCH



Date 5/11/85 Signature Joseph M Hall

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. V-79.



Date 5/1/85 Signature Joseph M. Hall

LEGEND FOR BUTTONHEADS

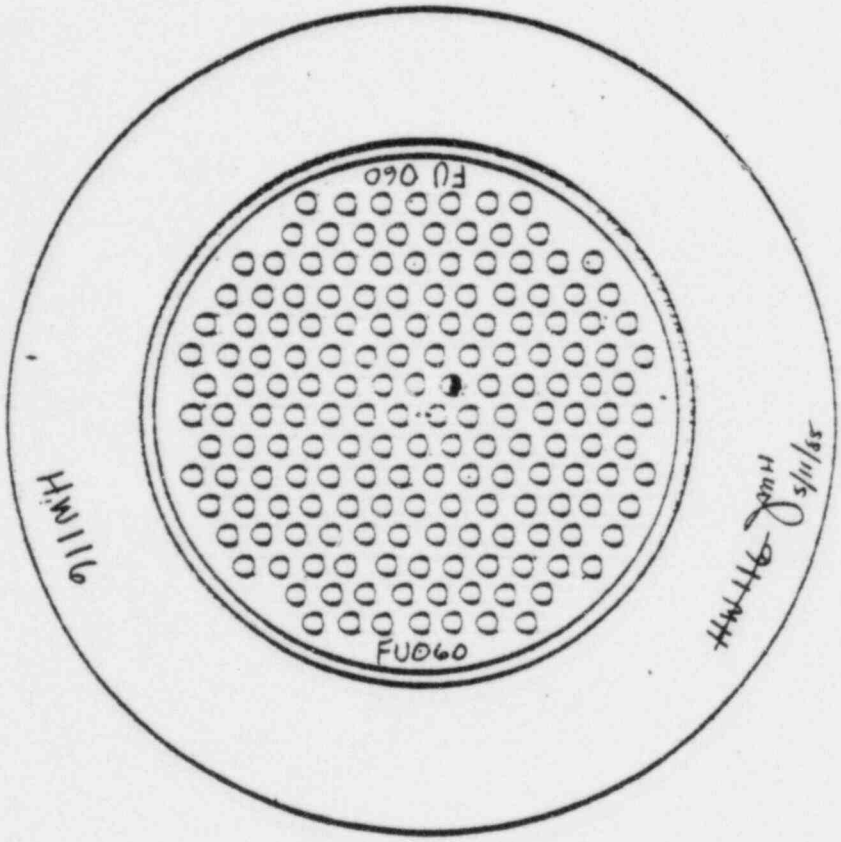
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead ~~with~~ Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON V-79

SIGNATURE J. M. Hall DATE 5/11/85



COMMENTS:

1 SPLIT ≈ 0.11" WIDE < 0.12" ∴ O.K.

DATA SHEET 1

TENDON NO. V-79 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

GALLERY

2. Last Date Stressed 4-8-85

3. Anchor End Number from Stressing Card Field HP-095
Shop FU-060 HW-116

4. Previous Shim Thickness from Stressing Card Field 6.4"
Shop 8.4"

5. Remove Tendon End Cap SDL / 1100 / 5-11-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease CLEAN, TAN WITH SOME BLACK GREASE, NO MOISTURE, GREASE CAN FILLED BY INRYCO UNTIL FULL GREASING PGM. IMPLEMENTED GOOD COVERAGE
SDL / 5-11-85
Initial/Date

7. Grease Sample Taken BY INRYCO
SDL / 5-11-85
Initial/Date

8. Bulk Filler Removed (Gal). 1/2 & SEE INRYCO DATA
SDL / 5-11-85
Initial/Date

9. Anchor End Number As Found HP 095
SDL / 5-11-85
Initial/Date

10. Shim Thickness As Found 6 7/16"
SDL / 5-11-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 1
Splits > .12" 0

SDL / 5-11-85
Initial/Date

DATA SHEET 1

TENDON NO. V-79 (FIELD) SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL / 5-11-85
Initial/Date

13. Tendon End Caps Re-installed SDL / 5-11-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO procedure SQ 12.6

Date (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

/
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-79
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 1

ANCHOR HEAD

Number: HP 095
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

BEARING PLATE

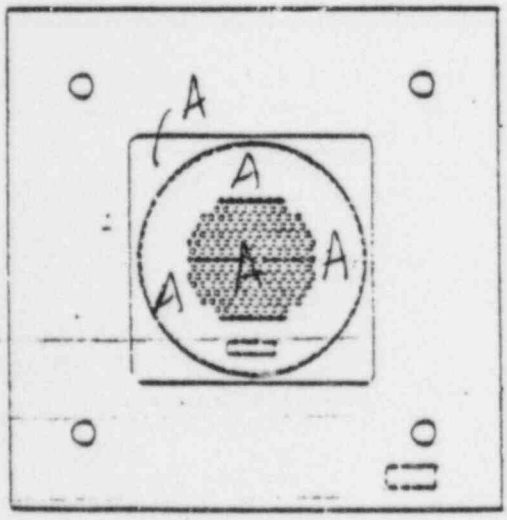
Degree of Corrosion: A WITH SMALL AMOUNTS OF B&C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.): NONE > 0.01"

REMARKS: ANCHORAGE LOOKS VERY GOOD, GOOD SHIM GAPS. RETAINER PLATE IN GOOD CONDITION HAS "A" WITH SLIGHT "B" CORROSION

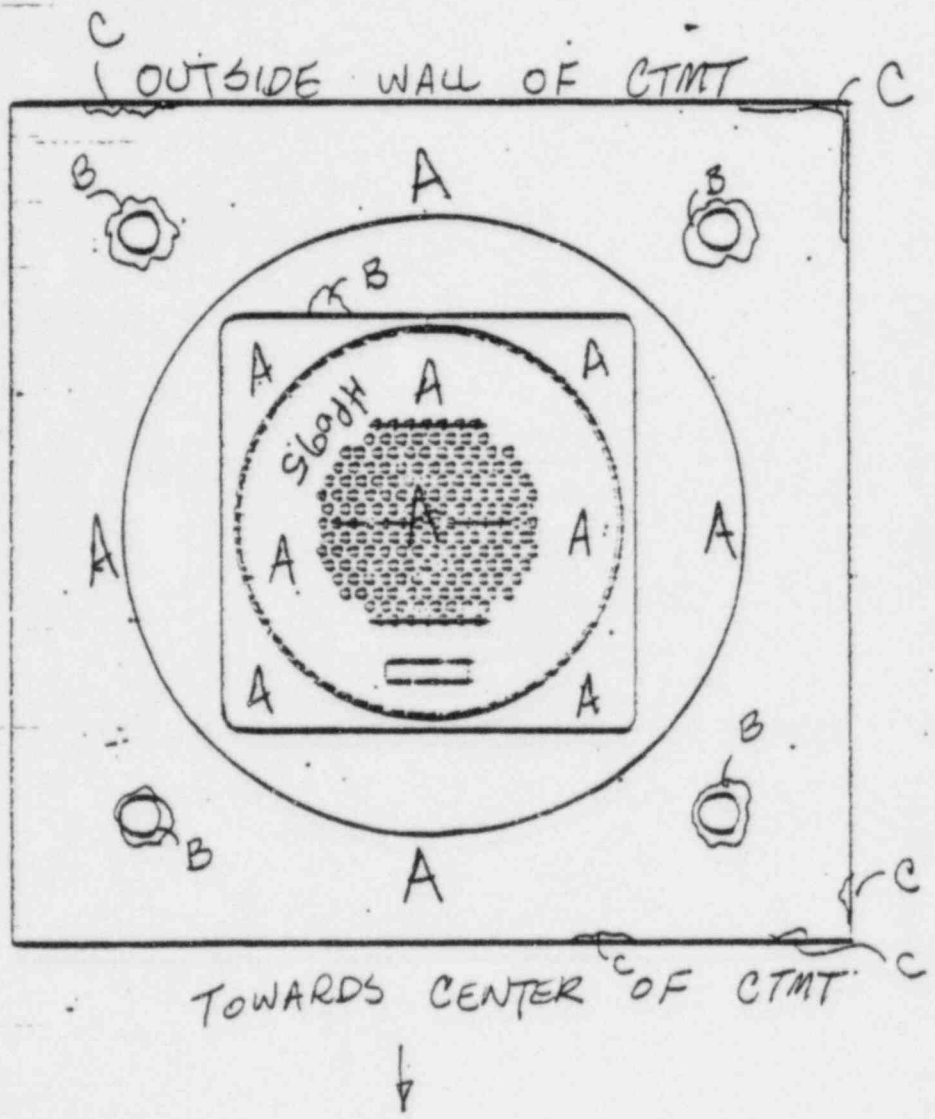
SKETCH



Date 5-11-85 Signature Steven D. Lowe

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. V-79



Date 5-11-85 Signature Steven D. Howe

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

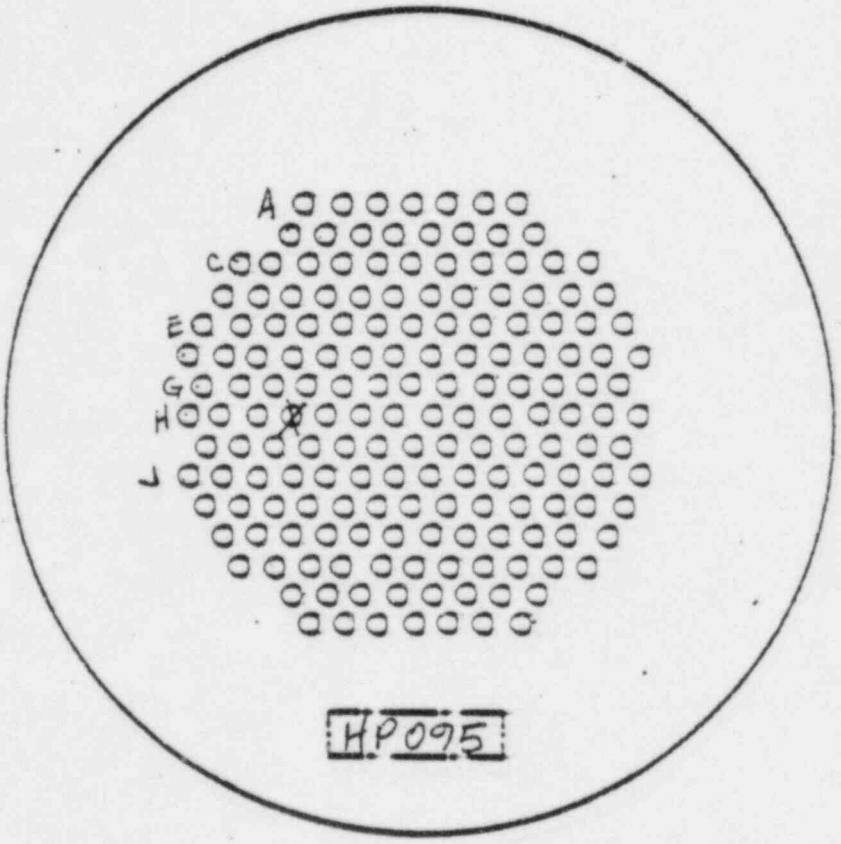
JOSEPH M. FARLEY NUCLEAR PLANT UNIT

FIELD END

TENDON V-79

Steven A. Lowe 15-11-85

SIGNATURE DATE



COMMENTS:

1 DOUBLE BUTTONHEAD H-4 (SEATED)

DATA SHEET 1

TENDON NO. V-100 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

   DOME

2. Last Date Stressed 3-19-85

3. Anchor End Number from Stressing Card — Field TCBC-11 / FD-142; Shop KA-069

4. Previous Shim Thickness from Stressing Card — Field 10.85"; Shop 4.3"

5. Remove Tendon End Cap — SDL / 1440 / 5-11-85 (Initials / Time / Date)

6. ~~Visual Examination~~ of Bulk Filler Grease GOOD NEW GREASE, ONLY COLD COATING PER INRYCO, NO MOISTURE, ANCHORAGE WELL COATED

   SDL / 5-11-85 (Initial/Date)

7. Grease Sample Taken BY INRYCO — SDL / 5-11-85 (Initial/Date)

8. Bulk Filler Removed (Gal). 1/2 & SEE INRYCO DATA BUSHING KA 069 — SDL / 5-11-85 (Initial/Date)

9. Anchor End Number As Found ANCHOR FD 142 — SDL / 5-11-85 (Initial/Date)

10. Shim Thickness As Found 4 5/16" — SDL / 5-11-85 (Initial/Date)

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

    Number of Buttonheads:
    - Missing 0
    - Misshaped 0
    - Splits > .12" 0

    SDL / 5-11-85 (Initial/Date)

DATA SHEET 1

TENDON NO. V-100 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL / 5-11-85
Initial/Date

13. Tendon End Caps Re-installed SDL / 5-11-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO
Data transferred from procedure SP 12.6

Date 5/13/85

Temperature of Grease in Bulk Container 165°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5928

Amount of Grease Replaced (Gal.) Entire Tendon

SDH / 6/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-100
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A with small amount of "B" (5% BH's)

Number missing, broken or damaged: 0

Cracks or splits: 0

Number not properly formed: 0

ANCHOR HEAD

Number: KA 069 FD142

Degree of Corrosion: A

Cracks: NONE

SHIMS

Degree of Corrosion: "A" with some "B"

Cracks: NONE

BEARING PLATE

Degree of Corrosion: "A" WITH ONE "C" AREA

Cracks: NONE

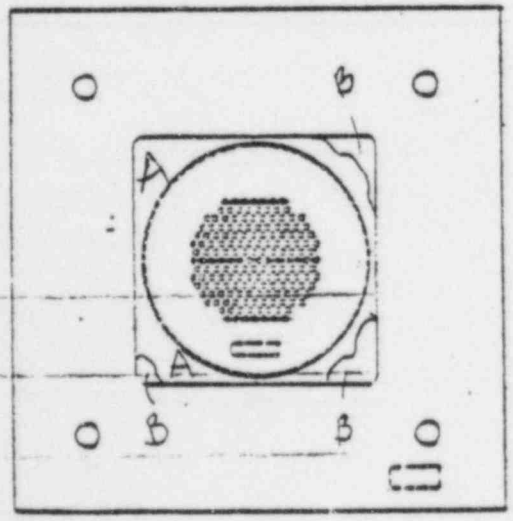
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.): NONE > 0.01" VISIBLE

REMARKS: ANCHORAGE LOOKS GOOD, SHIM GAP GOOD, "B" CORROSION ON SHIMS APPEARS TO HAVE BEEN PRESENT AT INSTALLATION NOT PROGRESSIVE, "C" CORROSION ON BEARING PLATE IS UNDER GASKET RETAINER PLATE, BEARING PLATE LOOK GOOD INSIDE PLATE WITH ONLY "A" CORROSION LEVEL PRESENT, GASKET RETAINER PLATE VERY CORRODED ON BOTTOM SIDE, TOP "A" WITH SOME "B"

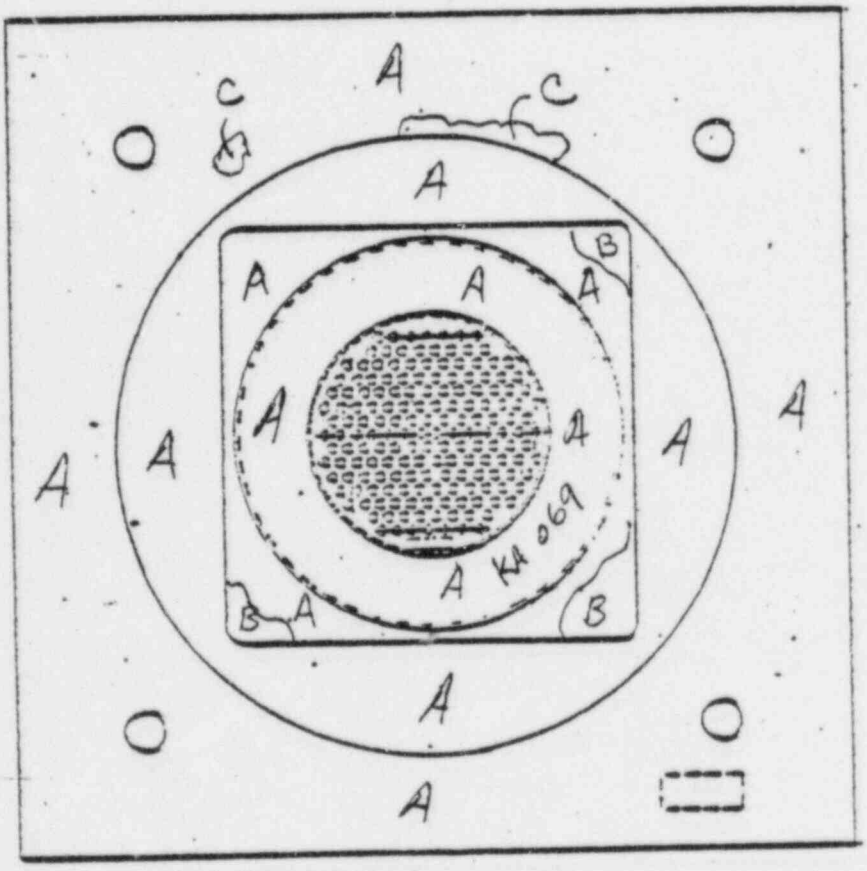
Date 5-11-85 Signature Steven D. Lowe

SKETCH



ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. V-10.0



TOWARDS ℄ CTMT

Date 5-11-85 Signature Steven D. Lowe

LEGEND FOR BUTTONHEADS

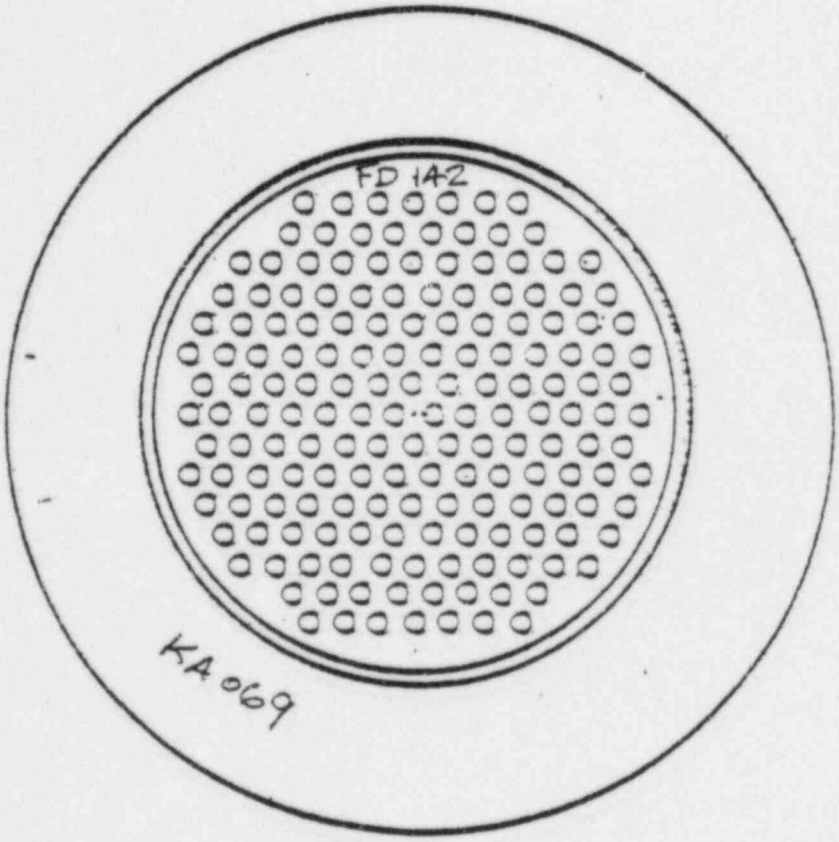
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON V-100

Steven D. Lowe 15-11-85
SIGNATURE DATE



COMMENTS:

Several splits but none > 0.12"

DATA SHEET 1

TENDON NO. V-100 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

GALLERY

2. Last Date Stressed 3-19-85

3. Anchor End Number from Stressing Card Field TC BC-11 FD-142
Shop KA-069

4. Previous Shim Thickness from Stressing Card Field 10.85"
Shop 4.3"

5. Remove Tendon End Cap JMH / 10:30 / 5-11-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease CLEAN, NEW GREASE, NO MOISTURE FOUND, GOOD CONSISTENCY

JMH / 5-11-85
Initial/Date

7. Grease Sample Taken PER INRYCO JMH / 5-11-85
Initial/Date

8. Bulk Filler Removed (Gal). 6½ & INRYCO DATA JMH / 5-11-85
Initial/Date

9. Anchor End Number As Found TC-B~~B~~C 11 JMH 5-11-85 JMH / 5-11-85
Initial/Date

10. Shim Thickness As Found 10 3/4" JMH / 5-11-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 1

Splits > .12" 0

JMH / 5-11-85
Initial/Date

DATA SHEET 1

TENDON NO. V-100 (FIELD)/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SOL / 5-11-85
Initial/Date

13. Tendon End Caps Re-installed _____ / 5-11-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO procedure SQ12.6

Date (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

_____ /
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. V-100
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A

~~Number missing~~, broken or damaged: 0

Cracks or splits: 0

Number not properly formed: 1

ANCHOR HEAD

Number: TC-BC-11

Degree of Corrosion: A

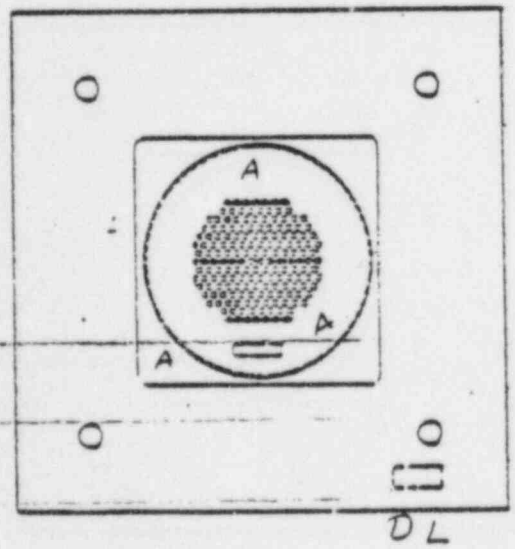
Cracks: NONE

SHIMS

Degree of Corrosion: A

Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A & B

Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE FOUND

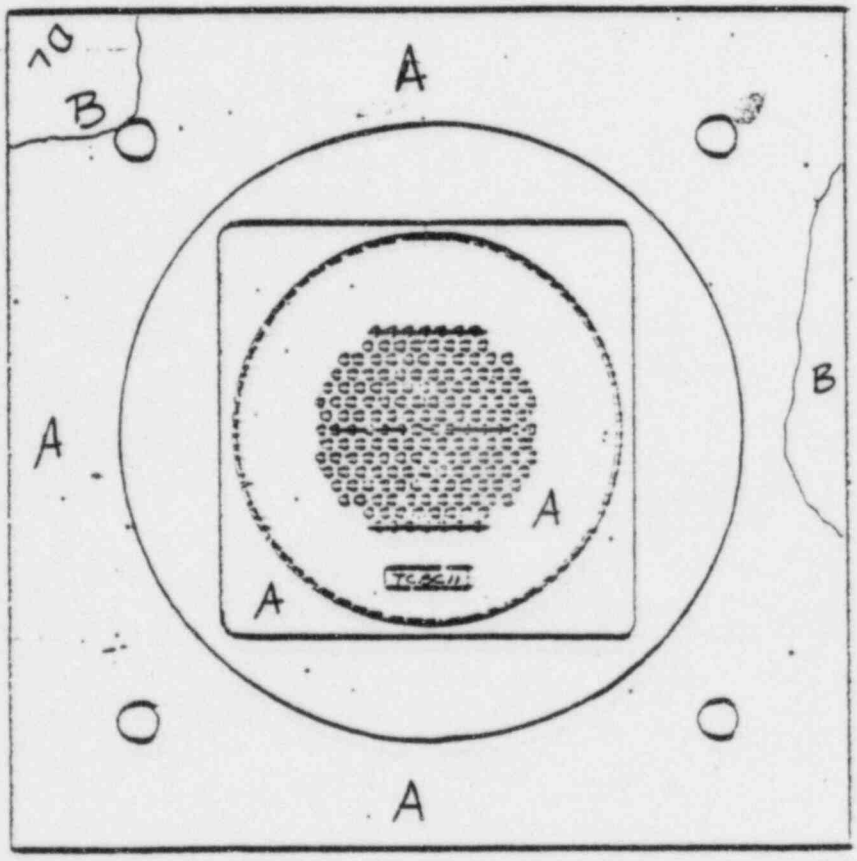
REMARKS:

END ANCHORAGE IN GOOD CONDITION. GASKET RETAINER PLATE HAS 'A' TYPE CORROSION LEVEL — 4 GREASE SHIMS IN SHIM STACK ... SHIM STACK GAP < 1/4" ON BOTH SIDES ADJACENT TO ANCHORHEAD.

Date 5-11-85 Signature Joyce M. Hall

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. V-100



Date 5-11-85 Signature Joseph M. Hall

LEGEND FOR BUTTONHEADS

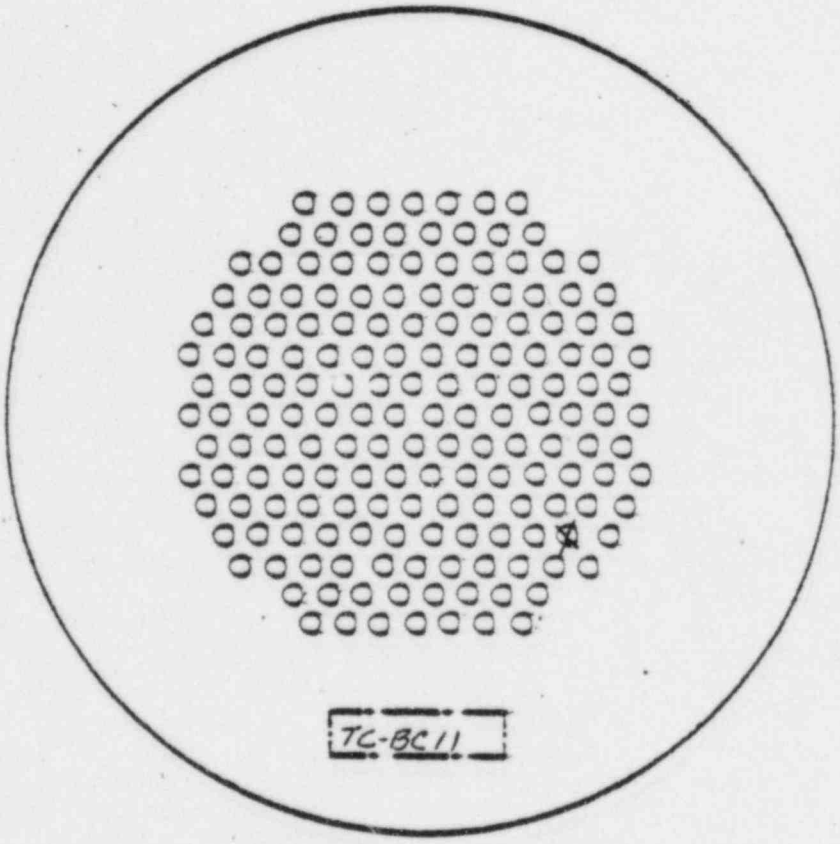
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON V-100

Joseph M. Stall 15-11-85
SIGNATURE DATE



COMMENTS:

1 DOUBLE BUTTONHEAD (SEATED)

DATA SHEET 1

TENDON NO. 1 DE FIELD (SHOP END) (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
   BUTTRESS "E"

2. Last Date Stressed 11-15-76

3. Anchor End Number from Stressing Card Field HP 103
   Shop KA 028

4. Previous Shim Thickness from Stressing Card Field 11"
   Shop 11 3/4"

5. Remove Tendon End Cap LNS / 0900 / 5-30-85
   Initials Time Date

6. Visual Examination of Bulk Filler Grease NO APPARENT FREE MOISTURE, BROWN COLOR - SMALL AMT. BLACK PERSERVATIVE, GOOD CONSISTENCY, GOOD COVERAGE
   LNS / 5-30-85
   Initial/Date

7. Grease Sample Taken LNS / 5-30-85
   Initial/Date

8. Bulk Filler Removed (Gal). ~~11~~ GAL. 4 Gal. 5-30-85 LNS
   LNS / 5-30-85
   Initial/Date

9. Anchor End Number As Found GT 081 KA 028 BUSH.
   LNS / 5-30-85
   Initial/Date

10. Shim Thickness As Found 11 7/8"
    LNS / 5-30-85
    Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

    Number of Buttonheads: Missing NONE
    Misshaped NONE
    Splits > .12" NONE
    LNS / 5-30-85
    Initial/Date

DATA SHEET 1

TENDON NO. 1 DE FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 5-30-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 5-30-85
Initial/Date

14. Tendon Re-greasing: PER INR4LO
Data transfered from procedure SQ 12.2

Date 5/31/85

Temperature of Grease in Bulk Container 220°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) Entire Tendon

LNS / 5-30-85
Initial/Date
DBH 8/7/85

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 1DE
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: NONE > 0.12"
Number not properly formed: NONE

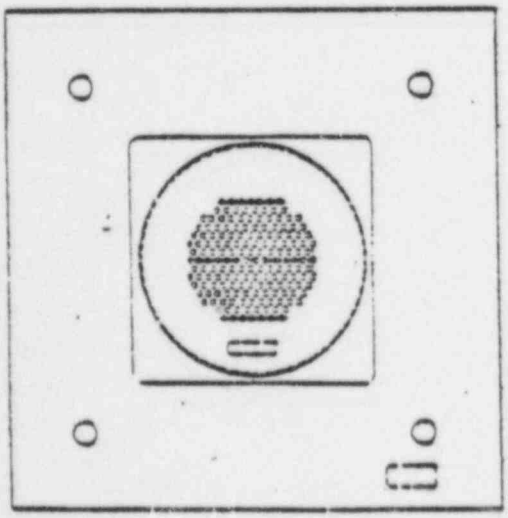
ANCHOR HEAD

Number: GT081
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A&B
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: B&C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.): NONE

REMARKS:

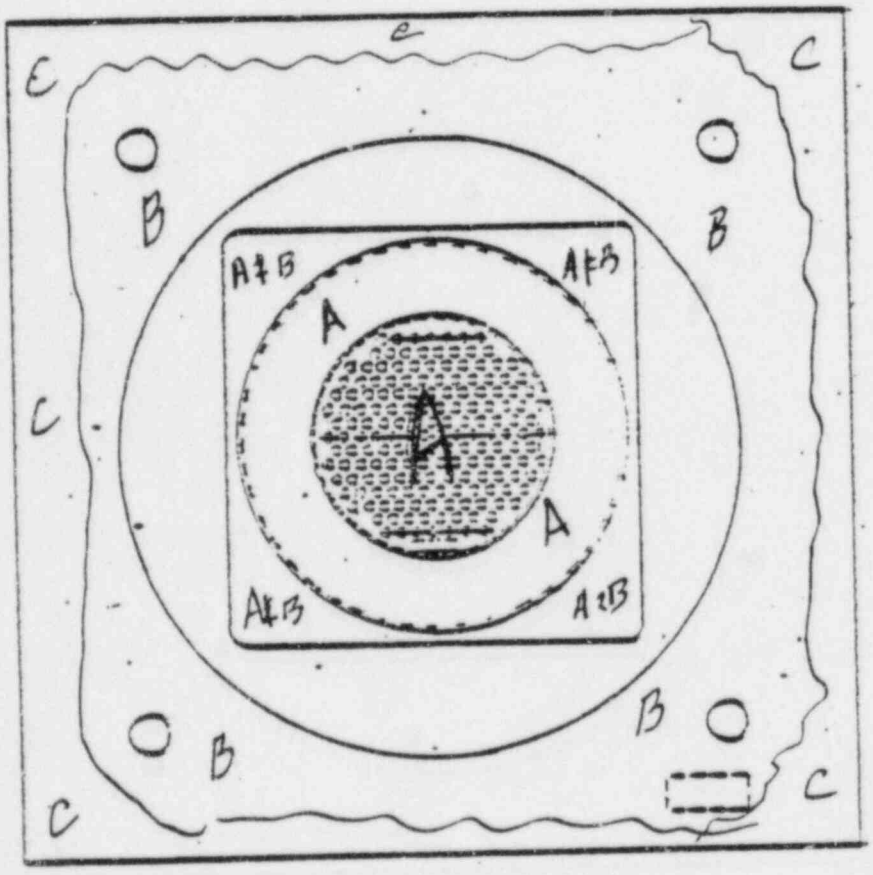
MUCH OF BEARING PLATE CORROSION APPEARS to be TRANSFERRED FROM metal RETAINER GASKET

APPROX. 3/8" GAP between halves OF 2 PAIRS 4" SHIMS ON OUTSIDE

Date 5-30-85 Signature T. Shannon

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 1DE



Date 5-30-85 Signature

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

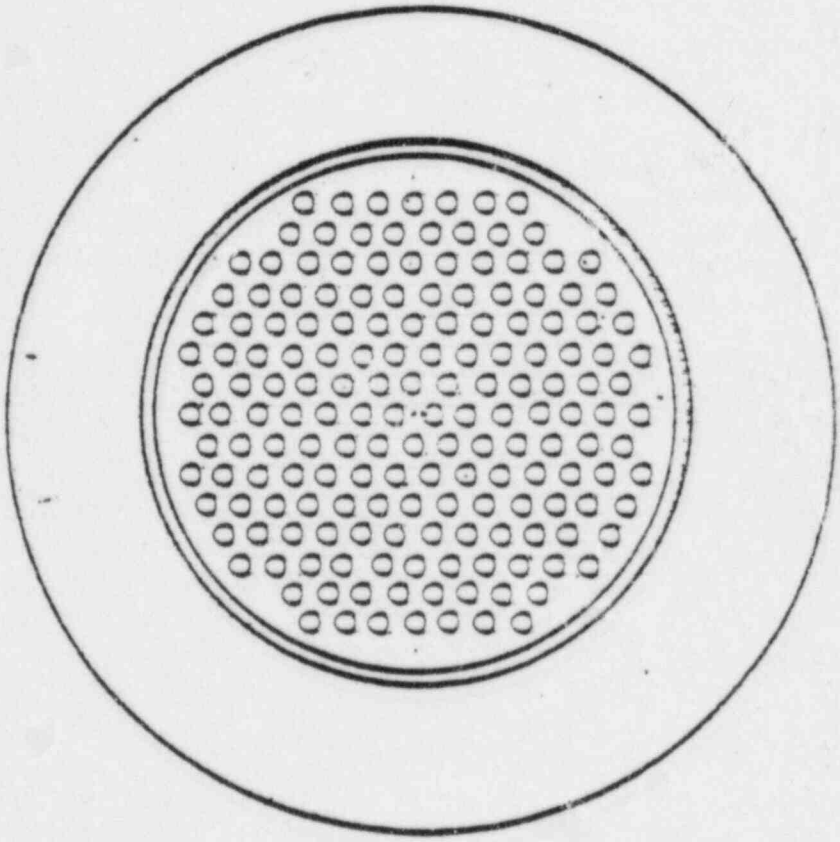
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON 1DE

SIGNATURE 15-30-85 DATE



COMMENTS:

9 9 2 2 5 0 0 3 9

TENDON STRESSING CARD

DATE 11-15-7

TENDON LOCATION H 1DE CTB JOB NO. 777-505 JOB 2401 EV UNIT 27

DO NOT EXCEED 80% OF ULT	
7602 KIPS	7600 PSI

LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO. 5		JACK NO.	
	GAUGE NO. 34		GAUGE NO.	
	END		END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 500 PSI		4.45 CTB		3.40
2. PRIOR TO STRESSING	1500	6.30	1500	
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	4100	10.30	4000	10.20
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		4.00		3.20
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	4100	4.30	4000	
6. (FULL RAM EXTENSION)	—	—	—	
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	
9. OVERSTRESS 7602 KIPS 7600 PSI	7600	9.00	7600	9.00
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-6+7+4)		8.70		8.10
11. LOCKOFF 7602 KIPS 6666 PSI TO 6970 PSI	6970		6800	

REMARKS RESTRESSED REFER NCR 505-F2

SHIMS	11 3/4"	SHIMS	11
FLD. HEAD	KA028	BUSHING	
BRG. PLATE	FC	BRG. PLATE	FC
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN [illegible]

Q.C. INSPECTOR [illegible] DATE 11-15-78

FORM 780 5/60 APRIL 1975 INRYCO an INLAND STEEL company

0 5 2 2 4 2 0 5 6

JOB NO. 21T-[illegible]

TENDON BUTTON HEADING CARD

JOB FARLEY UNIT 2

TENDON LOCATION: IED

DATE: 11-3-76

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
10% GO; NO-GO	(OK) 17	
SPLITS	(OK) 170	
ECCENTRICITY	(OK) 170	
TOTAL UNACCEPTABLE HEADS		0

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) NA

COMMENTS HP103

FOREMAN [illegible] Q.C. INSPECTOR Bobby Simmons DATE 11-3-76

FORM 790.65-60 APRIL 1979 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 1 DE FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "D"

2. Last Date Stressed 11-15-76

3. Anchor End Number from Stressing Card Field HP 103
Shop KA 028

4. Previous Shim Thickness from Stressing Card Field 11"
Shop 11 3/4"

5. Remove Tendon End Cap JMH / 1356 / 5/29/85
Initials Time Date

6. Visual Examination of Bulk Filler Grease Clean GREASE
CAN - ANCHORHEAD COLD PACKED PER INRYCO
No MOISTURE DETECTED
JMH / 5/29/85
Initial/Date

7. Grease Sample Taken SEE INRYCO DATA No Sample AVAILABLE FROM CAN JMH / 5/29/85
Initial/Date

8. Bulk Filler Removed (Gal). 0 JMH / 5/29/85
Initial/Date

9. Anchor End Number As Found HP 103 JMH / 5/29/85
Initial/Date

10. Shim Thickness As Found 10.9" JMH / 5/29/85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0

JMH / 5/29/85
Initial/Date

DATA SHEET 1

TENDON NO. 1DE FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ JMH / 5/29/85
Initial/Date

13. Tendon End Caps Re-installed JMH / 5/29/85
Initial/Date

14. Tendon Re-greasing: PER INRYCO
Data transferred from procedure SQ 12.7

Date 5/30/85

Temperature of Grease in Bulk Container 180°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 1 DE

FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A

Number missing, broken or damaged: 0

Cracks or splits: 0

Number not properly formed: 0

ANCHOR HEAD

Number: HP103

Degree of Corrosion: A & B

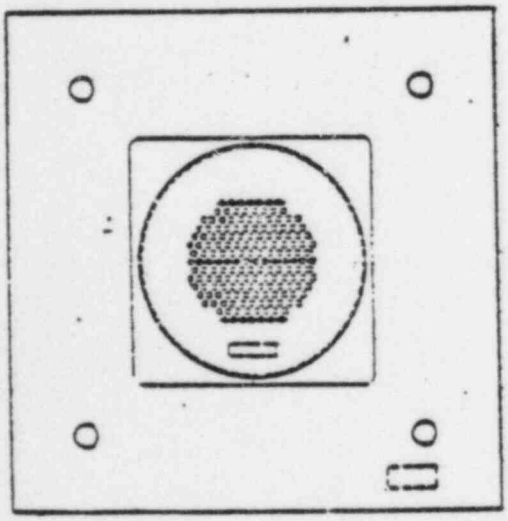
Cracks: NONE

SHIMS

Degree of Corrosion: A

Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A

Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NO CRACKS VISABLE...

PAINTED SURFACE .. NO CRACKING OR PEELING OF PAINT IN AREA

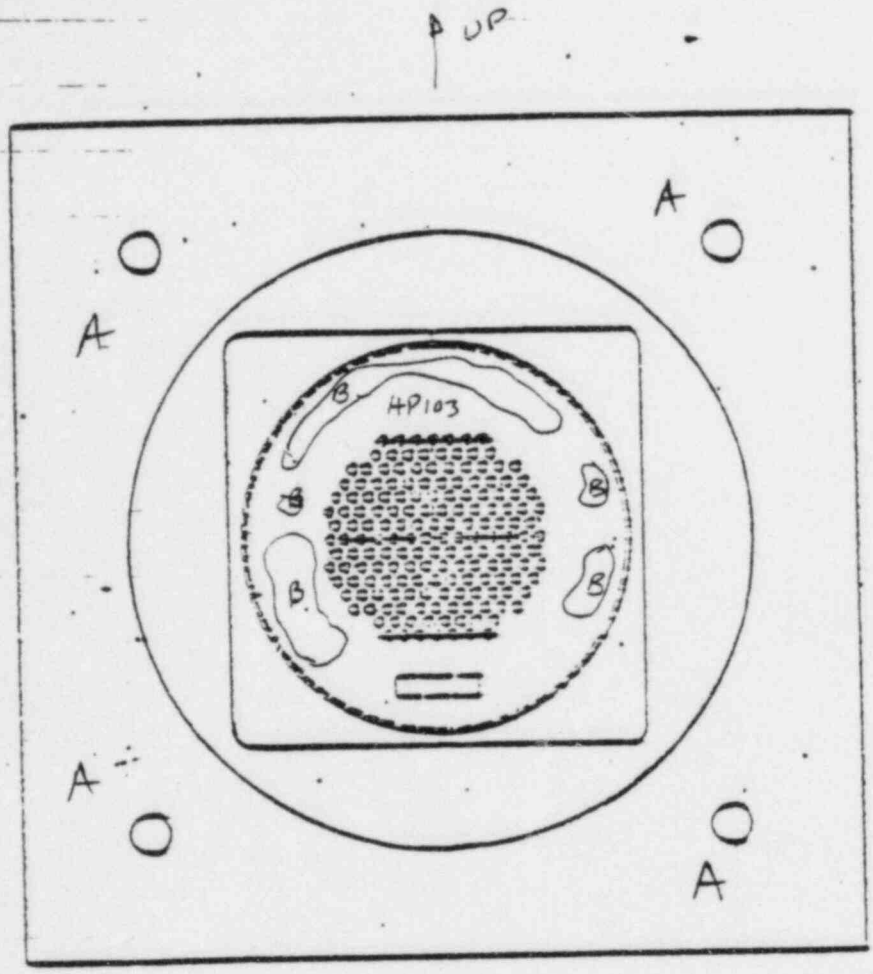
REMARKS: ANCHORAGE FOUND "COLD PACKED" BY INRYCO

LEVEL 'A' CORROSION ON GASKET RETAINER PLATE

Date 5/29/85 Signature J. M. Hall

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 1 DE



LEVEL 'B' CORROSION & WATER SPOTS ON ANCHORHEAD FACE.

Date 5/29/85 Signature Joseph M. Hall

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

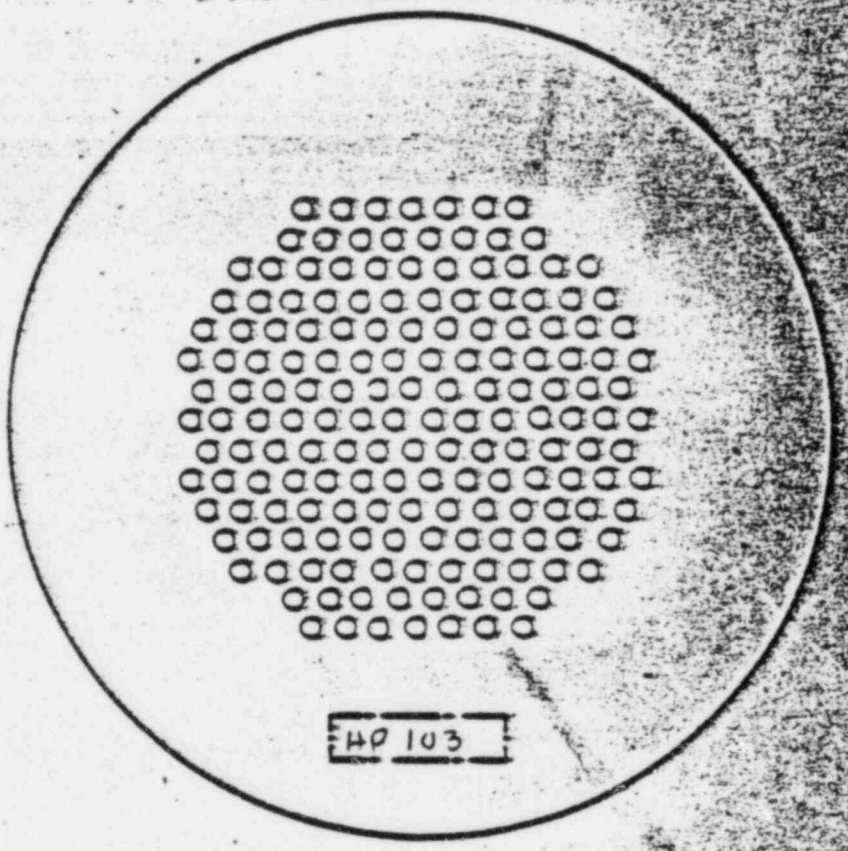
JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON 1 DE

Joseph M. Hall 3/29/85

SIGNATURE DATE



COMMENTS:

↓ UP

BUTTONHEADS HAVE SHINY NEW APPEARANCE

NO SPLITS > 0.12"

DATA SHEET 1

TENDON NO. 21 DE FIELD (SHOP END) (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

BUTTRESS "E"

2. Last Date Stressed 11-23-76

3. Anchor End Number from Stressing Card Field HP 093

Shop KA 049

4. Previous Shim Thickness from Stressing Card Field 11 3/4"

Shop 13"

5. Remove Tendon End Cap ~~1330~~ LNS 5-30-85 / 1330 / 5-30-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease No apparent free water, Light Brown & Good Consistency 80% Coverage

LNS / 5-30-85
Initial/Date

7. Grease Sample Taken LNS / 5-30-85
Initial/Date

8. Bulk Filler Removed (Gal). 7 1/2 Gal. LNS / 5-30-85
Initial/Date

9. Anchor End Number As Found GL 048 Bushing KA 049 LNS / 5-30-85
Initial/Date

10. Shim Thickness As Found 11 5/8" LNS / 5-30-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE

Misshaped NONE

Splits > .12" NONE

LNS / 5-30-85
Initial/Date

DATA SHEET 1

TENDON NO. 21 DE FIELD (SHOP END) (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 5-30-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 5-30-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO LNS 5-30-85 Data transferred from procedure SQ 12.7

Date 6/3/85

Temperature of Grease in Bulk Container 193 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) ENTIRE TENDON

SAH / 8/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 21 DE
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE

Cracks or splits: NONE
Number not properly formed: NONE

ANCHOR HEAD

Number: GL 048

Degree of Corrosion: A

Cracks: NONE

SHIMS

Degree of Corrosion: A & B

Cracks: NONE

BEARING PLATE

Degree of Corrosion: A, B & C

Cracks: NONE

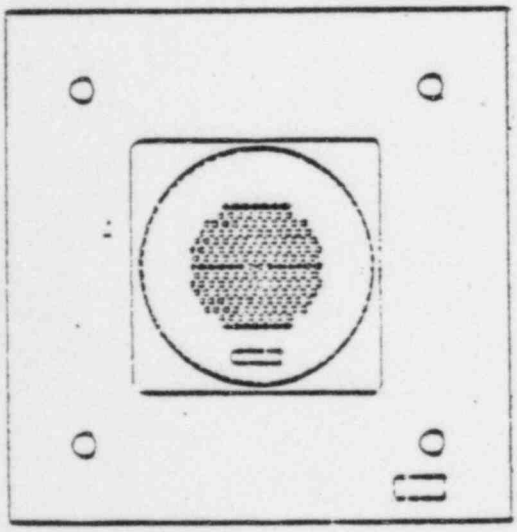
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE

REMARKS: SOME OF CORROSION ON BEARING plate TRANSFERRED FROM the RETAINER plate

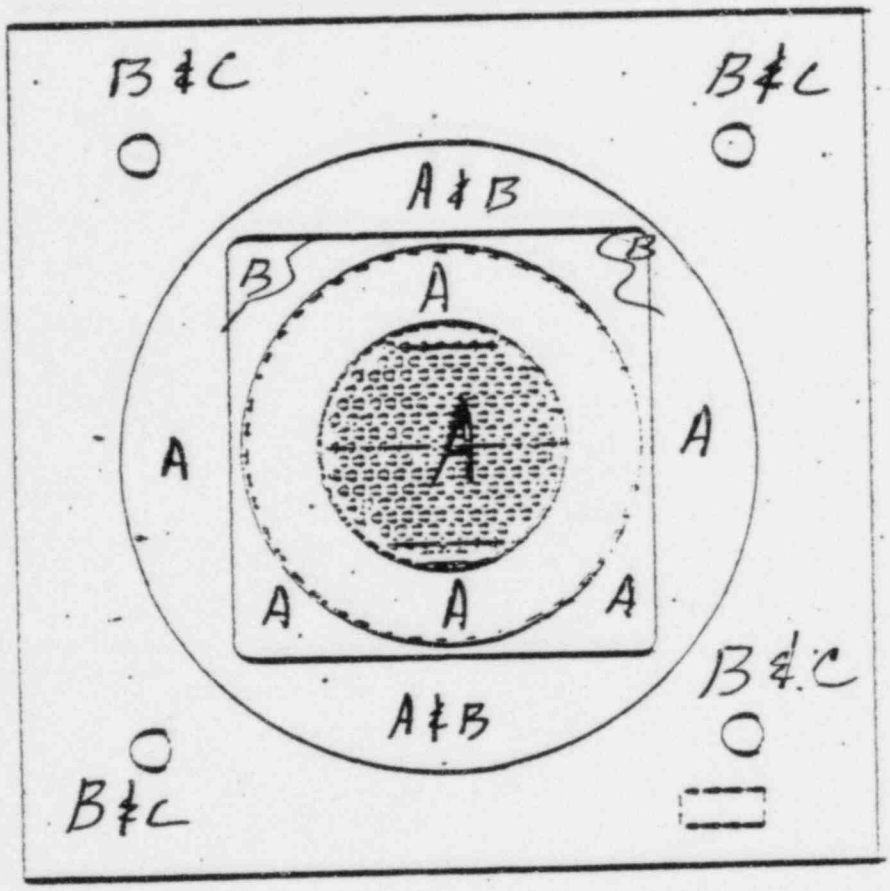
SKETCH



Date 5-30-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 21 DE



FNP-2-STP-609.

LEGEND FOR BUTTONHEADS

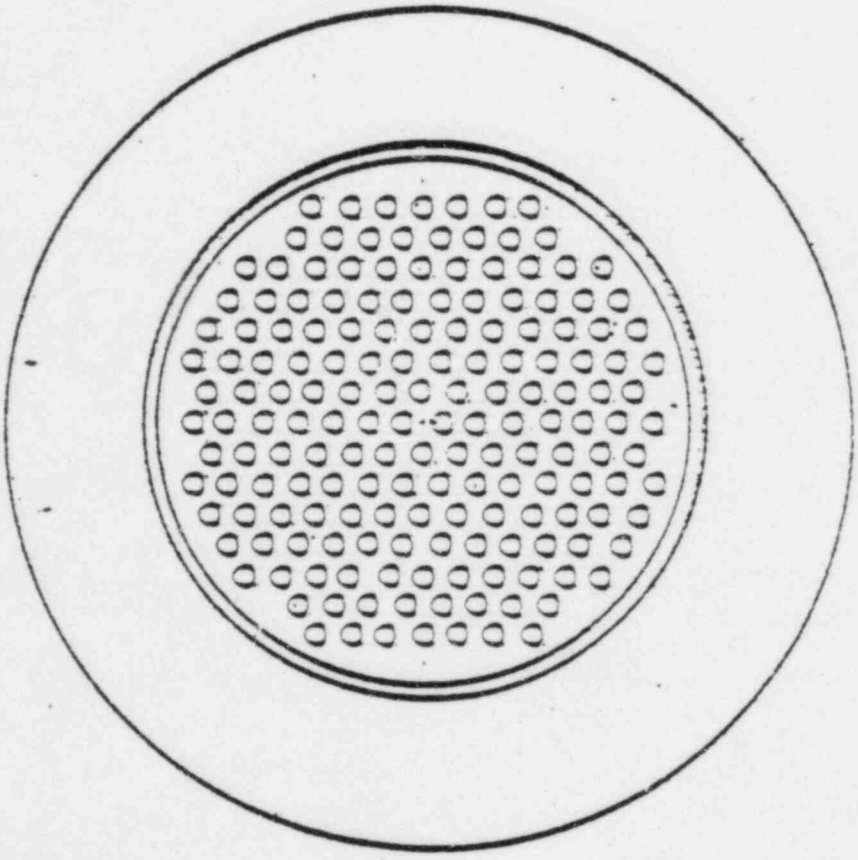
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON 21 DE

SIGNATURE 15-30 DAT



COMMENTS:

0 5 2 2 5 0 0 2 9

TENDON STRESSING CARD

DATE 11-23-72

TENDON LOCATION H 210E JOB NO. 71T-507 JOB FARLEY UNIT #2

DO NOT EXCEED 80% OF ULT
1602 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO. 5		JACK NO. 1	
	GAUGE NO. 34		GAUGE NO. 22	
	END		END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 500 PSI		7.15		
2. PRIOR TO STRESSING	1500	6.10	1500	7.30
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	3500	8.90	3500	10.[illegible]
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		2.80		3.[illegible]
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	3500	3.80	3500	4.70
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1602 KIPS 7600 PSI	7600	9.00	7600	10.[illegible]
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-6+7+4)		8.00		9.40
11. LOCKOFF 1402 KIPS 6646 PSI TO 6979 PSI	6860		6900	
SHIMS	1 3/4"		SHIMS	13"
FLD. HEAD	HP093		BUSHING	[illegible]
BRG. PLATE	None		BRG. PLATE	None
TENDON END PROTECTED	ok		TENDON END PROTECTED	OK

REMARKS

FOREMAN D. W. Hel[illegible]

Q.C. INSPECTOR C. J. Bell[illegible] DATE 11-23-72

FORM 780.67-40 APRIL 1979 INRYCO an INLAND STEEL company

* NOTE: COMPUTE ITEM 10 AS FOLLOWS:
[illegible] 2ND. STAGE (4+9-5) 3RD. STAGE (4+7+9-[illegible])

0 5 2 2 4 2 0 7 8

TENDON BUTTON HEADING CARD

JOB NO.: 21T[illegible]5

JOB: FARLEY UNIT 2

TENDON LOCATION: 21ED

DATE: 10-28-76

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO 109%	(OK) 17	
SPLITS	(OK) 170	
ECCENTRICITY	(OK) 170	
TOTAL UNACCEPTABLE HEADS		0

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) NA

COMMENTS HP093

FOREMAN [illegible] Q.C. INSPECTOR [illegible] DATE 10-28-76

FORM 780.65-60 APRIL 1975 SERVCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 21 DE (FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "D"

2. Last Date Stressed 11-23-76

3. Anchor End Number from Stressing Card Field HP093
Shop KA 049

4. Previous Shim Thickness from Stressing Card Field 11 3/4"
Shop 13"

5. Remove Tendon End Cap JMH / 14:32 pm / 5/29/85
Initials Time Date

6. Visual Examination of Bulk Filler Grease DARK BROWN
GOOD CONSISTENCY, NO MOISTURE IN CAN.
GOOD FULL COVERAGE ON ASSEMBLY
JMH / 5/29/85
Initial/Date

7. Grease Sample Taken JMH / 5/29/85
Initial/Date

8. Bulk Filler Removed (Gal). 4 1/2 GAL JMH / 5/29/85
Initial/Date

9. Anchor End Number As Found HP093 JMH / 5/29/85
Initial/Date

10. Shim Thickness As Found 12.9" JMH / 5/29/85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0
JMH / 5/29/85
Initial/Date

DATA SHEET 1

TENDON NO. 21 DE (FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ MH / 5/29/85
Initial/Date

13. Tendon End Caps Re-installed MH / 5/29/85
Initial/Date

14. Tendon Re-greasing: BY INRYCO
Data transferred from procedure SQ12.7

Date 5/30/85

Temperature of Grease in Bulk Container 190°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) Entire Tendon

DBH / 8/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 21 DE
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

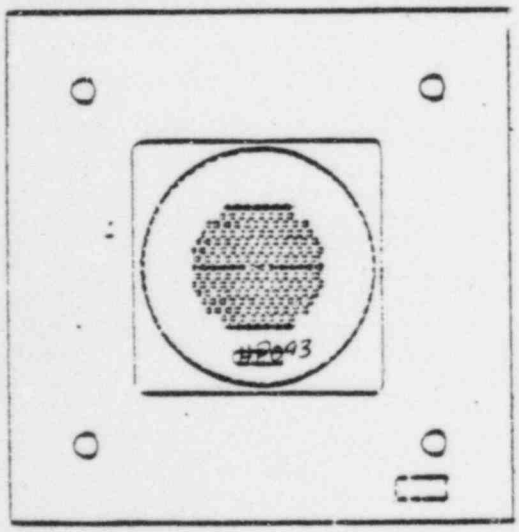
ANCHOR HEAD

Number: HP093
Degree of Corrosion: A w/B
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A w/B
Cracks: NONE

ANCHORAGE AREA CONCRETE

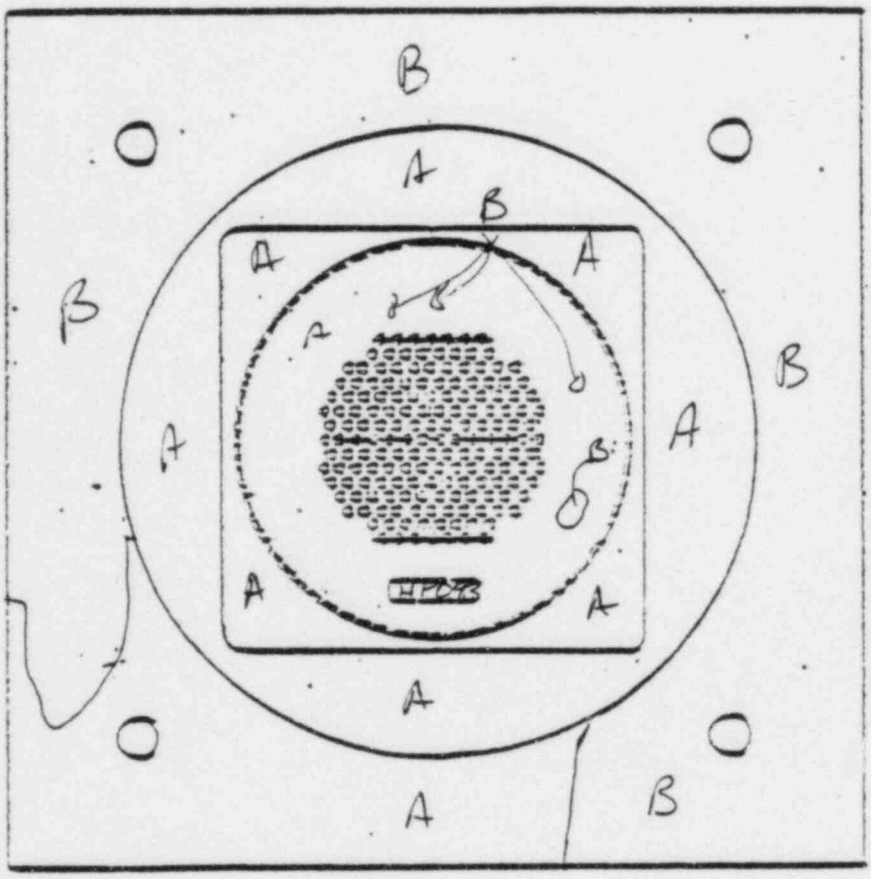
Cracks (width >0.01 in.)
NONE VISABLE - PAINTED SURFACE WITH NO CRACKING OR PEELING OF PAINT.

REMARKS: SHIM STACK LOOKS GOOD, GAP ≤ 1/4" ON BOTH SIDES. WATER SPOTS? TURNED TO 'B' LEVEL OF CORROSION ON ANCHORHEAD GASKET RETAINER PLATE HAS MOSTLY B LEVEL WITH A.

Date 5/29/85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 21 DE



SPOTTY PATCHES OF 'B' ON ANCHORHEAD FACE

Date 5/29/85 Signature Joseph M. Hall

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ ~~Buttonhead with~~ Split (Document the Split Size)

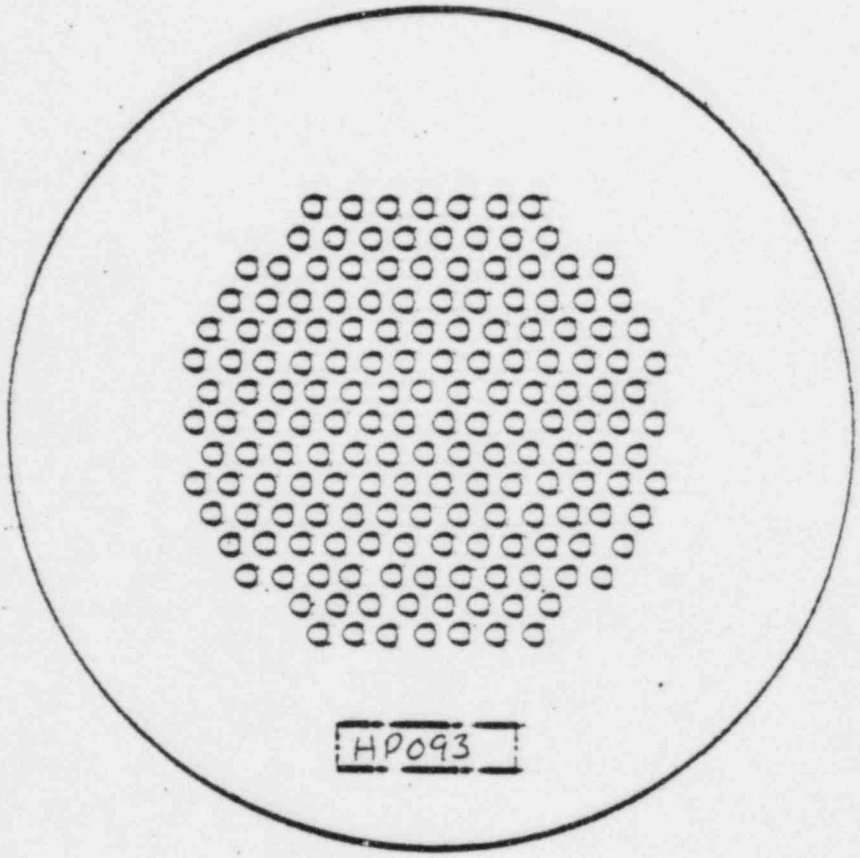
JOSEPH M. FARLEY NUCLEAR PLANT UNIT

FIELD END

TENDON ~~5~~ 21DE

Joseph M. Hall 5/21/85

SIGNATURE DA



COMMENTS:

NO SPLITS OR SLIPS, MISSING OR UNSEATED BUTTONHEADS OUTSIDE OF ACCEPTANCE LIMITS

BUTTONHEADS ~~HAVE~~ HAVE NEW SHINEY APPEARANCE

DATA SHEET 1

TENDON NO. 28 DE FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS ~~"D"~~ "E" LNS 5-30-85

2. Last Date Stressed 5-12-77

3. Anchor End Number from Stressing Card Field LS 013
Shop LG 031

4. Previous Shim Thickness from Stressing Card Field 13"
Shop 11 1/8"

5. Remove Tendon End Cap LNS / 1450 / 5-30-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease NO APPARENT FREE MOISTURE, GOOD CONSISTENCY, LIGHT BROWN, GOOD (1-70) COVERAGE
LNS / 5-30-85
Initial/Date

7. Grease Sample Taken LNS / 5-30-85
Initial/Date

8. Bulk Filler Removed (Gal). 6 GAL. LNS / 5-30-85
Initial/Date

9. Anchor End Number As Found GT 066 Bushing LG 031 LNS / 5-30-85
Initial/Date

10. Shim Thickness As Found 11 1/8" LNS / 5-30-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE
Misshaped NONE
Splits > .12" NONE

LNS / 5-30-85
Initial/Date

DATA SHEET 1

TENDON NO. 28 DE FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 5-30-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 5-30-85
Initial/Date

14. Tendon Re-greasing: Per INRYCO 5-30-85 LNS Data transfered from procedure SQ 12.7

Date 6/4/85

Temperature of Grease in Bulk Container 180 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 28 DE
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: None
Cracks or splits: None
Number not properly formed: NONE

ANCHOR HEAD

Number: GT 066
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: None

BEARING PLATE

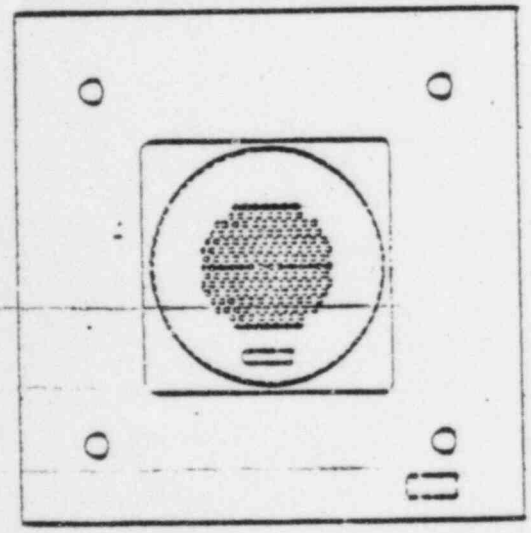
Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.): NONE

REMARKS: Some corrosion on bearing plate from retainer plate

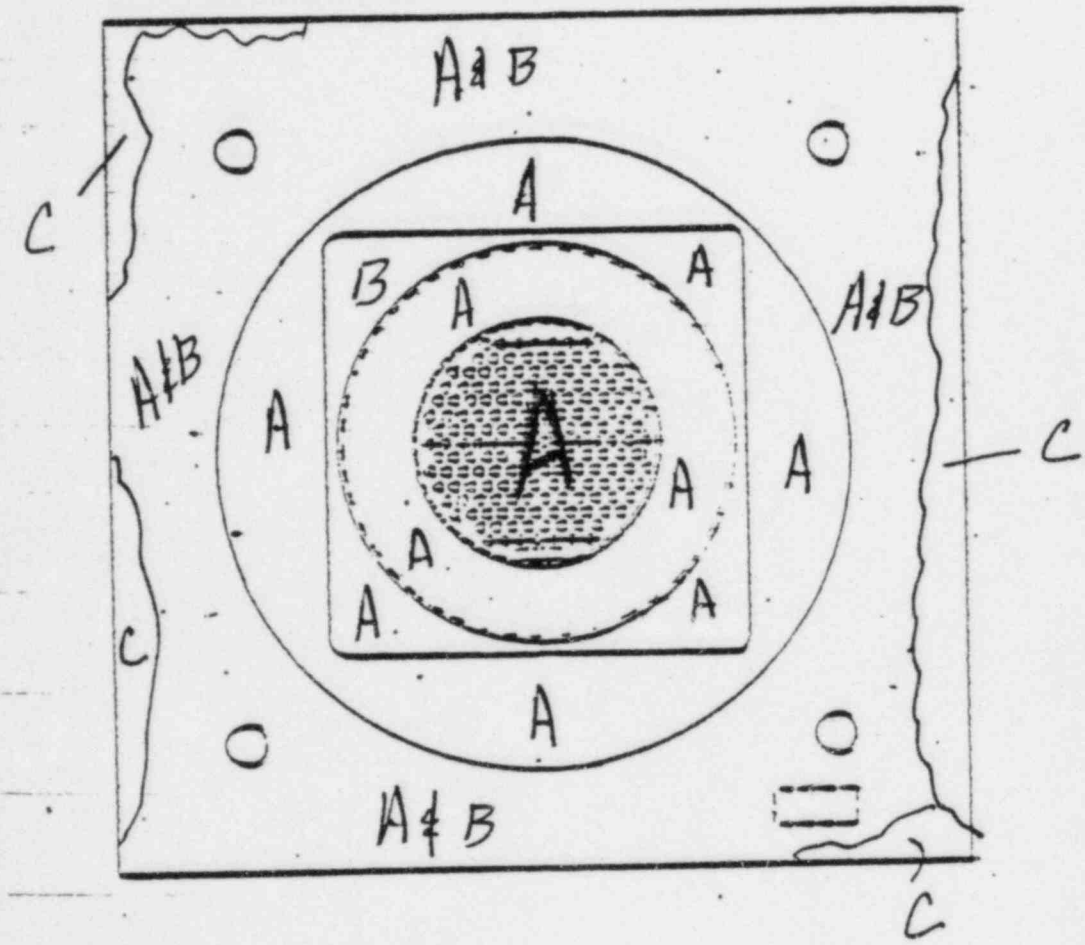
SKETCH



Date 5-30-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 28 DE



JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

LEGEND FOR BUTTONHEADS

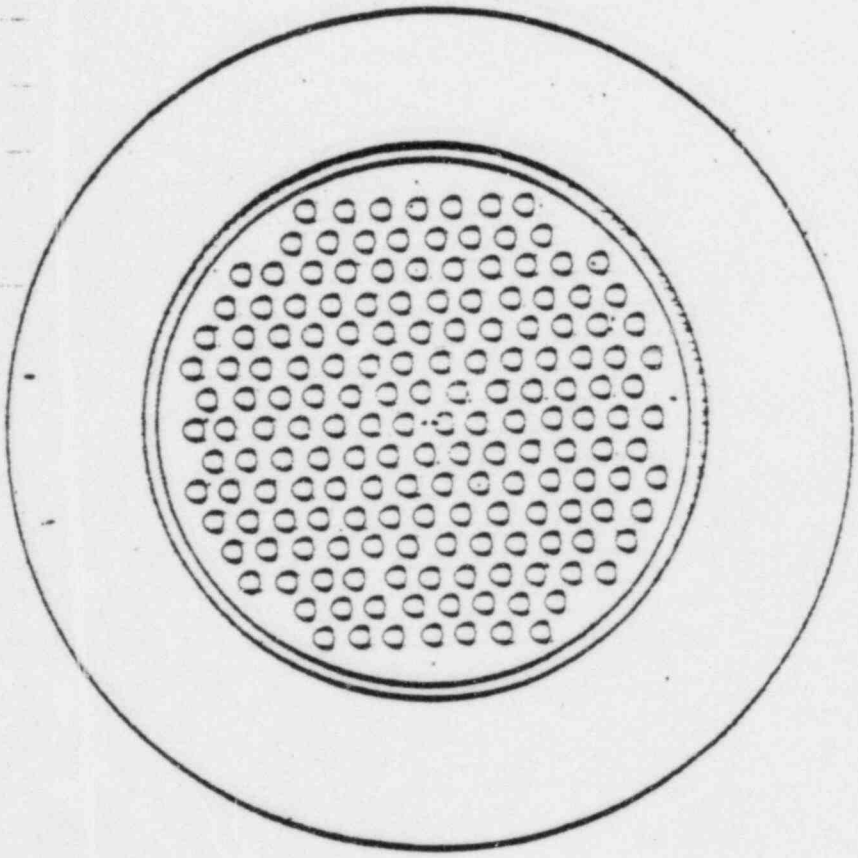
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

SHOP END

TENDON 28 DE

SIGNATURE

5-30-85
DATE



COMMENTS:

0 5 2 2 5 0 0 3 6

TENDON STRESSING CARD

DATE 5-12-77

TENDON LOCATION H 280F JOB NO. 777-505 JOB CARNEY UNIT 37

DO NOT EXCEED 80% OF ULT
1602 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO. 1 / GAUGE NO. 12 / END		JACK NO. / GAUGE NO. / END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 1500 PSI		9.75		
2. PRIOR TO STRESSING	1500	6.10	1500	
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	3500	8.80	3500	
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		2.70		
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	3500	4.00	3500	
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1602 KIPS (7600) PSI	7600	9.50	7600	
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (3+4+7+8) 6931		8.20		
11. LOCKOFF 1402 KIPS 6646 PSI TO 1402 PSI	6700		6700	

REMARKS

SHIMS 11½" SHIMS 13"

BUSHING SLD. HEAD 46031 RLD HD BUSHING 45013

FOREMAN [signature] BRG. PLATE None BRG. PLATE None

Q.C. INSPECTOR C. Bell DATE 5-12-77 TENDON END PROTECTED ok TENDON END PROTECTED ok

FORM 780.67-60 APRIL 1975 INRYCO an INLAND STEEL company

* NOTE: COMPUTE ITEM 10 AS FOLLOWS:
[illegible] STAGE (440-5) + 320, STAGE (4+7+4+8)

0 5 2 2 4 2 0 8 1

JOB NO. 21T[illegible]

TENDON BUTTON HEADING CARD

JOB: FARLEY UNIT 2

TENDON LOCATION: 29ED

DATE: 3-21-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 168	2
SPLITS	(OK) 170	0
ECCENTRICITY	(OK) 170	0
TOTAL UNACCEPTABLE HEADS		2

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS L5013 Two (2) double heads

FOREMAN Fred Lingle Q.C. INSPECTOR R. J. Beck DATE 3-21-77

FORM 790.65-60 APR. 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 28 DE (FIELD) SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
   BUTTRESS "D" LNS 5-31-85

2. Last Date Stressed 5-12-77

3. Anchor End Number from Stressing Card — Field LS 013
   Shop LG 031

4. Previous Shim Thickness from Stressing Card — Field 13"
   Shop 11 1/8"

5. Remove Tendon End Cap — LNS / 1030 / ~~6-6~~ LNS 6-1-85
   Initials / Time / Date

6. Visual Examination of Bulk Filler Grease DARK BROWN with sm. amt. of BLACK PERSERVATIVE, NO apparent moisture, 100% coverage
   LNS / 6-1-85
   Initial/Date

7. Grease Sample Taken — LNS / 6-1-85
   Initial/Date

8. Bulk Filler Removed (Gal). 4 Gal. — LNS / 6-1-85
   Initial/Date

9. Anchor End Number As Found LS 013 — LNS / 6-1-85
   Initial/Date

10. Shim Thickness As Found 12 1/2" — LNS / 6-1-85
    Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

    Number of Buttonheads: Missing NONE
    Misshaped 2
    Splits > .12" NONE

    LNS / 6-1-85
    Initial/Date

DATA SHEET 1

TENDON NO. 28 DE (FIELD) SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 6-1-85
Initial/Date

13. Tendon End Caps Re-installed PER INR4LO 6-1-85 LNS LNS / 6-1-85
Initial/Date

14. Tendon Re-greasing: Data transfered from procedure SQ 12.4

Date 6/4/85

Temperature of Grease in Bulk Container 152 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 6/7/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 28 DE
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: NONE
Number not properly formed: 2

ANCHOR HEAD

Number: LS 013
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

BEARING PLATE

Degree of Corrosion: A, B & C
Cracks: NONE

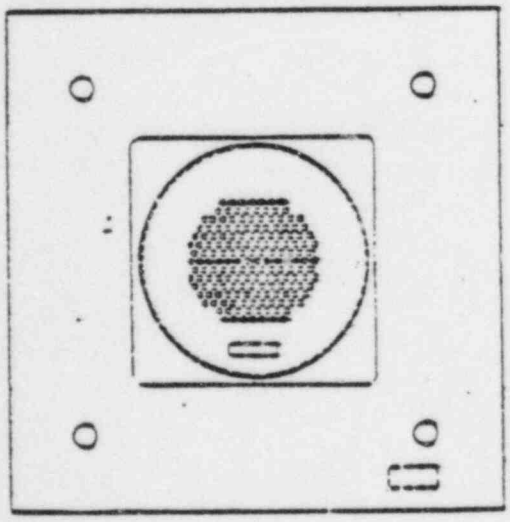
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE

REMARKS: Some of corrosion on bearing plate appears to have been transferred from the retainer plate

1/2" Gap bet. outside 4' shim Halves, on Top

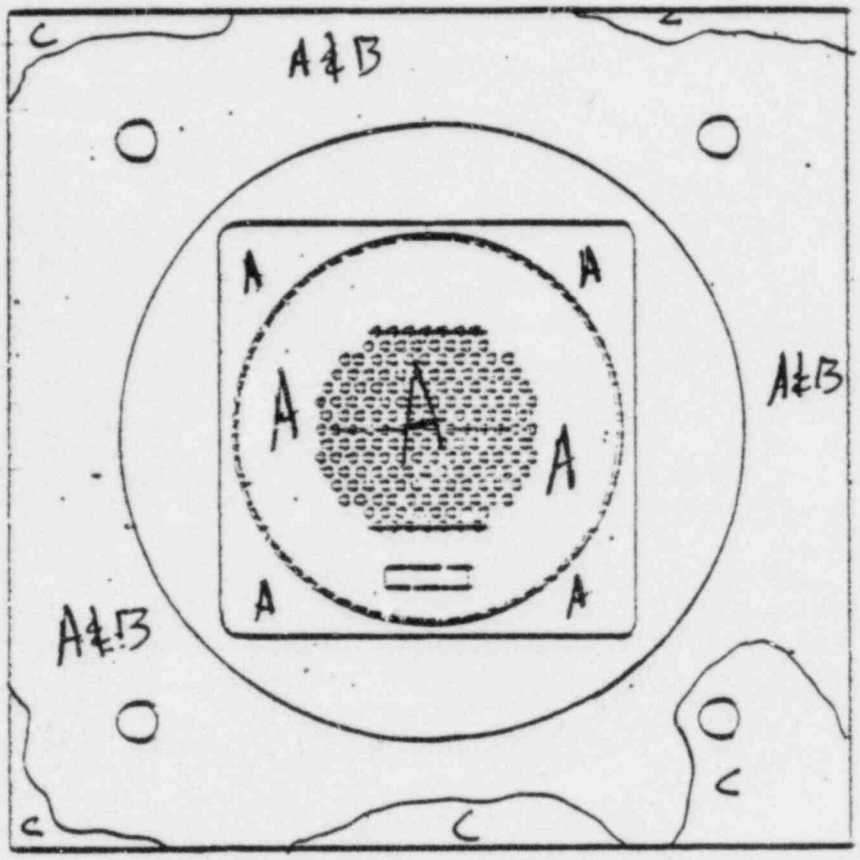
SKETCH



Date 6-1-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 28 ~~FE~~ DE



Date 6-1-85 Signature T. T. Simmons

LEGEND FOR BUTTONHEADS

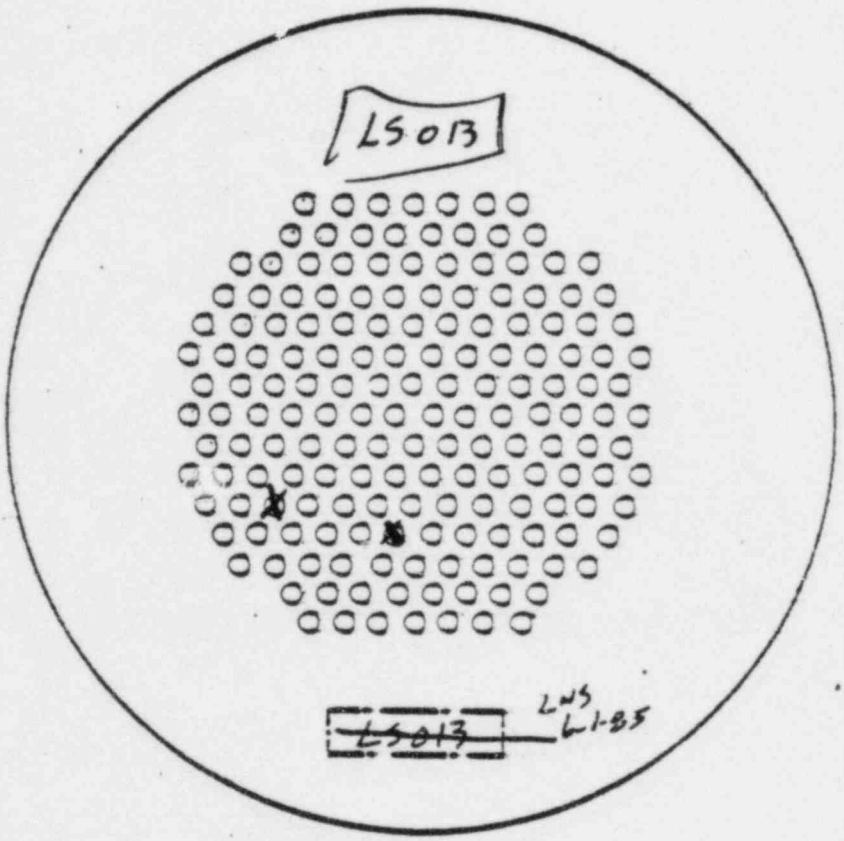
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ ~~Buttonhead with~~ Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

FIELD END

TENDON 28 DE

SIGNATURE 6-1-85 DATE



COMMENTS:

2 Double Buttonheads

DATA SHEET 1

TENDON NO. 45 DE FIELD (SHOP END) (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "E"

2. Last Date Stressed 12-6-76

3. Anchor End Number from Stressing Card Field HP068
Shop KA 048

4. Previous Shim Thickness from Stressing Card Field 12 1/2"
Shop 12"

5. Remove Tendon End Cap LNS / 1630 / 5-30-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease NO APPARENT MOISTURE, GOOD CONSISTENCY, LIGHT BROWN 100% COVERAGE
LNS / 5-30-85
Initial/Date

7. Grease Sample Taken LNS / 5-30-85
Initial/Date

8. Bulk Filler Removed (Gal). 5 Gal. LNS / 5-30-85
Initial/Date

9. Anchor End Number As Found F0094 Bushing KA 048 LNS / 5-30-85
Initial/Date

10. Shim Thickness As Found 12 3/8" LNS / 5-30-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE
Misshaped NONE
Splits > .12" NONE
LNS / 5-30-85
Initial/Date

DATA SHEET 1

TENDON NO. 45 DE FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? LNS / 5-30-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 5-30-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO LNS 5-30-85 Data transfered from procedure SQ 12.7

Date 6/4/85

Temperature of Grease in Bulk Container 220 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 45 DE
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: None
Cracks or splits: None
Number not properly formed: None

ANCHOR HEAD

Number: F0094
Degree of Corrosion: A
Cracks: None

SHIMS

Degree of Corrosion: A
Cracks: None

BEARING PLATE

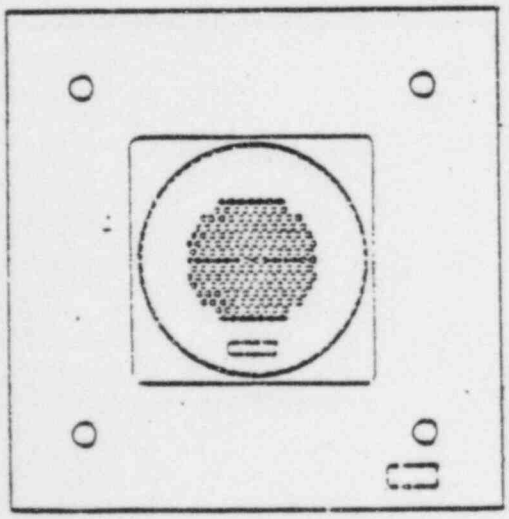
Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.): NONE

REMARKS: Corrosion on Bearing plate transferred from Retainer plate

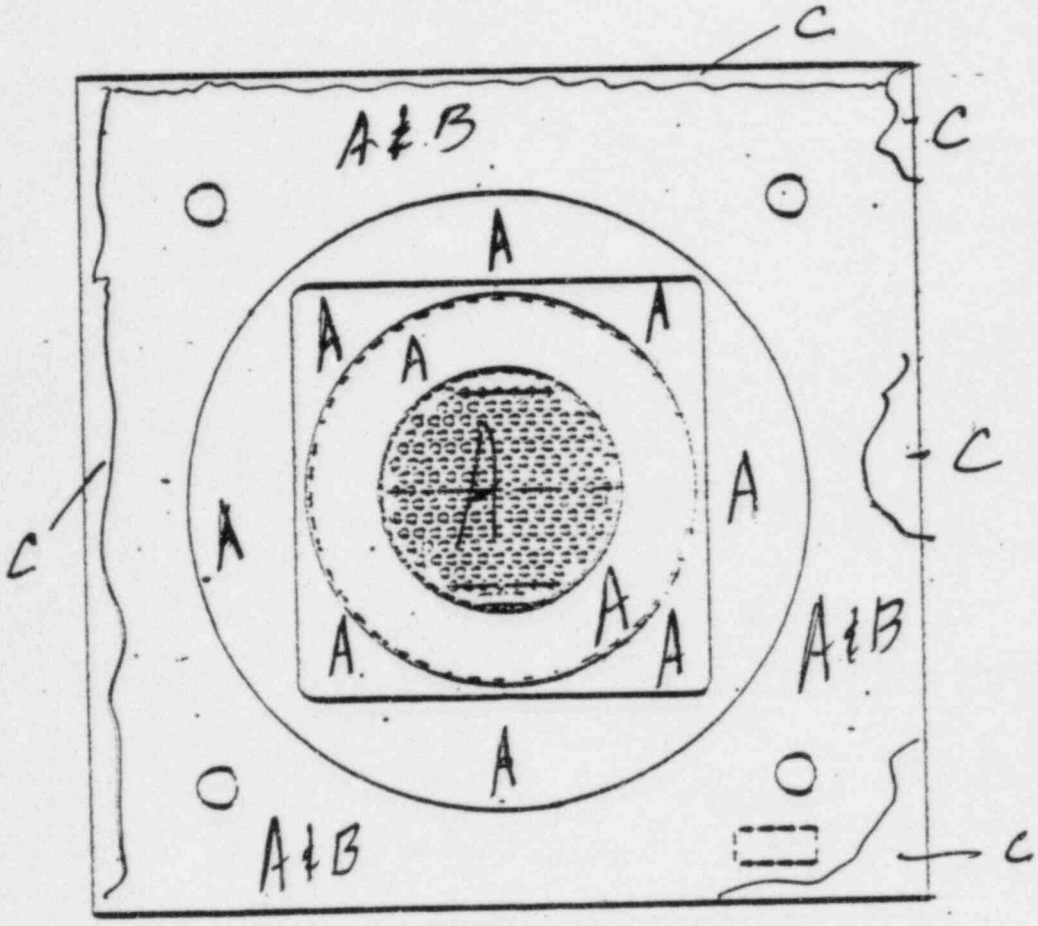
SKETCH



Date 5-31-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 45 DE



Date 5-30-85 Signature

LEGEND FOR BUTTONHEADS

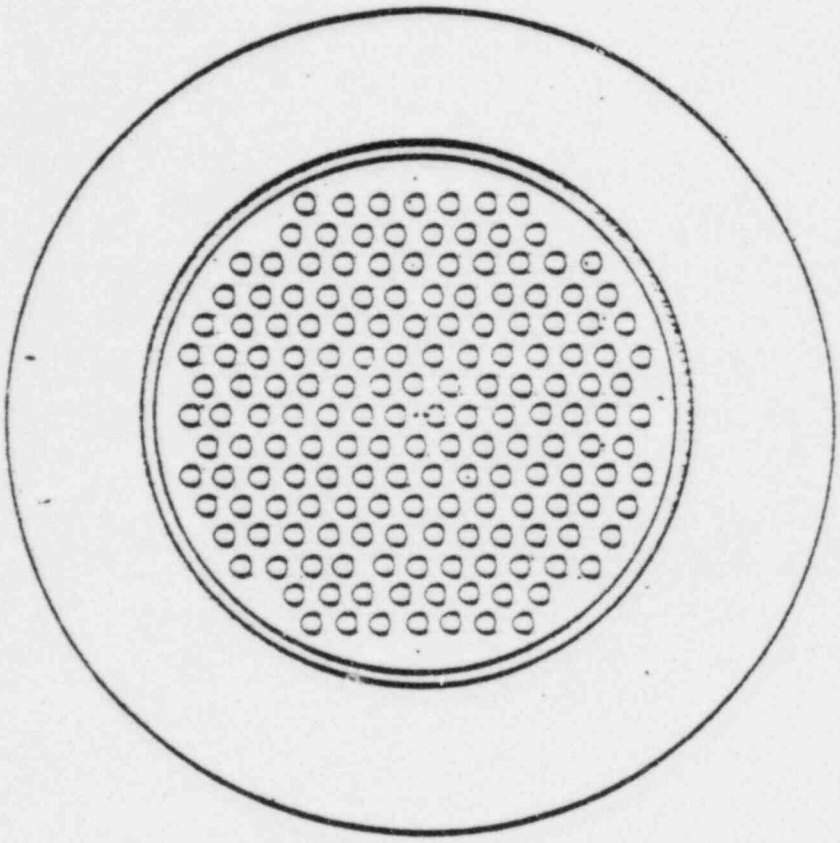
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON 45 DE

SIGNATURE 5-30-85 DATE



COMMENTS:

0 5 2 2 5 0 0 5 3

TENDON STRESSING CARD

DATE 12-6-78

TENDON LOCATION H 450F JOB NO. 2TT-505 JOB ZIMLEY UNIT #2

DO NOT EXCEED 80% OF ULT
1602 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

		JACK NO. 5		JACK NO. 4	
		GAUGE NO. 24		GAUGE NO. 107	
		END —		END —	
		PSI	ELONGATION	PSI	ELONGATION
1.	CALCULATED ELONGATION OVER 3000 PSI 500 PSI		8.36		8.30
2.	PRIOR TO STRESSING	1500 XXXXXX	6.60	1500 XXXXXX	6.70
3.	3500 TO 4000 PSI (OR FULL RAM EXTENSION)	4000	10.20	4000	10.00
4.	(MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		3.60		3.30
5.	(NEW LIFT OFF – SAME PSI AS LINE 3)	4000	4.16	4000	4.30
6.	(FULL RAM EXTENSION)	—	—	—	—
7.	(MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8.	(NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9.	OVERSTRESS 1602 KIPS 7600 PSI	7600	9.20	7600	9.20
10.	TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-6+7+4)		8.70		8.20
11.	LOCKOFF 1402 KIPS 6664 PSI TO 6979 PSI	6850		6900	

REMARKS

SHIMS	12½"	SHIMS	12"
FLOX HEAD	HP068	BUSHING	KP068
BRG. PLATE	FS	BRG. PLATE	[illegible]
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN Dw Hd s

Q.C. INSPECTOR C. J. Beel DATE 12-6-78

FORM 790.67-60 APRIL 1975 INSPECTED BY INLAND STEEL COMPANY

FILE AS FOLLOWS:

0 5 2 2 4 2 1 0 2

JOB NO. ZIT 50

TENDON BUTTON HEADING CARD

JOB: Farley Unit 2

TENDON LOCATION: 45ED

DATE: 10-19-76

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
10% GO; NO-GO	(OK) 17	
SPLITS	(OK) 17	
ECCENTRICITY	(OK) 17	
TOTAL UNACCEPTABLE HEADS		-0-

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) _____

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) _____

COMMENTS HP 068 (NCR 505-F11) K

FOREMAN [illegible] Q.C. INSPECTOR [illegible] DATE 10-19-76

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 45 DE (FIELD)/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "D"

2. Last Date Stressed 12-6-76

3. Anchor End Number from Stressing Card Field HP068
Shop KA048

4. Previous Shim Thickness from Stressing Card Field 12½"
Shop 12"

5. Remove Tendon End Cap LNS / 1330 / 5-31-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease NO APPARENT MOISTURE, GOOD CONSISTENCY, LIGHT BROWN & SMALL AMT. OF BLACK PRESERVATIVE - 100% COVERAGE
LNS / 5-31-85
Initial/Date

7. Grease Sample Taken LNS / 5-31-85
Initial/Date

8. Bulk Filler Removed (Gal). 2 Gal. LNS / 5-31-85
Initial/Date

9. Anchor End Number As Found HP068 LNS / 5-31-85
Initial/Date

✓10. Shim Thickness As Found 11 3/8" LNS / 5-31-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE
Misshaped 1
Splits > .12" NONE
LNS / 5-31-85
Initial/Date

DATA SHEET 1

TENDON NO. 45 DE (FIELD)/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ✓ NO

If YES, why? _____ LNS / 5-31-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 5-31-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO 5-31-85 LNS Data transferred from procedure SQ 12.7

Date 6/7/85

Temperature of Grease in Bulk Container 190°

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 45 DE
FIELD / SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: NONE
Number not properly formed: 1

ANCHOR HEAD

Number: HP 068
Degree of Corrosion: A & B
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

BEARING PLATE

Degree of Corrosion: A, B, & C
Cracks: NONE

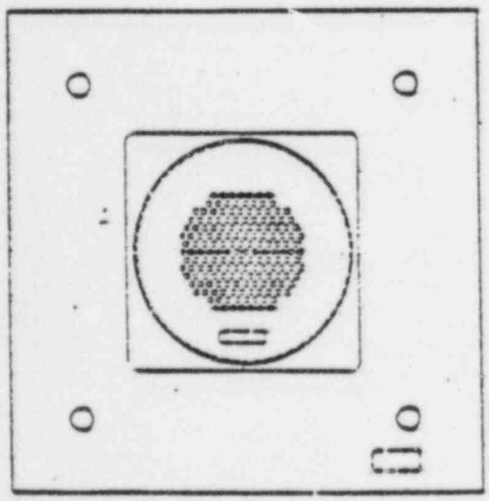
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE

REMARKS: MUCH of CORROSION ON BEARING PLATE APPEARS to have been TRANSFERRED FROM the Retainer plate

1/2" Gap between ~~plates~~ holes of the two outside shim ~~plates~~

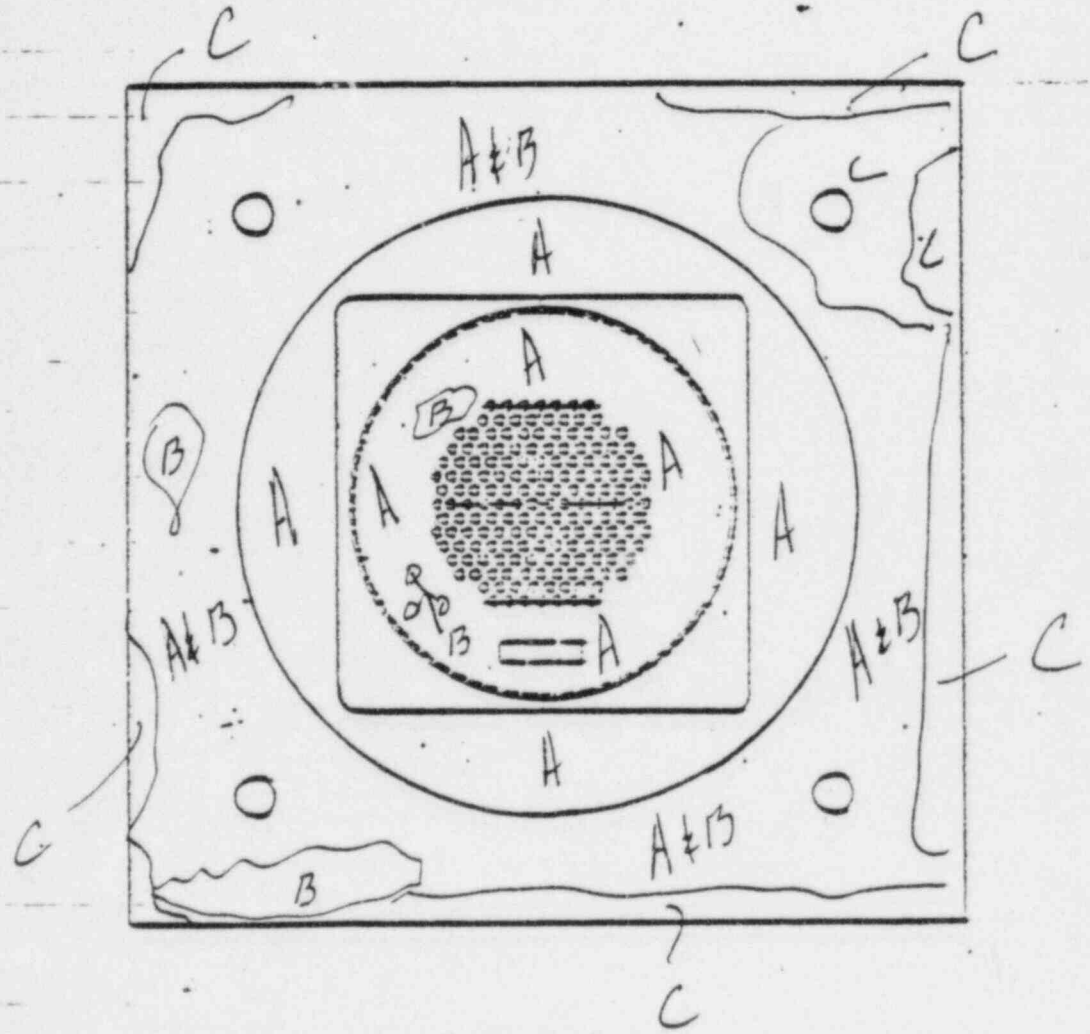
SKETCH



Date 5-31-85 Signature J. T. Sherrill

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 45DE



Date 5-31-85 Signature J. W. Rumme

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

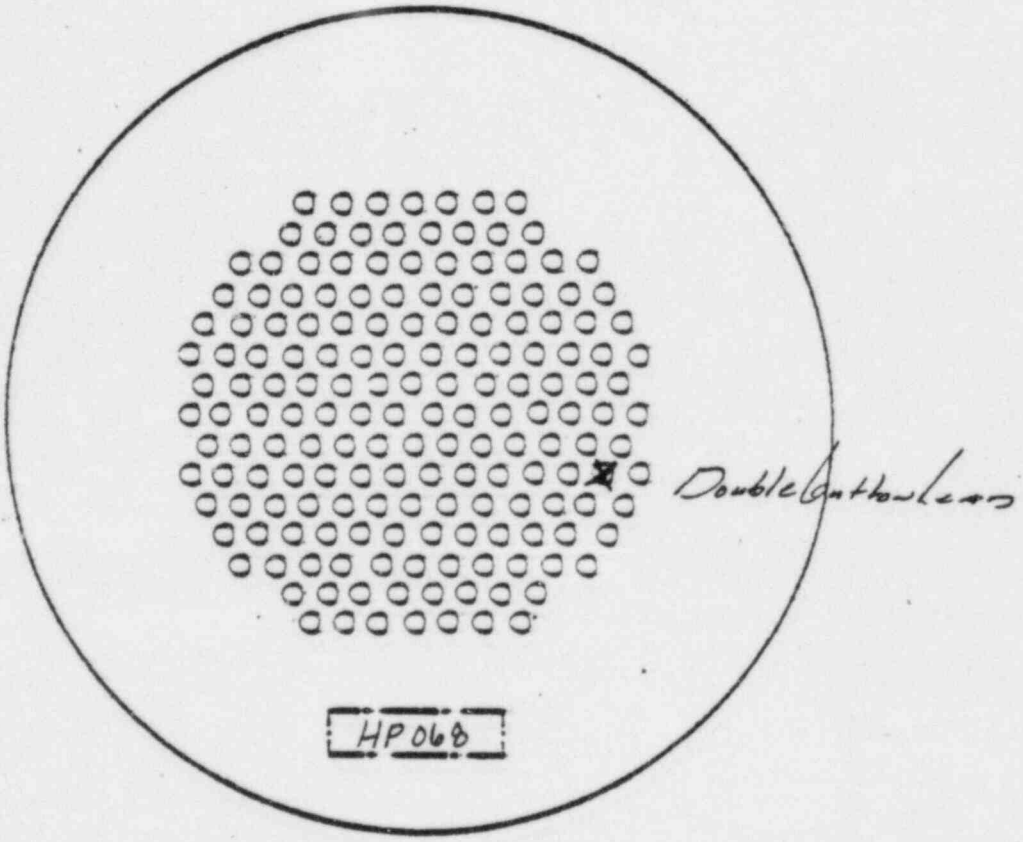
JOSEPH M. FARLEY NUCLEAR PLANT UNIT

FIELD END

TENDON 45 DE

J. T. Shannon 15-31-85

SIGNATURE DAT



COMMENTS:

DATA SHEET 1

TENDON NO. 3 EF ~~FIELD~~ SHOP END (Circle One) MH

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

BUTTRESS "E"

2. Last Date Stressed 11-15-76

3. Anchor End Number from Stressing Card Field HP 128

Shop KA021

4. Previous Shim Thickness from Stressing Card Field 10 1/2"

Shop 11 1/8"

5. Remove Tendon End Cap MH 19:14 5/30/85
Initials Time Date

6. ~~Visual Examination~~ of Bulk Filler Grease BROWN, (ALMOST NEW) IN COLOR GOOD CONSISTENCY WITH SOME FROTHING PRESENT. MOISTURE IN CAN & ON BOTTOM OF SHIMS. NO H_2O ON ANCHORHEAD. MOISTURE PRESENT IN UNCOLLECTABLE QUANTITES. MH 5/30/85
Initial/Date

7. Grease Sample Taken MH 5/30/85
Initial/Date

8. Bulk Filler Removed (Gal). 5 1/2 GALS MH 5/30/85
Initial/Date

9. Anchor End Number As Found (BUSHING) KA021 / (ANCHOR) GT019 MH 5/30/85
Initial/Date

10. Shim Thickness As Found ~~11 3/4~~ MH 5/30/85 11 1/2" MH 5/30/85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 1

Misshaped 0

Splits > .12" 0

MH 5/30/85
Initial/Date

DATA SHEET 1

TENDON NO. 3 EF FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ JMH / 5/30/85
Initial/Date

13. Tendon End Caps Re-installed JMH / 5/30/85
Initial/Date

14. Tendon Re-greasing: PER INRYCO
Data transfered from procedure SQ 12.7

Date 5/31/85

Temperature of Grease in Bulk Container 210°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) Entire Tendons

DBH / 8/9/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 3 EF
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 1
Cracks or splits: 0
Number not properly formed: 0

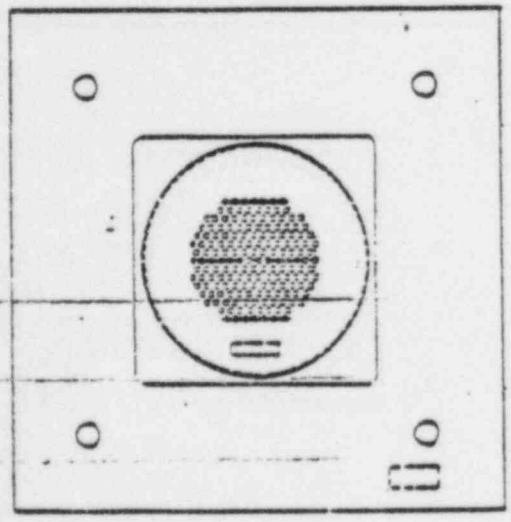
ANCHOR HEAD

Number: KA021/GT019
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A & B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE - CONSTRUCTION JOINT AT ANCHORAGE ℄ ∴ O.K

REMARKS: 1/2" SHIM ADJACENT BEARING PLATE OFF SET 3/4" & WAS GROUND OFF TO ALLOW INSTALLATION OF CAN. SHOP BUSHING NOT FULLY ENGAGED (DOWN 3/16")

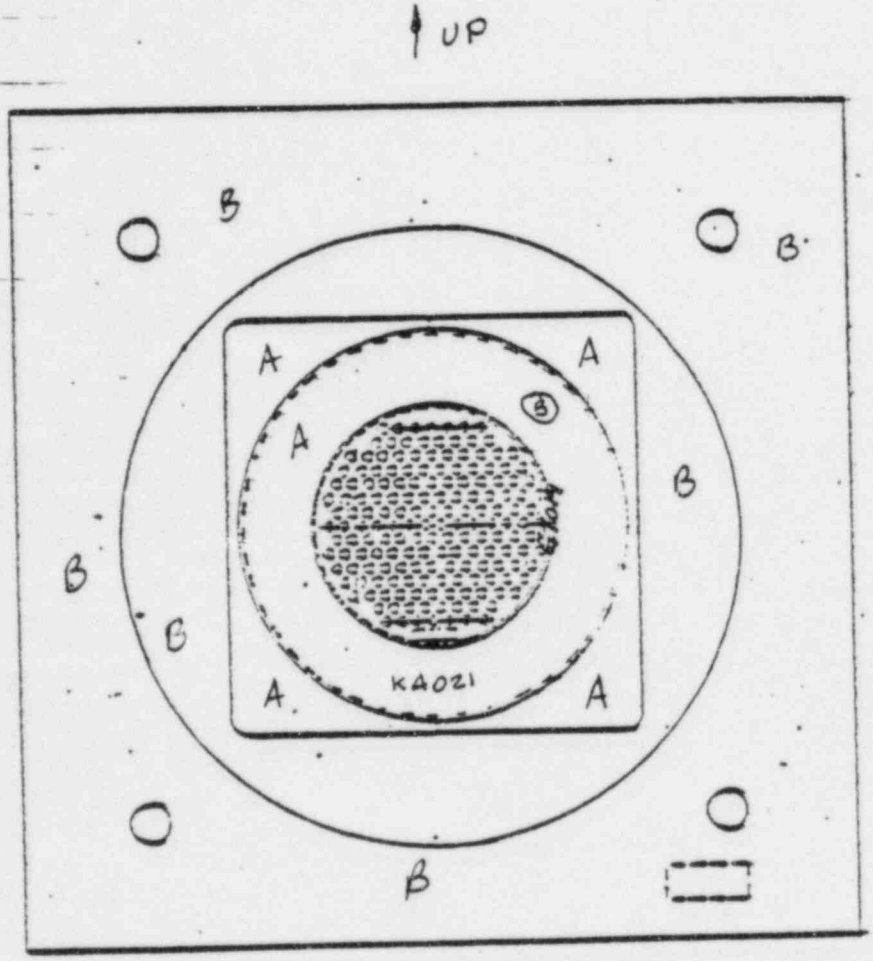
WATER DRIPPING SLOWLY FROM GREASE HOLE & SHIM GAP.

SHIM GAP ≤ 1/4" ON BOTH SIDES. GASKET RETAINER ℞ HAS A TO C CORROSION LEVELS.

Date 5/30/85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 3EF



Date 5/30/85 Signature Angel M. Hall

LEGEND FOR BUTTONHEADS

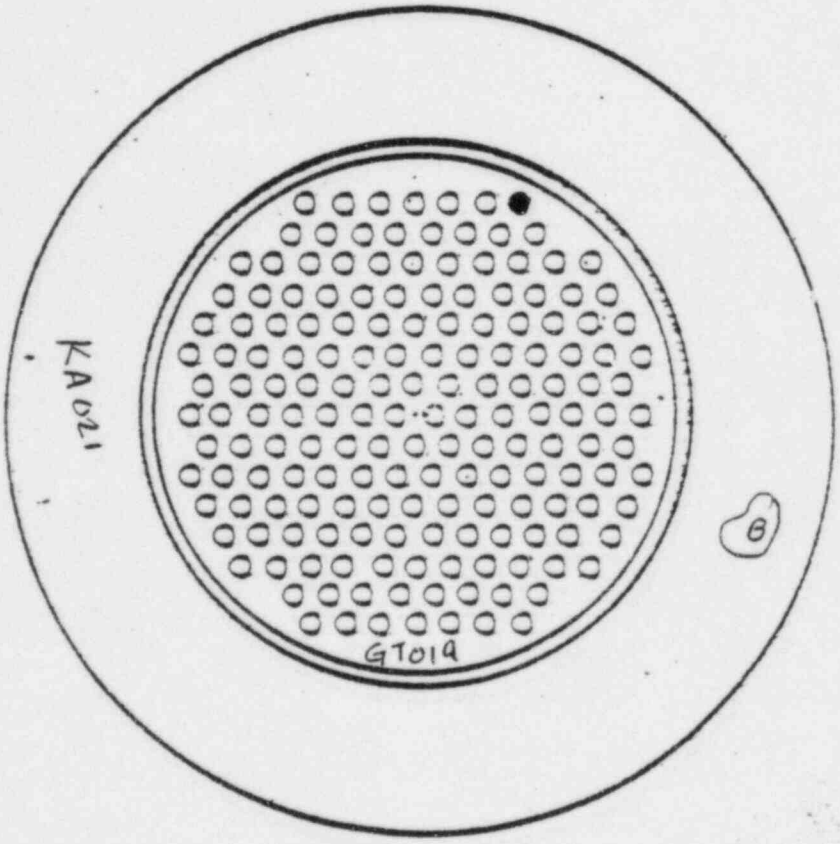
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead ~~with~~ Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON 3EF

Joseph M. Hall 5/30/85
SIGNATURE DATE



→ UP

B LEVEL CORROSION

COMMENTS:

1 BUTTONHEAD MISSING. NO IMPROPERLY FORMED OR UNSEATED BUTTONHEADS. NO SPLITS > 0.12"

0 5 2 2 5 0 0 5 7 - 4

TENDON STRESSING CARD

DATE 11-15-76

TENDON LOCATION [illegible] JOB NO. 2ST-5/15 JOB FERMI UNIT #2

DO NOT EXCEED 80% OF ULT	
1602 KIPS	7600 PSI

LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO. 2		JACK NO. 3	
	GAUGE NO. 40		GAUGE NO. 34	
	END		END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI (500 PSI)		8.40		2.00
2. PRIOR TO STRESSING	1500 ~~XX 2000X~~	5.00	1400 ~~XX 2000X~~	5.90
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	4500	9.10	4500	10.90
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		4.20		4.00
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	4500	3.60	4500	3.00
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1602 KIPS 7600 PSI	7600	8.00	7600	9.30
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-5+7+4)		8.50		8.80
11. LOCKOFF 1402 KIPS 5645 PSI TO 6979 PSI	6800		6850	

REMARKS

SHIMS	10½"	SHIMS	11½"
ELD. HEAD	HP128	KA021 BUSHING	[illegible]
BRG. PLATE	FB	BRG. PLATE	FB
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN [illegible]

Q.C. INSPECTOR [illegible] DATE 11-15-76

FORM 190 & 7 40 APRIL 1975 INRYCO an INLAND STEEL company

0 5 2 2 4 2 1 0

TENDON BUTTON HEADING CARD

JOB NO. 21T 50

JOB: Farley Unit 2

TENDON LOCATION: 3FE 1

DATE: 10-18-76

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
10% GO; NO-GO	(OK) 17	
SPLITS	(OK) 17 (170)	
ECCENTRICITY	(OK) 17 (170)	
TOTAL UNACCEPTABLE HEADS		-0-

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) Ok

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS HV 128

Revisions by C. Greene 6-1-77

FOREMAN Gill Kirkpatrick Q.C. INSPECTOR P. Hackett DATE 10-18-76

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 3 EF (FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "F"

2. Last Date Stressed 11-15-76

3. Anchor End Number from Stressing Card Field HP 128
Shop KA021

4. Previous Shim Thickness from Stressing Card Field 10 1/2"
Shop 11 1/8"

5. Remove Tendon End Cap JMH / 9:15 / 5-29-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease TAN COLOR, (LOOKS NEW) GOOD CONSISTENCY, FULL COVERAGE ON ANCHORAGE ASSEMBLY — NO MOISTURE FOUND
JMH / 5-29-85
Initial/Date

7. Grease Sample Taken
JMH / 5-29-85
Initial/Date

8. Bulk Filler Removed (Gal). 4 1/2 GAL
JMH / 5-29-85
Initial/Date

9. Anchor End Number As Found HP 128
JMH / 5/29/85
Initial/Date

10. Shim Thickness As Found 10.5"
JMH / 5/29/85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 1

JMH / 5-29-85
Initial/Date

DATA SHEET 1

TENDON NO. 3 EF (FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ JMH / 5-29-85
Initial/Date

13. Tendon End Caps Re-installed JMH / 5-29-85
Initial/Date

14. Tendon Re-greasing: PER INRY Co Data transfered from procedure SQ 12.7

Date 5/29/85

Temperature of Grease in Bulk Container 220 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 3 EF
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 1
Number not properly formed: 0

ANCHOR HEAD

Number: HR128
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

BEARING PLATE

Degree of Corrosion: A & B
Cracks: NONE

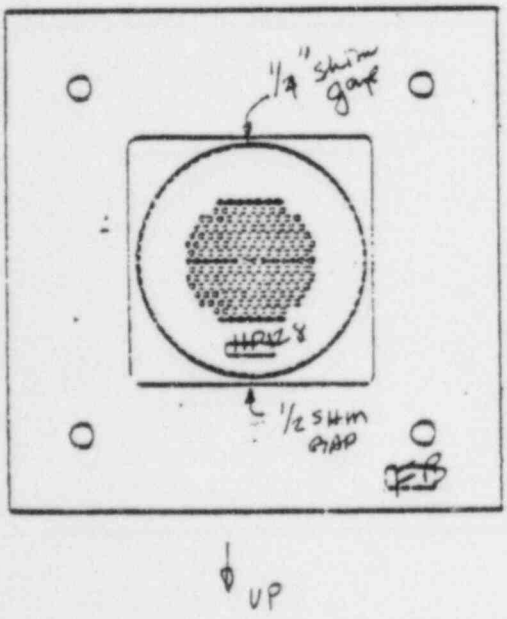
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE VISABLE – PAINTED SURFACE ... NO CRACKING OR PEELING OF PAINT

REMARKS: ≈ 1/2" SHIM GAP ON TOP
< 1/4" GAP ON BOTTOM OF SHIM STACK (ADJACENT TO ANCHOR HEAD)
1/2" SHIM NEXT TO BEARING PL
GOOD OVERALL SHIM STACK APPEARANCE
A & B LEVEL CORROSION ON GASKET RETAINER PLATE

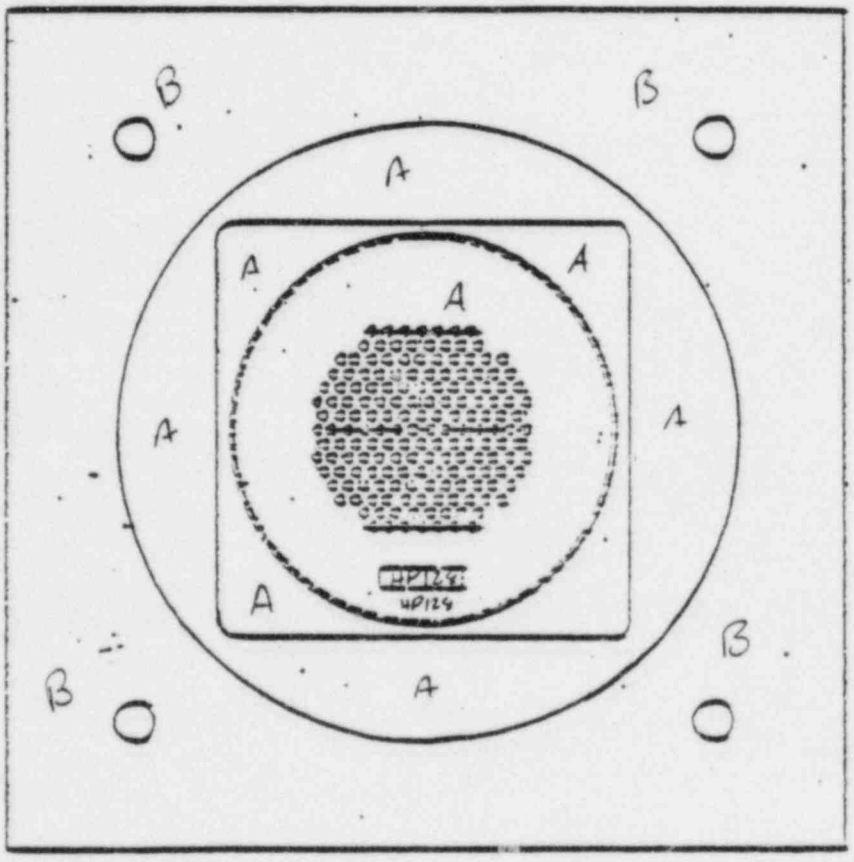
SKETCH



Date 5/29/88 Signature Joseph M. Hall

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 3EF



A LEVEL INSIDE 'O' RING
B LEVEL OUTSIDE 'O' RING

Date 5/29/85 Signature Joseph M. Hall

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

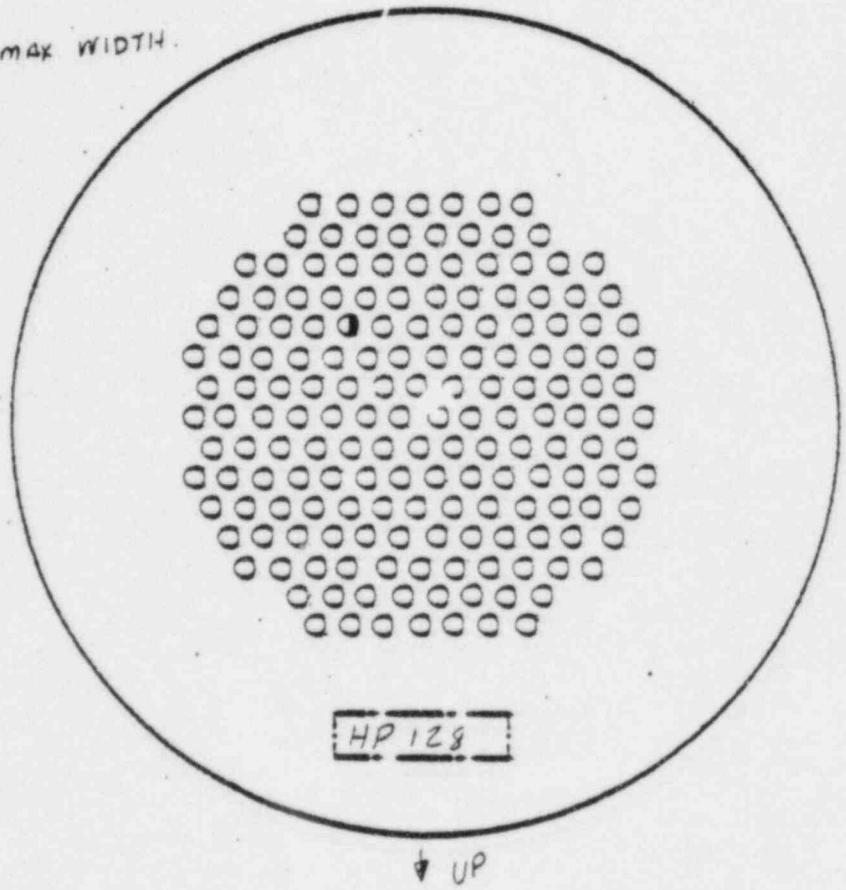
FIELD END

TENDON 3EF

Joseph M. Hall 5-29-85

SIGNATURE DATE

1 SPLIT - 0.125" MAX WIDTH.



COMMENTS:

SHINY NEW APPEARANCE OF ALL BUTTONHEADS. WELL ROUNDED SHAPE OF BUTTONHEADS. THERE ARE NUMEROUS SLIPS BUT ALL ARE WITHIN ACCEPTANCE CRITERIA.

DATA SHEET 1

TENDON NO. 17 EF FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "E"

2. Last Date Stressed 11-23-76

3. Anchor End Number from Stressing Card Field HP 050
Shop HW 141

4. Previous Shim Thickness from Stressing Card Field 12 5/8
Shop 11 5/8

5. Remove Tendon End Cap LNS / 1130 / 5-30-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease Good consistency, No apparent free moisture, Brown with ~~some~~ LNS small amt. of black perservative
LNS / 5-30-85
Initial/Date

7. Grease Sample Taken LNS / 5-30-85
Initial/Date

8. Bulk Filler Removed (Gal). LNS 5-30-85 ~~12 6~~ 4 Gal. LNS / 5-30-85
Initial/Date

9. Anchor End Number As Found GL 030 Bushing HW 141 LNS / 5-30-85
Initial/Date

10. Shim Thickness As Found 11 7/16" LNS / 5-30-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE
Misshaped NONE
Splits > .12" NONE
LNS / 5-30-85
Initial/Date

DATA SHEET 1

TENDON NO. 17 EF FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 5-30-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 5-30-85
Initial/Date

14. Tendon Re-greasing: Per INRYCO Data transfered from procedure SQ 12.7

Date 5/31/85

Temperature of Grease in Bulk Container 170 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) Entire Tendon

LNS / 5-30-85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 17 EF
FIELD (SHOP END) (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: NONE > 0.12
Number not properly formed: NONE

ANCHOR HEAD

Number: GL030
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

BEARING PLATE

Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

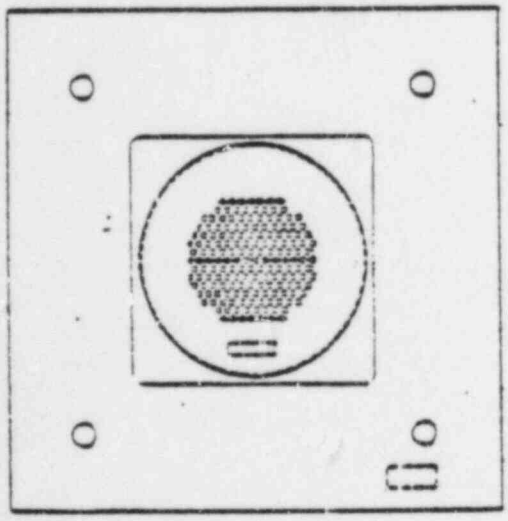
Cracks (width >0.01 in.)

NONE

REMARKS:

Some corrosion on bearing p. is transferred from Retainer Plate

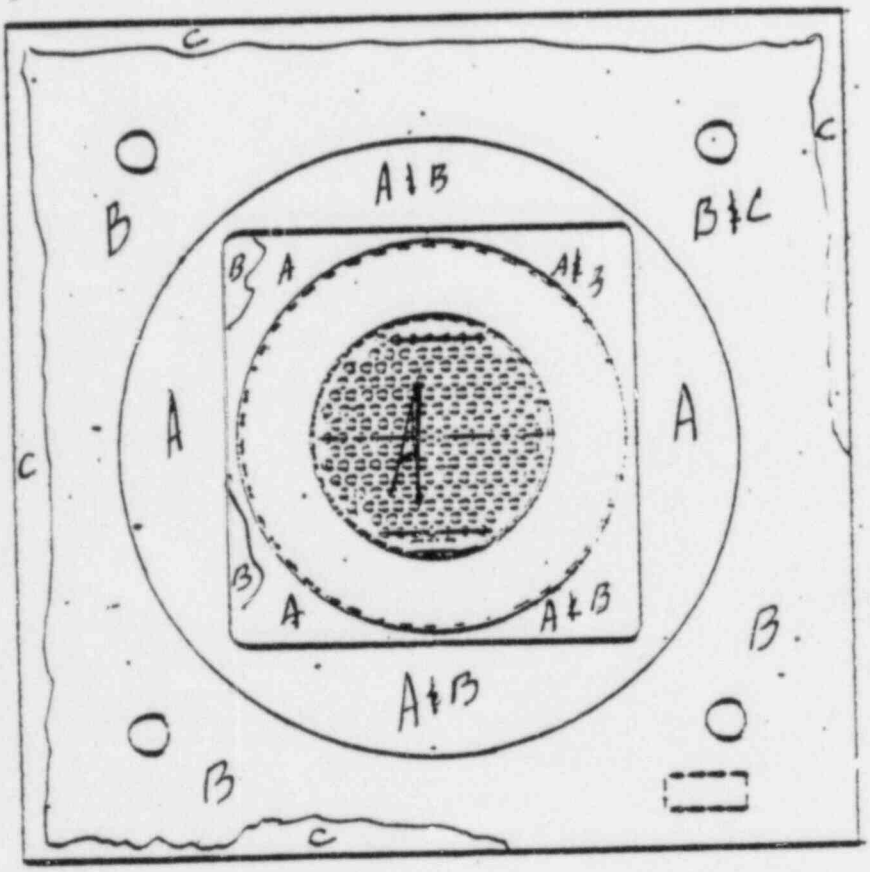
SKETCH



Date 5-30-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 17EF



Date 5-30-85 Signature J. T. N

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

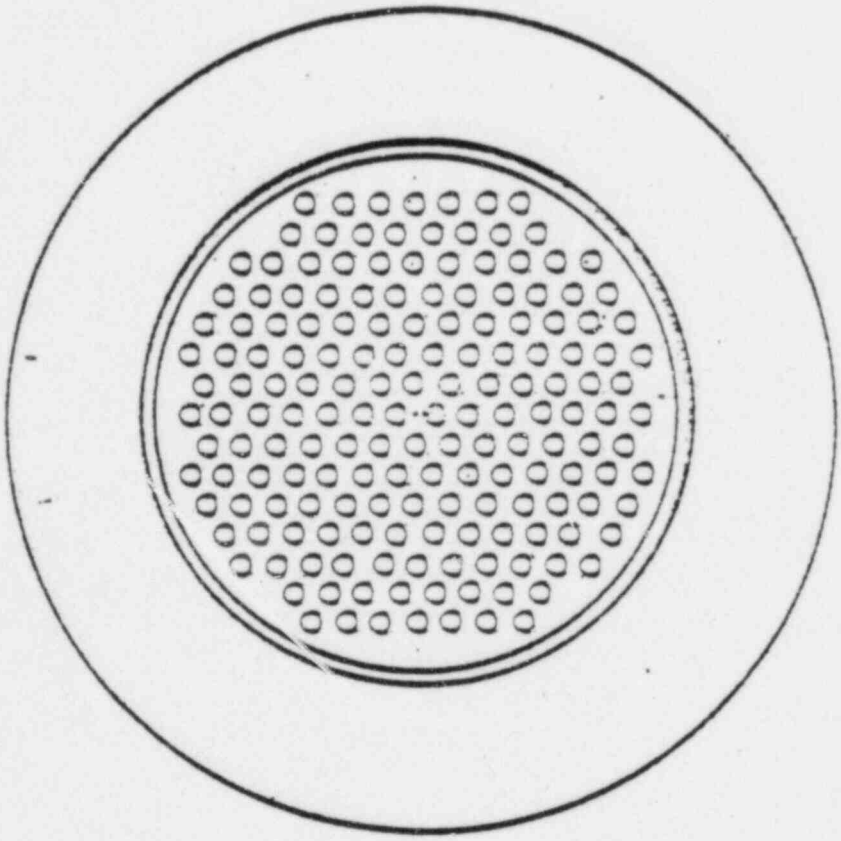
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON 17EF

SIGNATURE 15-30-85 DATE



COMMENTS:

0 5 2 2 5 1 0 0 7

TENDON STRESSING CARD

DATE 11-23-7

TENDON LOCATION H 17EE JOB NO. 2YE-505 JOB EARLEY UNIT #2

DO NOT EXCEED 80% OF ULT	
1602 KIPS	7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY	

	JACK NO. 2		JACK NO. 3	
	GAUGE NO. 10		GAUGE NO. 14	
	END		END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI: 500 PSI		8.30		7.80
2. PRIOR TO STRESSING	1500 ~~2000~~	6.80	1500 ~~2000~~	7.00
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	3500	9.80	3500	9.60
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		3.00		2.60
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	3500	3.90	3500	3.80
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1602 KIPS 7600 PSI	7600	9.70	7600	8.50
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-4+7+4)		8.30		7.60
11. LOCKOFF 1402 KIPS 6646 PSI TO 6979 PSI	6800		6900	

REMARKS

SHIM 12 7/8" SHIM 10 7/8"

PLG. HEAD HP050 BUSHING HP044

FOREMAN

BRG. PLATE FB BRG. PLATE FB

TENDON END PROTECTED ok TENDON END PROTECTED ok

Q.C. INSPECTOR C J Beee DATE 11-23-7

FORM 780.67-60 APRIL 1975 INRYCO an INLAND STEEL company

[illegible] TO AS FOLLOWS:

[illegible] STAGE (4+7+9-P) 2ND STAGE (4+7+9-P)

0 5 2 2 4 2 1 1 9

TENDON BUTTON HEADING CARD

JOB NO. 21T 5[illegible]5

JOB: Farley Unit 2

TENDON LOCATION: 17FE

DATE: 10-14-76

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
10% GO; NO-GO	(OK) 17	
SPLITS	(OK) ~~16~~ 168	+ 2
ECCENTRICITY	(OK) ~~17~~ 170	
TOTAL UNACCEPTABLE HEADS		+ 2

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) On

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS HV 050

Revisions by C. Grace 6-1-77

FOREMAN Gill Bristow Q.C. INSPECTOR P. Gaddis DATE 10-14-76

FORM 790.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 17 EF (FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "F"

2. Last Date Stressed 11-23-76

3. Anchor End Number from Stressing Card Field HP 050
Shop HW 141

4. Previous Shim Thickness from Stressing Card Field 12 5/8"
Shop 11 5/8"

5. Remove Tendon End Cap JMH (Initials) 1250 (Time) 5/29/85 (Date)

6. Visual Examination of Bulk Filler Grease BROWN IN COLOR
GOOD CONSISTENCY, SOME FROTHING PRESENT
NO MOISTURE DETECTED. GOOD COVERAGE OVER
ANCHORAGE ASSEMBLY
JMH 5/29/85 (Initial/Date)

7. Grease Sample Taken JMH 5/29/85 (Initial/Date)

8. Bulk Filler Removed (Gal). 2 GAL JMH 5/29/85 (Initial/Date)

9. Anchor End Number As Found HP 050 JMH 5/29/85 (Initial/Date)

10. Shim Thickness As Found 12.3" / 12.55" JMH 5/29/85 (Initial/Date)

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0
JMH 5/29/85 (Initial/Date)

DATA SHEET 1

TENDON NO. 17 EF (FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ JMH / 5/30/85
Initial/Date

13. Tendon End Caps Re-installed JMH / 5/29/85
Initial/Date

14. Tendon Re-greasing: PER INRYCO. Data transfered from procedure SQ 12.7

Date 5/30/85

Temperature of Grease in Bulk Container 185°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/2/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 17 EF
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

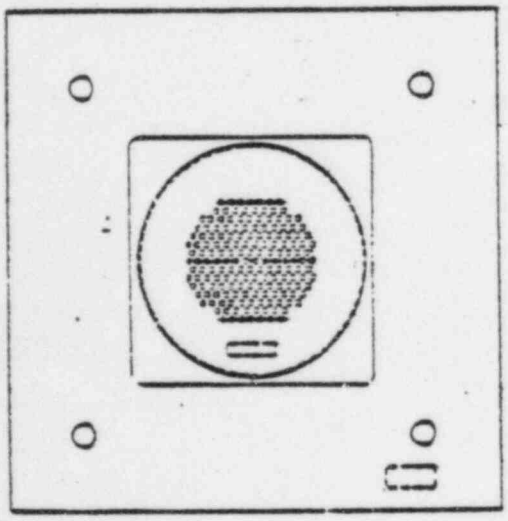
ANCHOR HEAD

Number: HP050
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A TO C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

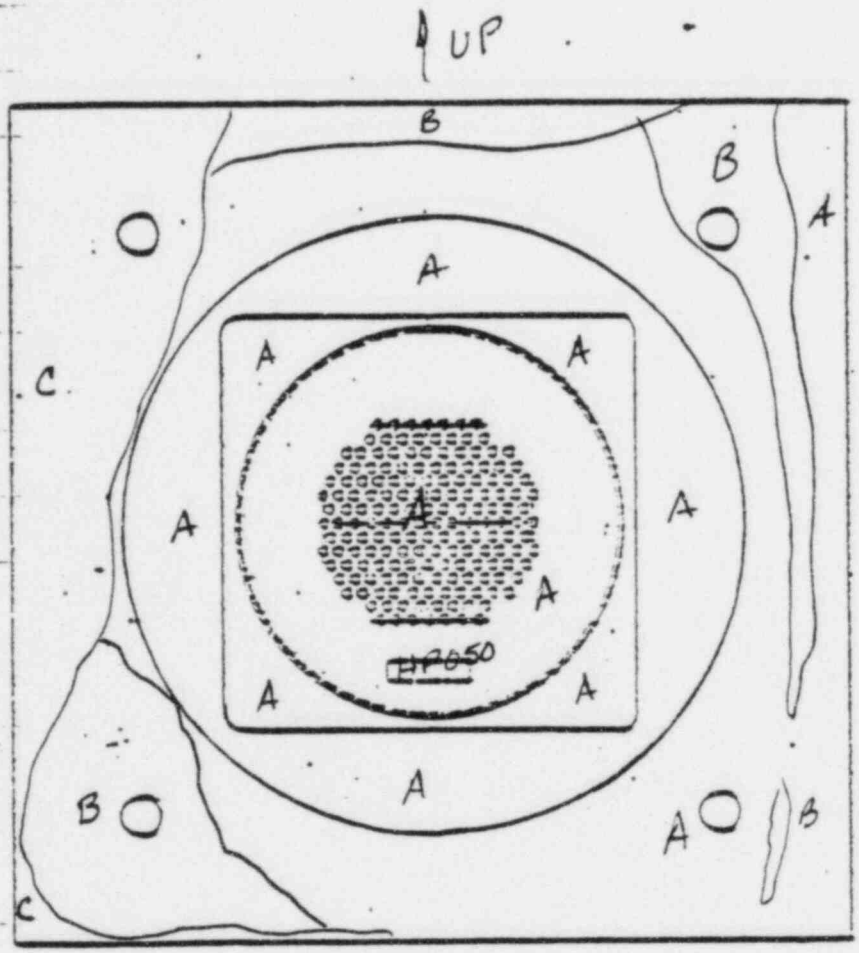
NONE VISABLE ... PAINTED SURFACE ... PAINT NOT PEELING OR CRACKING.

REMARKS: SHIM STACK WELL COATED WITH GREASE; SHIM HEIGHT DIFFERENTAL OF 0.25" SHIM GAPS ≈ 1/4" BOTH SIDES. GASKET RETAINER PLATE HAS LEVELS A TO LIGHT C LEVELS OF CORROSION.

Date 5/29/85 Signature Joseph M. Hall

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 17 EF



Date 5/29/85 Signature Joseph M. Hall

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

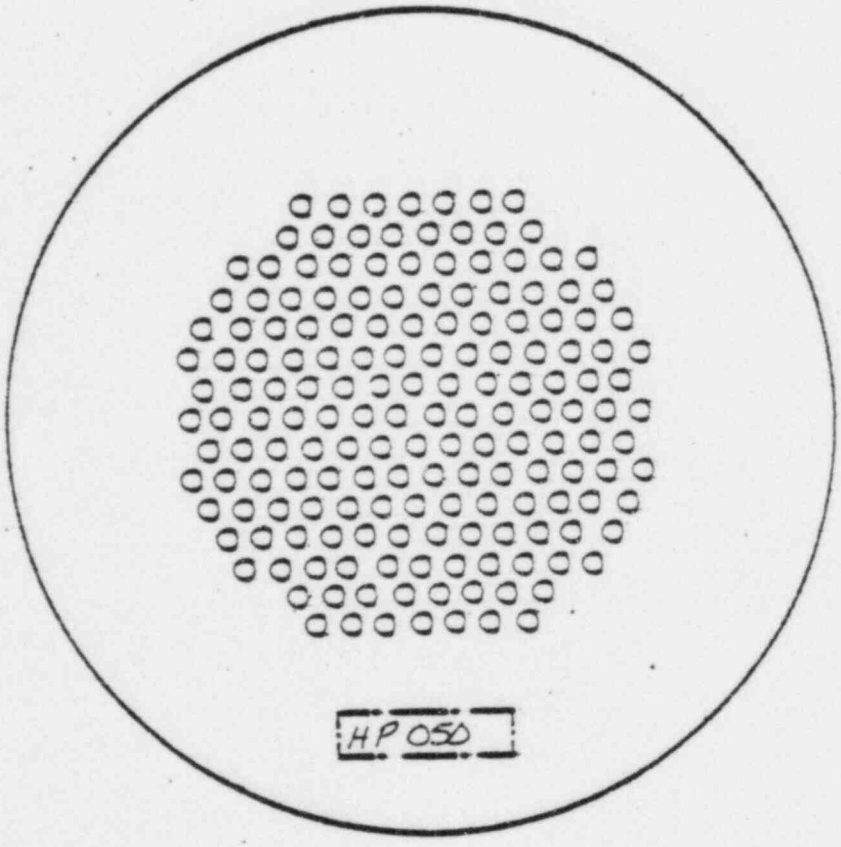
LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

FIELD END

TENDON 17 EF

Joseph M. Hall 15/29/85
SIGNATURE DATE



COMMENTS:

WELL FORMED BUTTONHEADS; SHINY NEW APPEARANCE

DATA SHEET 1

TENDON NO. 31 EF FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "E"

2. Last Date Stressed 12-2-76

3. Anchor End Number from Stressing Card Field HP 038
Shop HW 031

4. Previous Shim Thickness from Stressing Card Field 13 1/4"
Shop 12"

5. Remove Tendon End Cap LNS / 0830 / 5-31-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease No apparent moisture, Good consistency, light brown, 100% coverage
LNS / 5-31-85
Initial/Date

7. Grease Sample Taken LNS / 5-31-85
Initial/Date

8. Bulk Filler Removed (Gal). 4 Gal. LNS / 5-31-85
Initial/Date

9. Anchor End Number As Found GL 065 BUSHING HW 031 LNS / 5-31-85
Initial/Date

10. Shim Thickness As Found 11 7/8" LNS / 5-31-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE

Misshaped NONE

Splits > .12" NONE

LNS / 5-31-85
Initial/Date

DATA SHEET 1

TENDON NO. 31 EF FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 5-31-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 5-31-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO 5-31-85 LOG Data transfered from procedure SQ 12.7

Date 6/6/85

Temperature of Grease in Bulk Container 220 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) Entire Tendon

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 31 EF
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: NONE
Number not properly formed: NONE

ANCHOR HEAD

Number: GL 065
Degree of Corrosion: A & B
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

BEARING PLATE

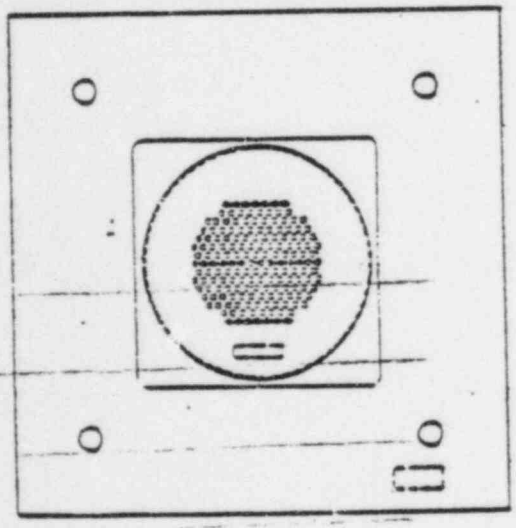
Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE

REMARKS: Some of corrosion on Bearing plate is transferred from the Retainer plate

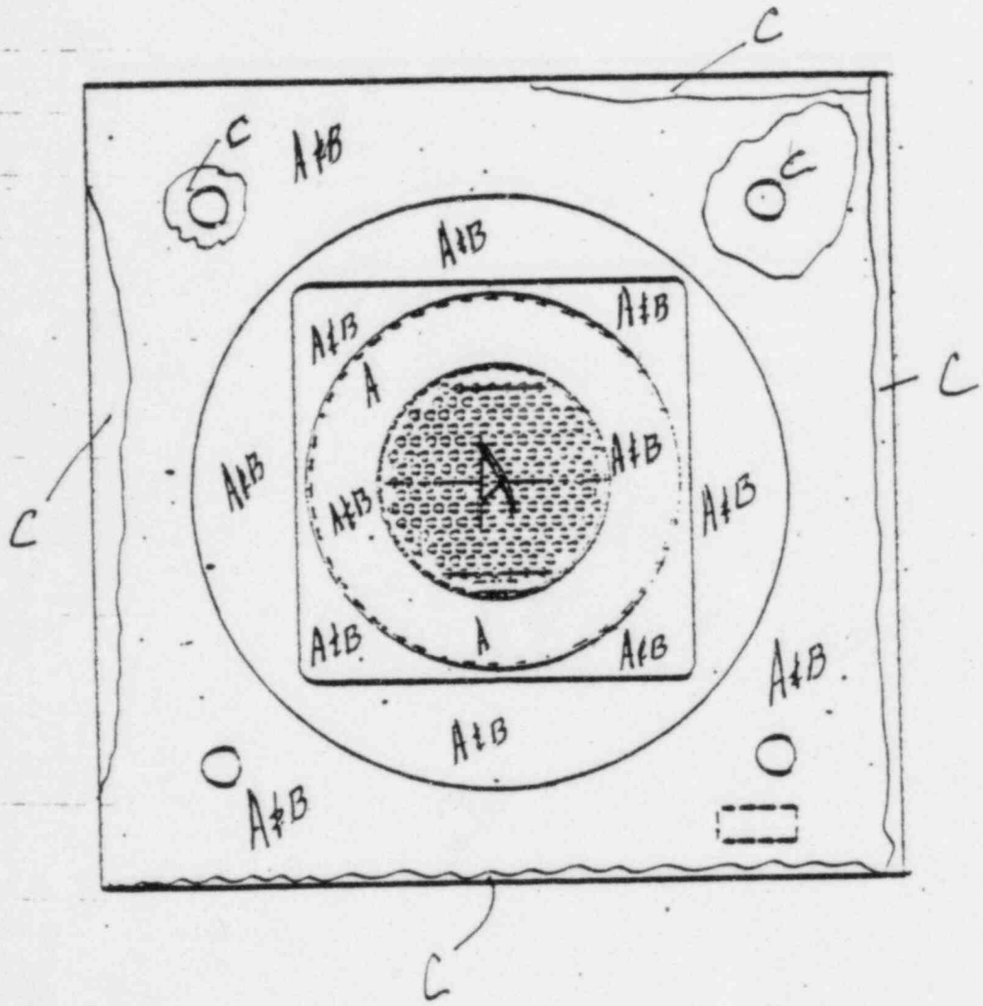
SKETCH



Date 5-31-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 31 EF.



Date 5-31-85 Signature

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ ~~Buttonhead with~~ Split (Document the Split Size)

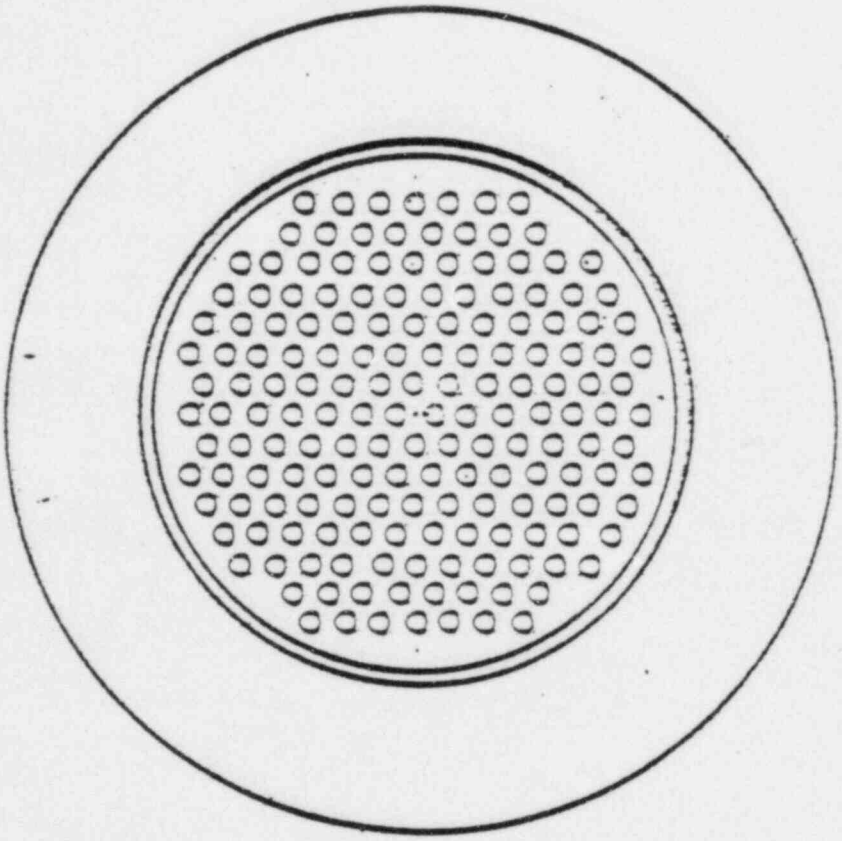
JOSEPH M. FARLEY NUCLEAR PLANT UNIT

SHOP END

TENDON 31 EF

J. T. Rammage 15-31-85

SIGNATURE DATE



COMMENTS:

NONE

0 0 8 4

TENDON STRESSING CARD

DATE 12-2-76

TENDON LOCATION W 31EE JOB NO. 21T-505 JOB EARLY UNIT 42

DO NOT EXCEED 80% OF ULT	
1602 KIPS 7600 PSI	
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY	

	JACK NO. 2		JACK NO. 3	
	GAUGE NO. 10		GAUGE NO. 54	
	END		END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI (500 PSI)		8.75		8.75
2. PRIOR TO STRESSING	1500 ~~2000~~	7.00	1500 ~~2000~~	7.10
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	3500	10.00	3500	9.80
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		3.00		2.70
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	3500	4.10	3500	4.40
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1602 KIPS 7600 PSI	7600	10.10	7600	9.80
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-8+7+4)		9.00		8.10
11. LOCKOFF 1602 KIPS 6640 PSI TO 6979 PSI	6800		6800	

REMARKS

SHIMS	13 1/4"	SHIMS	12"
FLD. HEAD	HP038	BUSHING	HW031
BRG. PLATE	NONE	BRG. PLATE	FA
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN Douglas

Q.C. INSPECTOR C J Bell DATE 12-2-76

FORM 780.67-60 APRIL 1975 INRYCO an INLAND STEEL company

NOTES: TOTAL ELEM TO AS 400.0MS:
1ST. STAGE: 200.STAGE(449-8): 3RD.STAGE(447-8)

0 5 2 2 4 2 1 3 3

JOB NO.: 21T 50

TENDON BUTTON HEADING CARD

JOB: Farley Unit 2

TENDON LOCATION: 31 FE

DATE: 10-11-76

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
~~10%~~ 30%		
GO; NO-GO	(OK) ~~16~~ (50)	1
SPLITS	(OK) ~~17~~ (170)	0
ECCENTRICITY	(OK) ~~17~~ (170)	0

TOTAL UNACCEPTABLE HEADS -1-

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N A

COMMENTS HP038 Revisions by C. Haase 6-1-77

FOREMAN Sp Stuart Q.C. INSPECTOR P. Haebel DATE 10-11-76

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 1 EF FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "F"

2. Last Date Stressed 12-2-84

3. Anchor End Number from Stressing Card Field HP-38
Shop H 0

4. Previous Shim Thickness from Stressing Card Field 3"
Shop 12"

5. Remove Tendon End Cap JNS / 1500 / 6-1-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease DARK BROWN
[illegible] NO [illegible]
[illegible]
LES / 6-1-85
Initial/Date

7. Grease Sample Taken EWS / 6-1-85
Initial/Date

8. Bulk Filler Removed (Gal). 8 Gal. LWS / 6-1-85
Initial/Date

9. Anchor End Number As Found HP-038 [illegible] / 6-2-85
Initial/Date

10. Shim Thickness As Found 13 1/8 LWS / 6-1-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE
Misshaped 1
Splits > .12" NONE
LWS / 6-1-85
Initial/Date

DATA SHEET 1

TENDON NO. 31 EF (FIELD) SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 6-1-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 6-1-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO 6-1-85 LNS Data transferred from procedure SQ 12.7

Date ~~215°F~~ DBH 6/6/85

Temperature of Grease in Bulk Container 215°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 31 EF
FIELD / SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: NONE
Number not properly formed: 1

ANCHOR HEAD

Number: HP 038
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

BEARING PLATE

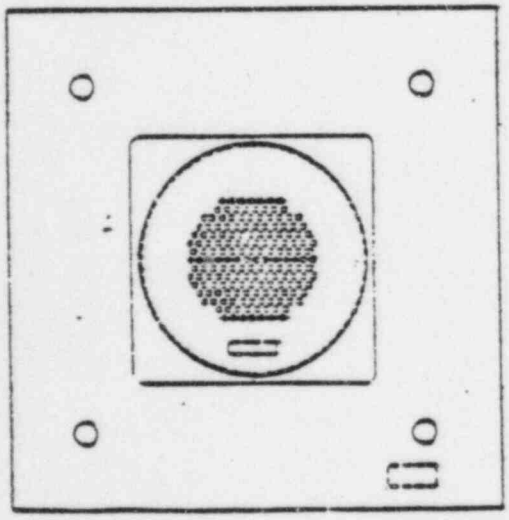
Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.): NONE

REMARKS: Much of corrosion on Bearing plate appears to have been transferred from the retainer plate

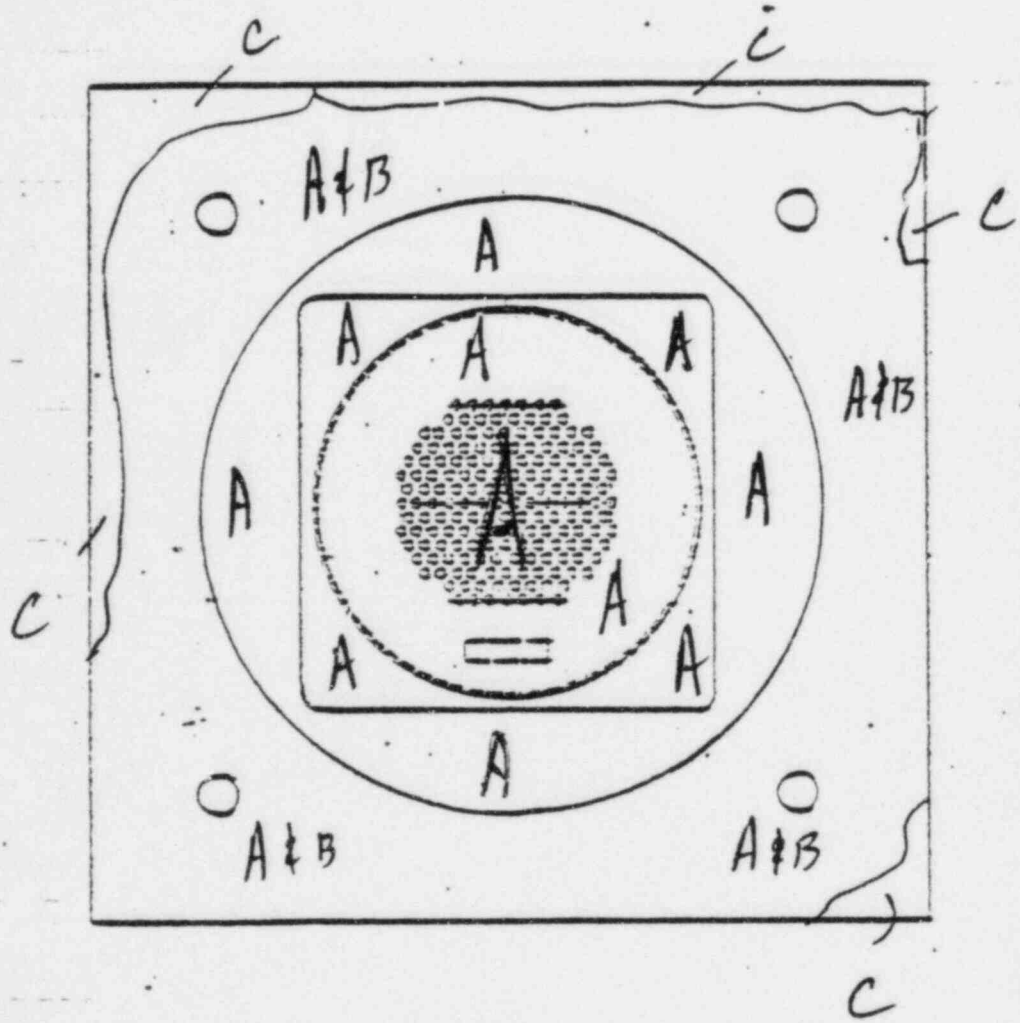
SKETCH



Date 6-1-95 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 31EF



Date 6-1-85 Signature T. J. Thomas

LEGEND FOR BUTTONHEADS

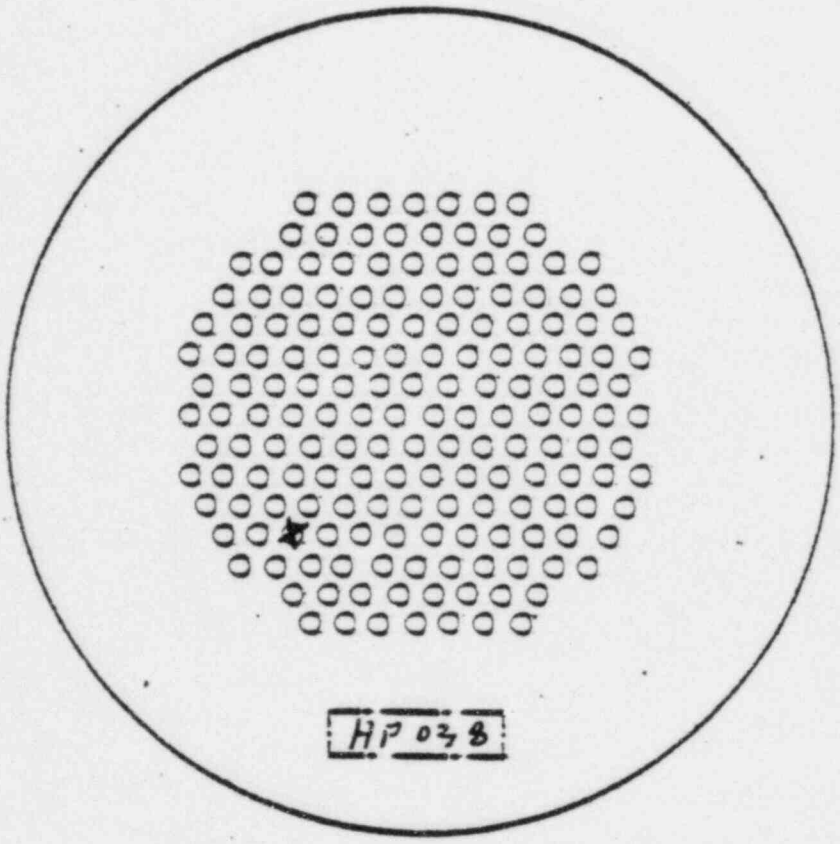
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT

FIELD END

TENDON 31 EF

SIGNATURE 6-1-85 DATE



COMMENTS:

One Double Buttonhead

DATA SHEET 1

TENDON NO. 13 FD FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "F"

2. Last Date Stressed 11-22-76

3. Anchor End Number from Stressing Card Field HV 024
Shop KA 090

4. Previous Shim Thickness from Stressing Card Field 12 1/8"
Shop 12 1/4"

5. Remove Tendon End Cap MH / 11:00 / 5/29/85
Initials Time Date

6. Visual Examination of Bulk Filler Grease LIGHT BROWN COLOR WITH GOOD CONSISTENCY, SOME FROTHING APPARENT, FULL COVERAGE ON ANCHORAGE ASSEMBLY - NO MOISTURE PRESENT
MH / 5/29/85
Initial/Date

7. Grease Sample Taken MH / 5/29/85
Initial/Date

8. Bulk Filler Removed (Gal). 2 1/2 GALS MH / 5/29/85
Initial/Date

9. Anchor End Number As Found KA090 / FU154 MH / 5/29/85
Initial/Date

10. Shim Thickness As Found 12.1" MH / 5/29/85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0

MH / 5/29/85
Initial/Date

DATA SHEET 1

TENDON NO. 13 FD FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ JMH 1 5/29/85
Initial/Date

13. Tendon End Caps Re-installed JMH 1 5/29/85
Initial/Date

14. Tendon Re-greasing: PER INRYCO
Data transfered from procedure SG 12.7

Date 5/30/85

Temperature of Grease in Bulk Container 185°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH 1 6/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 13 FD
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0

Cracks or splits: 0
Number not properly formed: 0
1 UNSEATED → PROTRUDES 0.60"

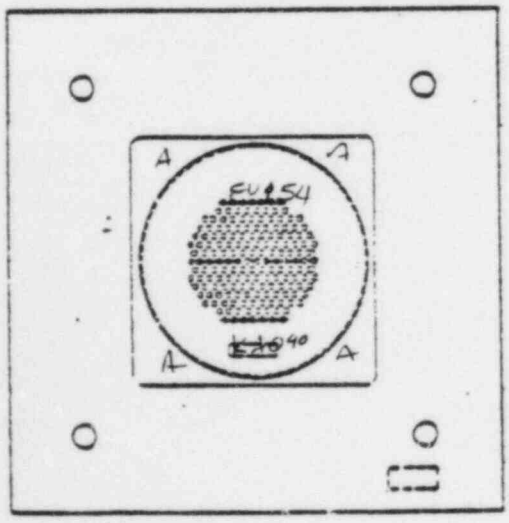
ANCHOR HEAD

Number: KA090/FU154
Degree of Corrosion: A/A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A + HEAVY B
Cracks: NONE

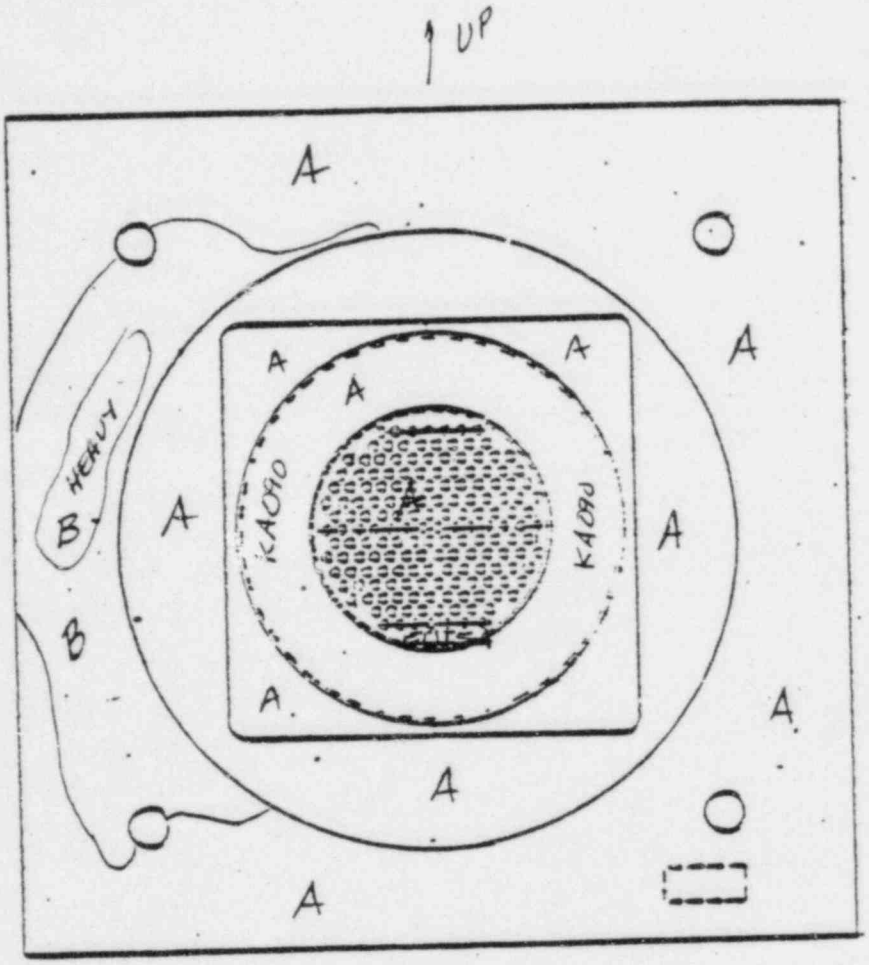
ANCHORAGE AREA CONCRETE
Cracks (width >0.01 in.)
NONE - PAINTED CONCRETE SURFACE - NO VISABLE CRACKS
PAINT NOT SPLIT OR CRACKING

REMARKS: GOOD TIGHT SHIM STACK ... BUSHING FULLY ENGAGED ... BEARING PLATE NOT PAINTED.
GASKET RETAINER PLATE HAS A & B LEVELS OF CORROSION.
SHIM GAPS < 1/4" BOTH SIDE

Date 5/29/85 Signature Joseph M Hall

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 13 FD.



BEARING PL IS NOT PAINTED

Date 5/29/85 Signature Joseph M. Hall

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

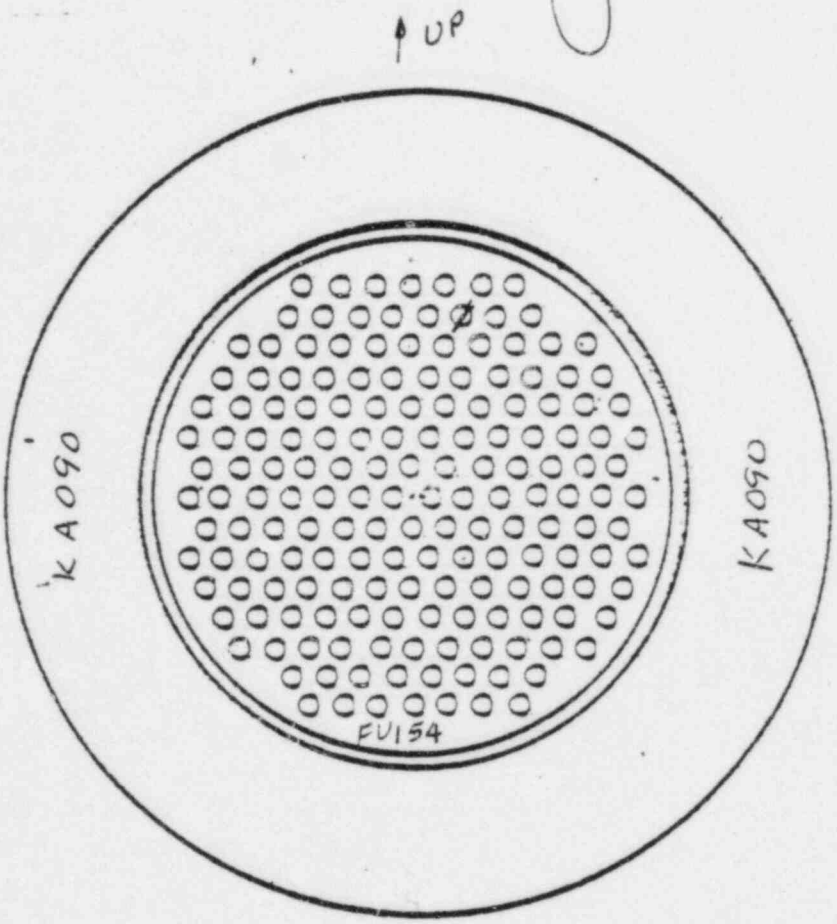
- ● Missing Buttonhead or Wire
- Ø Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON 13 FD

SIGNATURE: [illegible] DATE: 5/29/85



COMMENTS:

1 UNSEATED BUTTONHEAD PROTRUDE = 0.60"

BUTTONHEADS HAVE FLAT HEADS BUT ARE WELL ROUNDED.

BUTTONHEADS HAVE SHINY NEW APPEARANCE

0 5 2 2 5 0 1 1 3

TENDON STRESSING CARD

DATE 11-22-76

TENDON LOCATION 4 13ED JOB NO. 21T-505 JOB BARLEY UNIT #2

DO NOT EXCEED 80% OF ULT
1602 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

JACK NO.	4		6	
GAUGE NO.	114		18	
END	D		[illegible]	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 1500 PSI		9.25		7.25
2. PRIOR TO STRESSING	1500 ~~XX 2000X~~	8.40	1500 ~~XX 2000X~~	5.00
3. 3P... TO 4000 PSI (OR FULL RAM EXTENSION)	3600	11.30	3500	7.70
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		2.90		2.70
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	3600	5.40	3500	3.00
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1602 KIPS 7600 PSI	7600	11.00	7600	8.70
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-8+7+4)		8.50		8.40
11. LOCKOFF 1412 KIPS 6666 PSI TO 6079 PSI	6650		6850	

REMARKS

SHIMS	12 1/8"	SHIMS	12 1/4
FLD. HEAD	HU024	BUSHING	KA095
BRG. PLATE	EC	BRG. PLATE	EA
TENDON END PROTECTED	OK	TENDON END PROTECTED	OK

FOREMAN D W Helms

Q.C. INSPECTOR C F Bell DATE 11-22-76

FORM 180 87 60 APRIL 1975 INRYCO an INLAND STEEL company

0 5 2 2 2 F-6 1

JOB NO.: 21T[illegible]5

TENDON BUTTON HEADING CARD

JOB: FARLEY UNIT 2

TENDON LOCATION: 13FD

DATE: 10-14-76

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
10% GO; NO-GO	(OK) 17	
SPLITS	(OK) 170	
ECCENTRICITY	(OK) 170	
TOTAL UNACCEPTABLE HEADS		-0-

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) OK

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) _____

COMMENTS HV024

FOREMAN Lewis B. Powell Q.C. INSPECTOR P. Shaulach DATE 10-14-76

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 13 FD (FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

BUTTRESS "D"

2. Last Date Stressed 12-22-76

3. Anchor End Number from Stressing Card Field HV024

Shop KA090

4. Previous Shim Thickness from Stressing Card Field 12 1/8"

Shop 12 1/4"

5. Remove Tendon End Cap MH / 15:07 / 5/29/85
Initials Time Date

6. Visual Examination of Bulk Filler Grease CLEAN NEW 'COLD PACK' BY INRYCO — NO GREASE IN CAN NO MOISTURE PRESENT - GREASE CAN CLEAN

MH 5/29/85
Initial/Date

7. Grease Sample Taken → SEE INRYCO DATA COLD PACKED

MH 5/29/85
Initial/Date

8. Bulk Filler Removed (Gal). 0

MH 5/29/85
Initial/Date

9. Anchor End Number As Found HV024

MH 5/29/85
Initial/Date

10. Shim Thickness As Found 12.1

MH 5/29/85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

MH 5/29/85
Initial/Date

DATA SHEET 1

TENDON NO. 13 FD FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ MH / 5/29/85
Initial/Date

13. Tendon End Caps Re-installed MH / 5/29/85
Initial/Date

14. Tendon Re-greasing: PER INRYCO
Data transfered from procedure SG 12.7

Date 5/30/85

Temperature of Grease in Bulk Container 160°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 13 FD
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

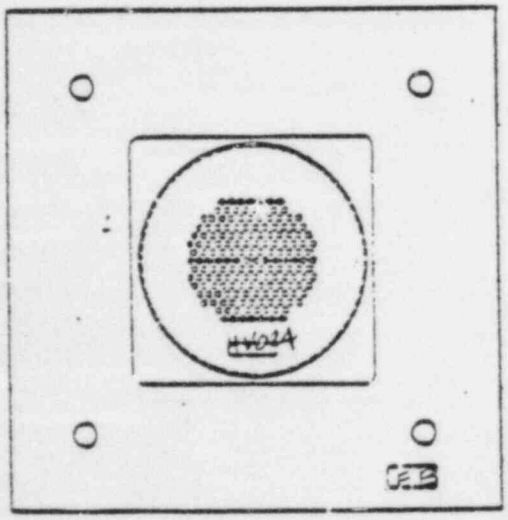
ANCHOR HEAD

Number: HV 024
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A
Cracks: NONE

ANCHORAGE AREA CONCRETE
Cracks (width >0.01 in.)
NO CRACKS VISABLE ...
PAINTED SURFACE WITH NO CRACKING OR PEELING OBSERVED

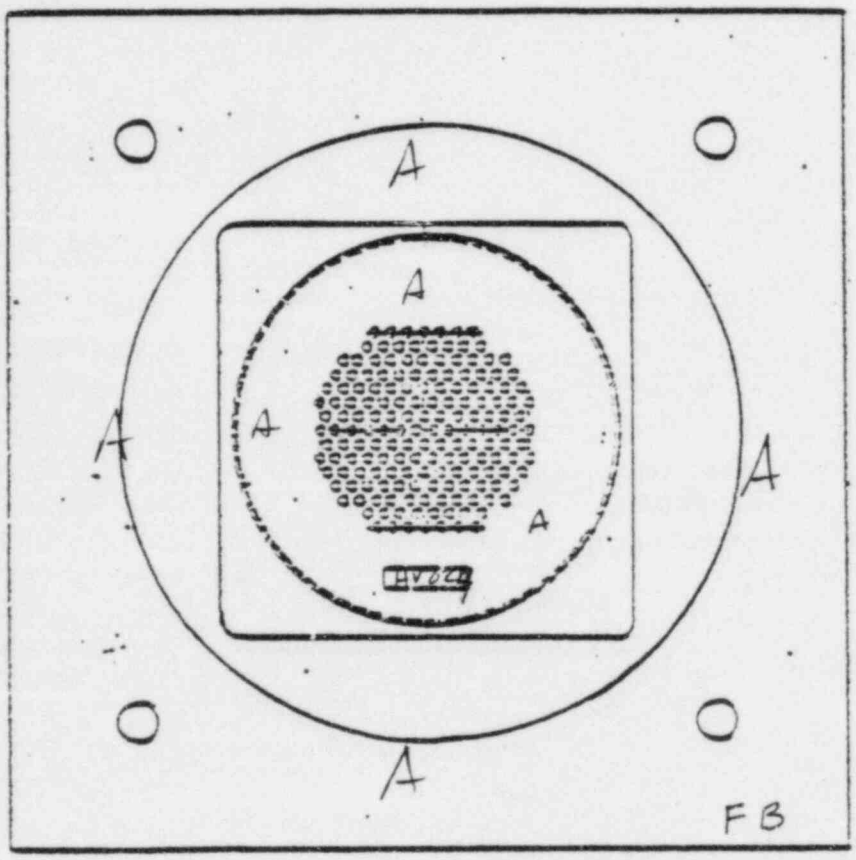
REMARKS: GOOD SHIMS STACK GAP ≈ 1/4 BOTH SIDES ... ANCHOR HEAD HAS SHINY APPEARANCE (PROBABLY GLASS BEADED RECENTLY)

GASKET RETAINER PLATE HAS LEVEL A CORROSION.

Date 5/29/88 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 13 FD



Date 5/29/85 Signature Joseph M. Hall

DATA SHEET 3a REV. 1

LEGEND FOR BUTTONHEADS

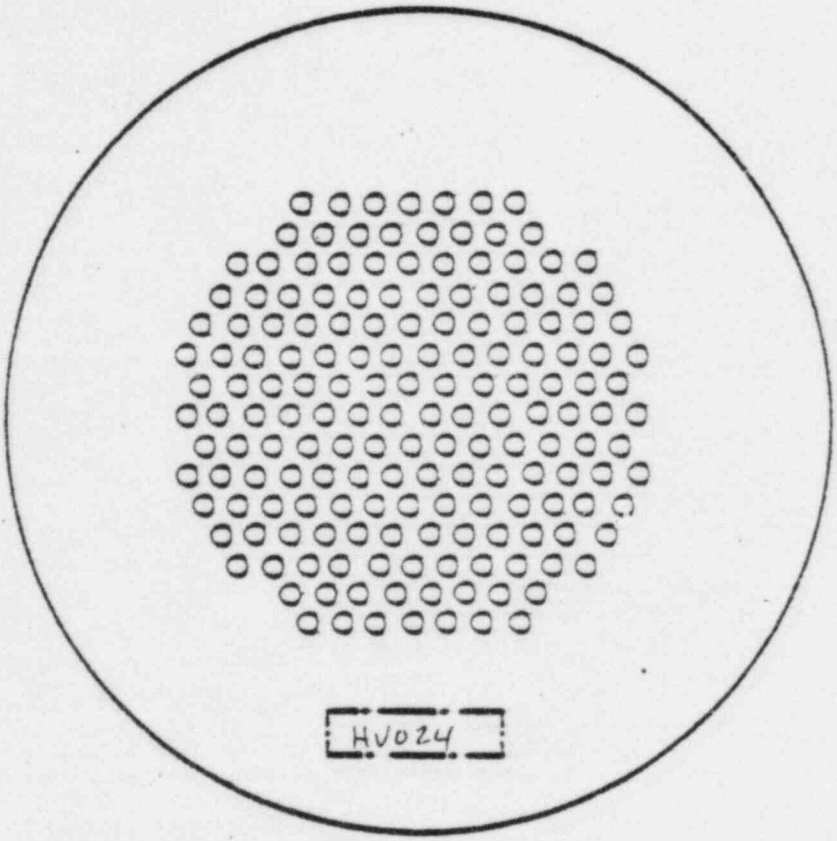
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON 13 FD

Joseph M. Hall / 5/29/85
SIGNATURE DATE



COMMENTS:

WELL FORMED BUTTONHEADS -- UNIFORM SIZE AND SHAPE. NEW SHINEY APPEARANCE NO TS > 0.12

NO MIS-SHAPED HEADS

DATA SHEET 1

TENDON NO. 26 FD (FIELD) / SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "D"

2. Last Date Stressed 5-10-77

3. Anchor End Number from Stressing Card Field HU 035
Shop LG 006

4. Previous Shim Thickness from Stressing Card Field 12"
Shop 12 1/4"

5. Remove Tendon End Cap 0815 LNS / 0815 / 6-1-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease DARK BROWN, GOOD CONSISTENCY, NO APPARENT MOISTURE - 100% COVERAGE
LNS / 6-1-85
Initial/Date

7. Grease Sample Taken LNS / 6-1-85
Initial/Date

8. Bulk Filler Removed (Gal). 5 GAL. LNS / 6-1-85
Initial/Date

9. Anchor End Number As Found HU 035 LNS / 6-1-85
Initial/Date

10. Shim Thickness As Found 11 1/2" LNS / 6-1-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 2
Misshaped 1
Splits > .12" NONE

LNS / 6-1-85
Initial/Date

DATA SHEET 1

TENDON NO. 26 FD (FIELD) SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ✗ NO

If YES, why? _____ LNS / 6-1-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 6-1-85
Initial/Date

14. Tendon Re-greasing: PER INR4CO LNS 6-1-85 Data transfered from procedure SQ 12.4

Date 6/8/85

Temperature of Grease in Bulk Container 220 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 6/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 26 FD
(FIELD) SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 2
Cracks or splits: NONE
Number not properly formed: 1

ANCHOR HEAD

Number: HU 035
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A&B
Cracks: NONE

BEARING PLATE

Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

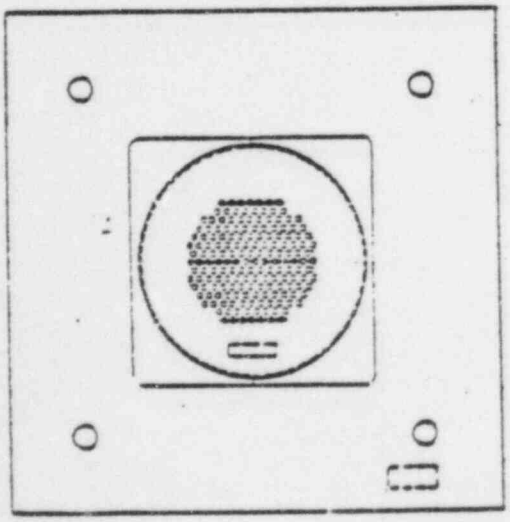
Cracks (width >0.01 in.)

NONE

REMARKS: Much of corrosion on bearing plate appears to have been transferred from the retainer plate

1/2" Gap between halves of outside 4" shim, on bottom side

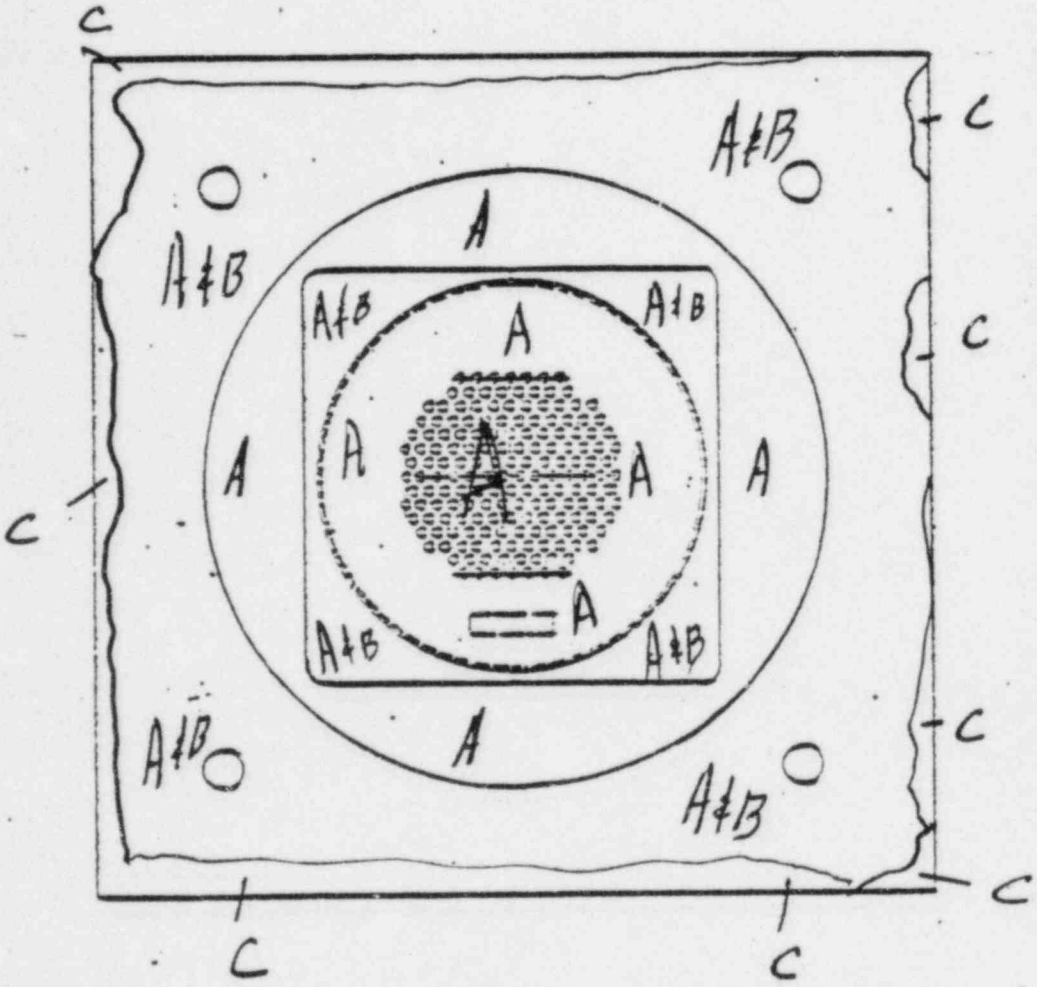
SKETCH



Date 6-1-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 26 DF



Date 6/1/85 Signature J. M. Demmer

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON 26 DF

G. T. Ramme 6-1-85

SIGNATURE DATE

COMMENTS:

2 MISSING WIRES

1 Double Buttonhead

- 05225 0126

TENDON STRESSING CARD

DATE 5-10-77

TENDON LOCATION 4 26ED JOB NO. 21T-505 JOB EARLEY UNIT #2

DO NOT EXCEED 80% OF ULT
1502 KIPS 7600 PSI

LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO. 4		JACK NO. 6	
	GAUGE NO. 51		GAUGE NO. 107	
	END 9		END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 1500 PSI		~~2.75~~		~~2.75~~
2. PRIOR TO STRESSING	1500 ~~2000~~	6.80	1500 ~~2000~~	5.50
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	3500	10.00	3500	8.30
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		3.20		2.80
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	3500	5.40	3500	4.00
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1502 KIPS 7600 PSI	7600	11.20	7600	9.50
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-8+7+4)		9.00		8.30
11. LOCKOFF 1402 KIPS 5662 PSI TO 6931 PSI	6700		6850	

REMARKS

SHIMS	12"	SHIMS	12 1/4"
FLD. HEAD	H4035	BUSHING	H16065
BRG. PLATE	EP	BRG. PLATE	None
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN Fred Hughes

QC. INSPECTOR C. Beee DATE 5-10-77

FORM 780.67-60 APRIL 1975 INRYCO an INLAND STEEL company

U 5 2 2 4 2 1 7 4

JOB NO.: 21T-[illegible]5

TENDON BUTTON HEADING CARD

JOB: FARLEY UNIT 2

TENDON LOCATION: 26-D

DATE: 4-22-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 149	1
SPLITS	(OK) 1[illegible]2	0
ECCENTRICITY	(OK) 150	0
TOTAL UNACCEPTABLE HEADS		1

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS HV035

FOREMAN Fred Lingle Q.C. INSPECTOR C. Rozeie DATE 4-22-77

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 26 FD FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

BUTTRESS "F"

2. Last Date Stressed 5-10-77

3. Anchor End Number from Stressing Card Field HU 035

Shop LG 006

4. Previous Shim Thickness from Stressing Card Field 12"

Shop 12 1/4"

5. Remove Tendon End Cap MH / 15:45 / 5/31/85
Initials Time Date

6. Visual Examination of Bulk Filler Grease DARK BROWN COLOR GOOD CONSISTENCY, NO VISABLE MOISTURE; ANCHORAGE WELL COVERED

MH / 5/31/85
Initial/Date

7. Grease Sample Taken MH / 5/31/85
Initial/Date

8. Bulk Filler Removed (Gal). 12 MH / 5/31/85
Initial/Date

9. Anchor End Number As Found BUSHING LG006 / ANCHOR GL086 MH / 5/31/85
Initial/Date

10. Shim Thickness As Found 12 1/4" MH / 5/31/85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

MH / 5/31/85
Initial/Date

DATA SHEET 1

TENDON NO. 26 FD FIELD (SHOP) END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ MH / 5/31/85
Initial/Date

13. Tendon End Caps Re-installed · MH / 5/31/85
Initial/Date

14. Tendon Re-greasing: PER INRYCO
Data transfered from procedure SQ 127

Date 6/5/85

Temperature of Grease in Bulk Container 182°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) Entire Tendon

MH / 5/31/85
Initial/Date
DBH 8/8/85

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 26 FD
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: LG006/GL086
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

BEARING PLATE

Degree of Corrosion: A THRU C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE > 0.01 IN

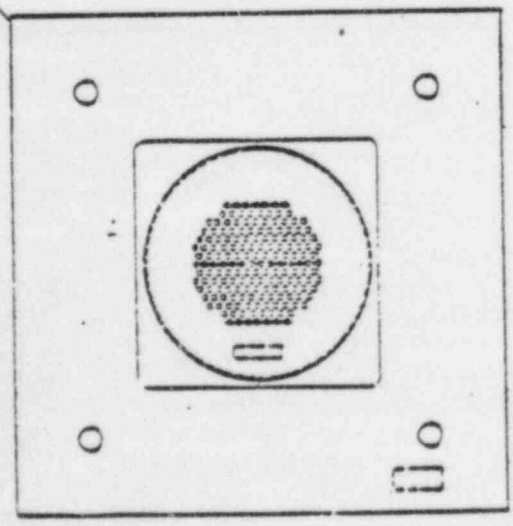
REMARKS: GASKET RETAINER PLATE HAS B & C LEVEL OF CORROSION. SHIM STACK STRAIGHT WITH GAPS ≅ 1/4", SHOD BUSHING IS FULLY ENGAGED. BUSHING HAS NEW, POLISHED APPEARANCE. ANCHORAGE ASSEMBLY IS IN OVERALL GOOD CONDITION.

GASKET RETAINER PLATE APPEARS TO BE TRANSFERRING CORROSION TO BEARING PLATE

Date 5/31/85 Signature Joyce M. Hall

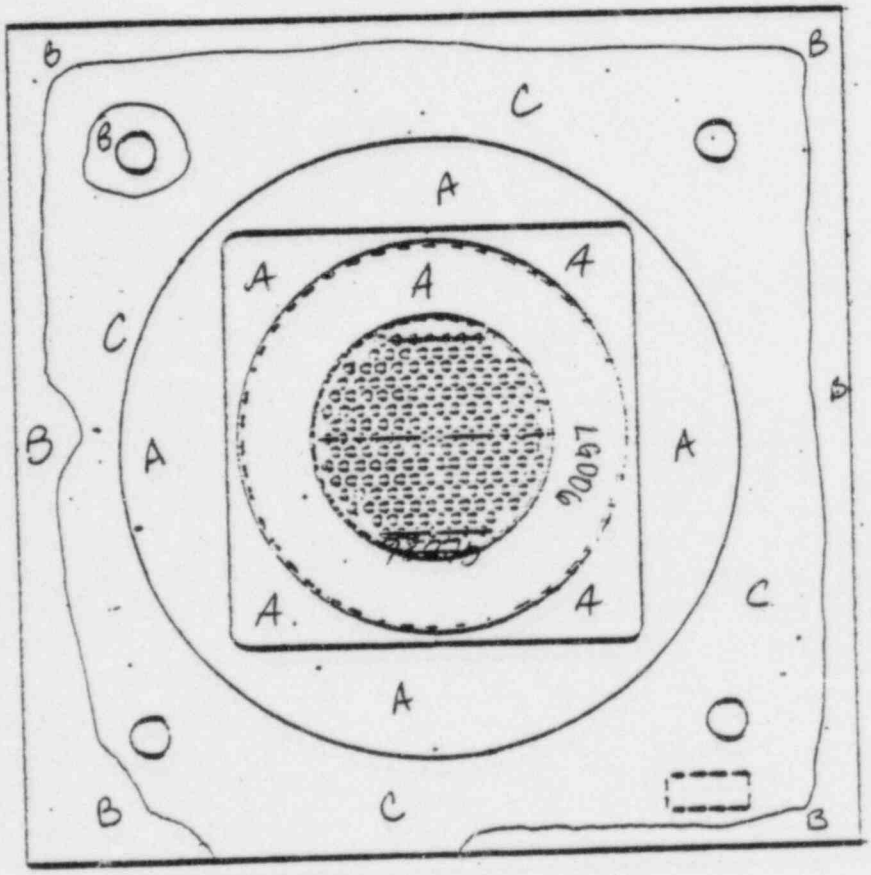
SKETCH

SURFACE CRACK (NO MEASURABLE DEPTH)



ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 26 FD



Date 5/31/85 Signature Joseph M. Hall

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

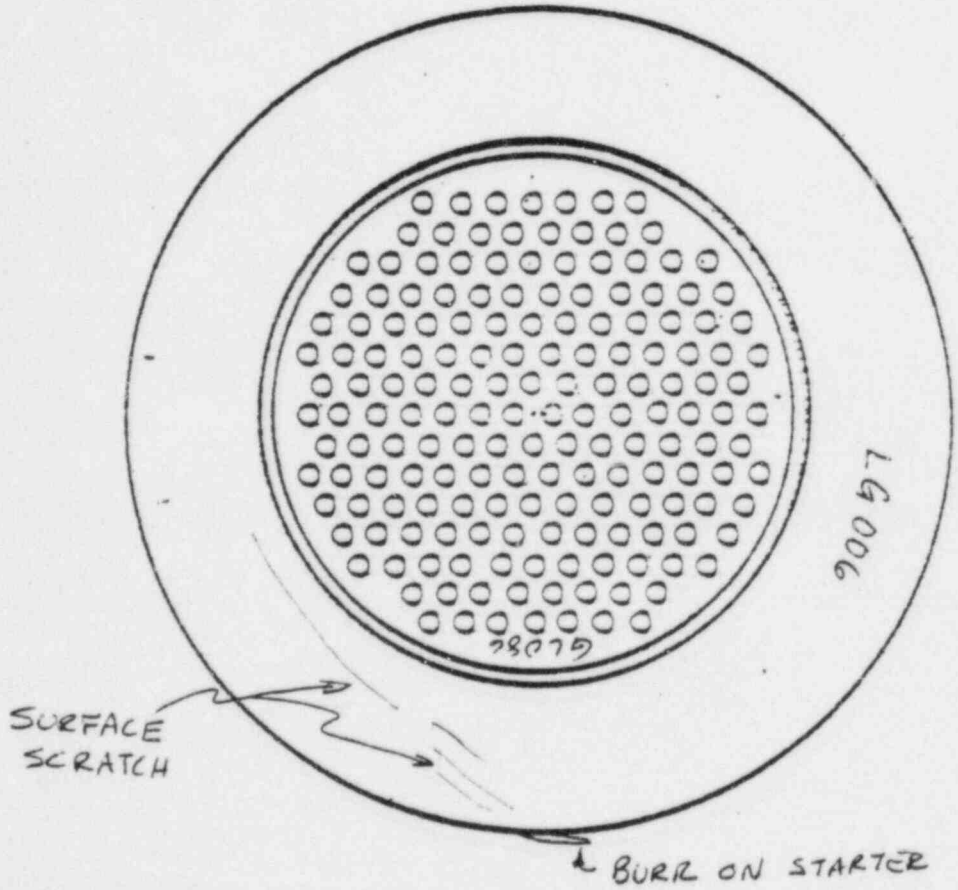
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead ~~with~~ Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON 26 FD

Joseph M. Hall /
UP SIGNATURE DATE



COMMENTS:

NO MISSHAPED, MISSING OR UNSEATED BUTTONHEADS. BUTTONHEADS WELL ROUNDED WITH FLAT TOPS. ALL HAVE SHINEY NEW APPEARANCE.

DATA SHEET 1

TENDON NO. 42 FD (FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BUTTRESS "D"

2. Last Date Stressed 5-18-77

3. Anchor End Number from Stressing Card Field LS 036
Shop LG 024

4. Previous Shim Thickness from Stressing Card Field 11"
Shop 12 1/2"

5. Remove Tendon End Cap LNS / 1530 / 5-31-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease NO APPARENT MOISTURE, GOOD CONSISTENCY, LIGHT BROWN & SMALL AMT. OF BLACK PERSERVATIVE - 100% COVERAGE
LNS / 5-31-85
Initial/Date

7. Grease Sample Taken LNS / 5-31-85
Initial/Date

8. Bulk Filler Removed (Gal). 5 GAL. LNS / 5-31-85
Initial/Date

9. Anchor End Number As Found LS 036 LNS / 5-31-85
Initial/Date

10. Shim Thickness As Found 10 3/4" LNS / 5-31-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE
Misshaped 2
Splits > .12" NONE
LNS / 5-31-85
Initial/Date

DATA SHEET 1

TENDON NO. 42 FD (FIELD) SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? LNS / 5-31-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 5-31-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO LNS 5-31-85 Data transferred from procedure SQ 12.4

Date 6/7/85

Temperature of Grease in Bulk Container 190°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 42 FD
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: NONE
Number not properly formed: 2

ANCHOR HEAD

Number: LS 036
Degree of Corrosion: A & B
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

BEARING PLATE

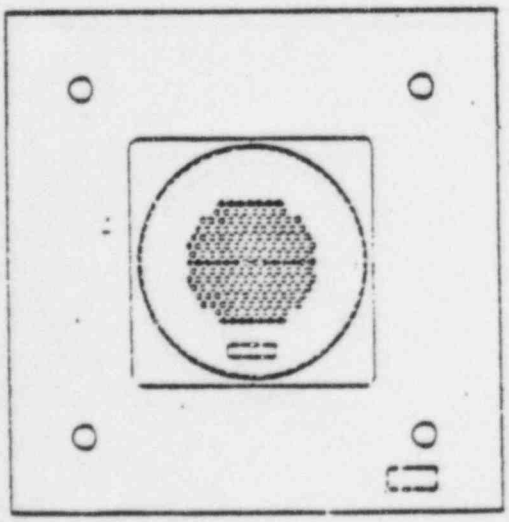
Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE

REMARKS: MUCH of BEARING plate CORROSION APPEARS to have been transferred FROM RETAINER plate

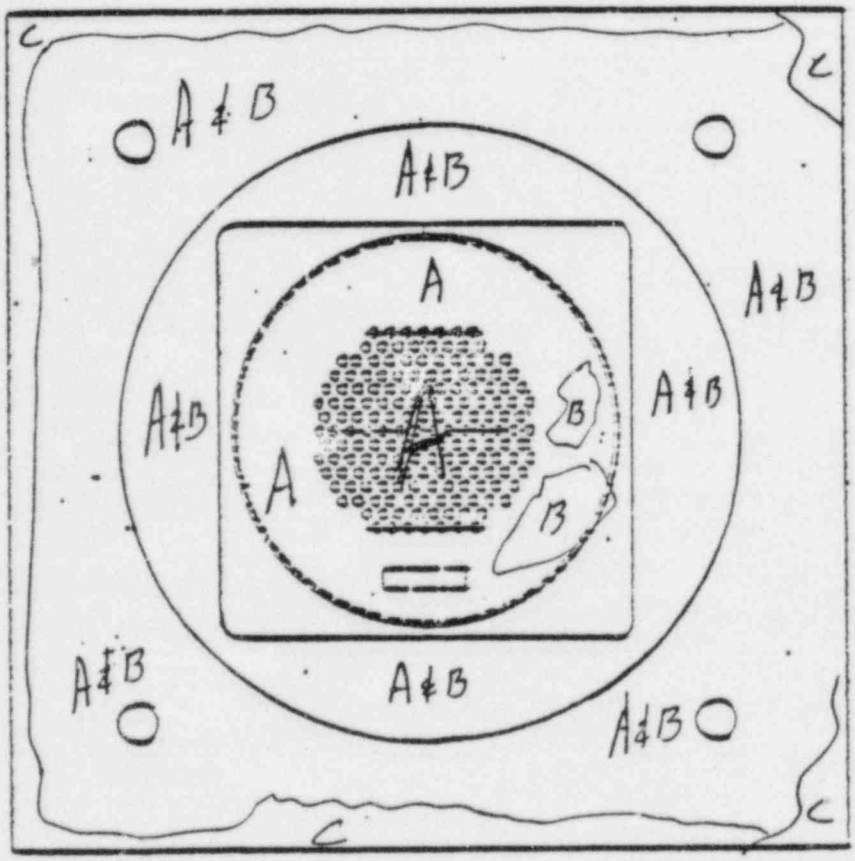
SKETCH



Date 5-31-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. 42 ~~DE~~ ED



Date 5-31-85 Signature J. T. R.

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

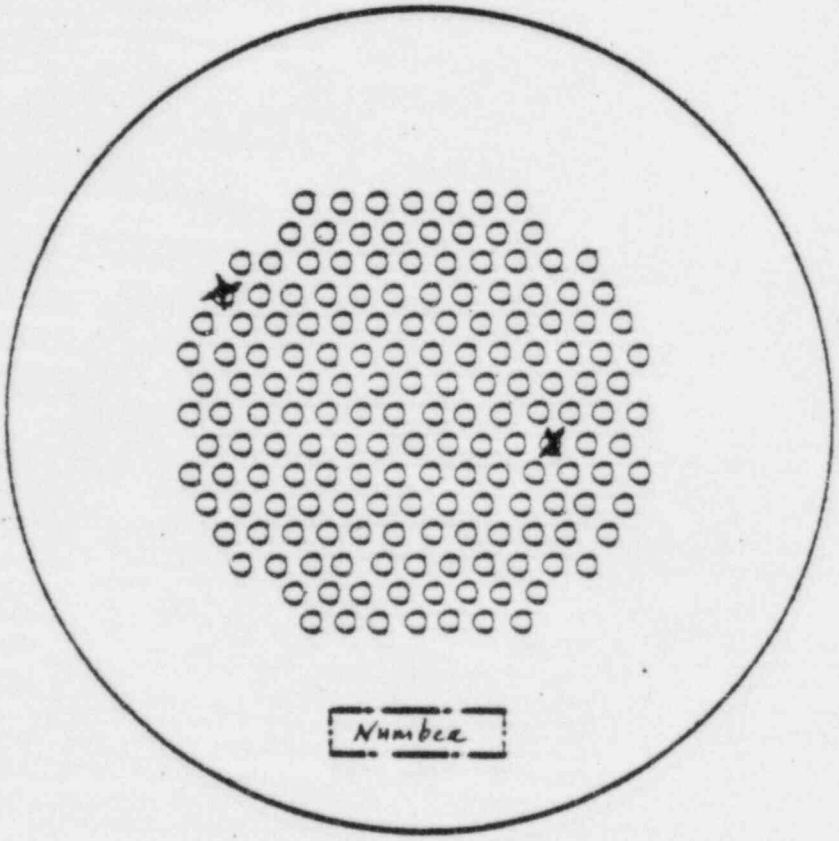
JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON 42 ~~DE~~ FD 6-12-85

J. T. Rammel 5-31-85

SIGNATURE DATE



COMMENTS:

2 Double Buttonheads

-0-5-2-2-5-0-1-4-3-

TENDON STRESSING CARD

DATE 5-18-77

TENDON LOCATION 4 42ED JOB NO. 217-505 JOB FARLEY UNIT #2

DO NOT EXCEED 80% OF ULT
1602 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO. 4		JACK NO. 6	
	GAUGE NO. 51		GAUGE NO. 107	
	END D		END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 1500 PSI		P 75		P 75
2. PRIOR TO STRESSING	1500 ~~XX 2000X~~	6.90	1500 ~~XX 2000~~	5.70
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	3500	9.70	3500	8.90
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		2.80		3.20
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	3500	4.70	3500	3.10
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1602 KIPS 7600 PSI	7600	10.40	7600	9.30
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-6+7+4)		CTR ~~8.50~~ 8.50		9.40
11. LOCKOFF 1402 KIPS 5646 PSI TO ~~5070~~ 6931 PSI	6850		6850	

REMARKS

SHIMS	11"	SHIMS	12½"
FLD. HEAD	L5036	BUSHING	L6024
BRG. PLATE	NONE	BRG. PLATE	GW169
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN Fred Langley

Q.C. INSPECTOR C. F. Bell DATE 5-18-77

FORM 780.67.60 APRIL 1975 INRYCO an INLAND STEEL company

0 5 2 2 4 2 1 9 0

TENDON BUTTON HEADING CARD

JOB NO.: 21T[illegible]5

JOB: FARLEY UNIT 2

TENDON LOCATION: 42FD

DATE: 3-31-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 167	3
SPLITS	(OK) 170	0
ECCENTRICITY	(OK) 170	0
TOTAL UNACCEPTABLE HEADS		3

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS L2 036 THREE (3) double heads

FOREMAN Fred Triplett Q.C. INSPECTOR C. J. Beere DATE 3-31-77

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. 42 FD FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C)
BUTTRESS "F"

2. Last Date Stressed 5-18-77

3. Anchor End Number from Stressing Card Field LS 036
Shop LG 024

4. Previous Shim Thickness from Stressing Card Field 11"
Shop 12 1/2"

5. Remove Tendon End Cap LNS / 1315 / 6-1-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease DARK BROWN, NO APPARENT MOISTURE, GOOD CONSISTENCY — 100% COVERAGE
LNS / 6-1-85
Initial/Date

7. Grease Sample Taken LNS / 6-1-85
Initial/Date

8. Bulk Filler Removed (Gal). 3 Gal. LNS / 6-1-85
Initial/Date

9. Anchor End Number As Found GL 063
BEARING LG 024 LNS / 6-1-85
Initial/Date

10. Shim Thickness As Found 12 3/8" LNS / 6-1-85
Initial/Date

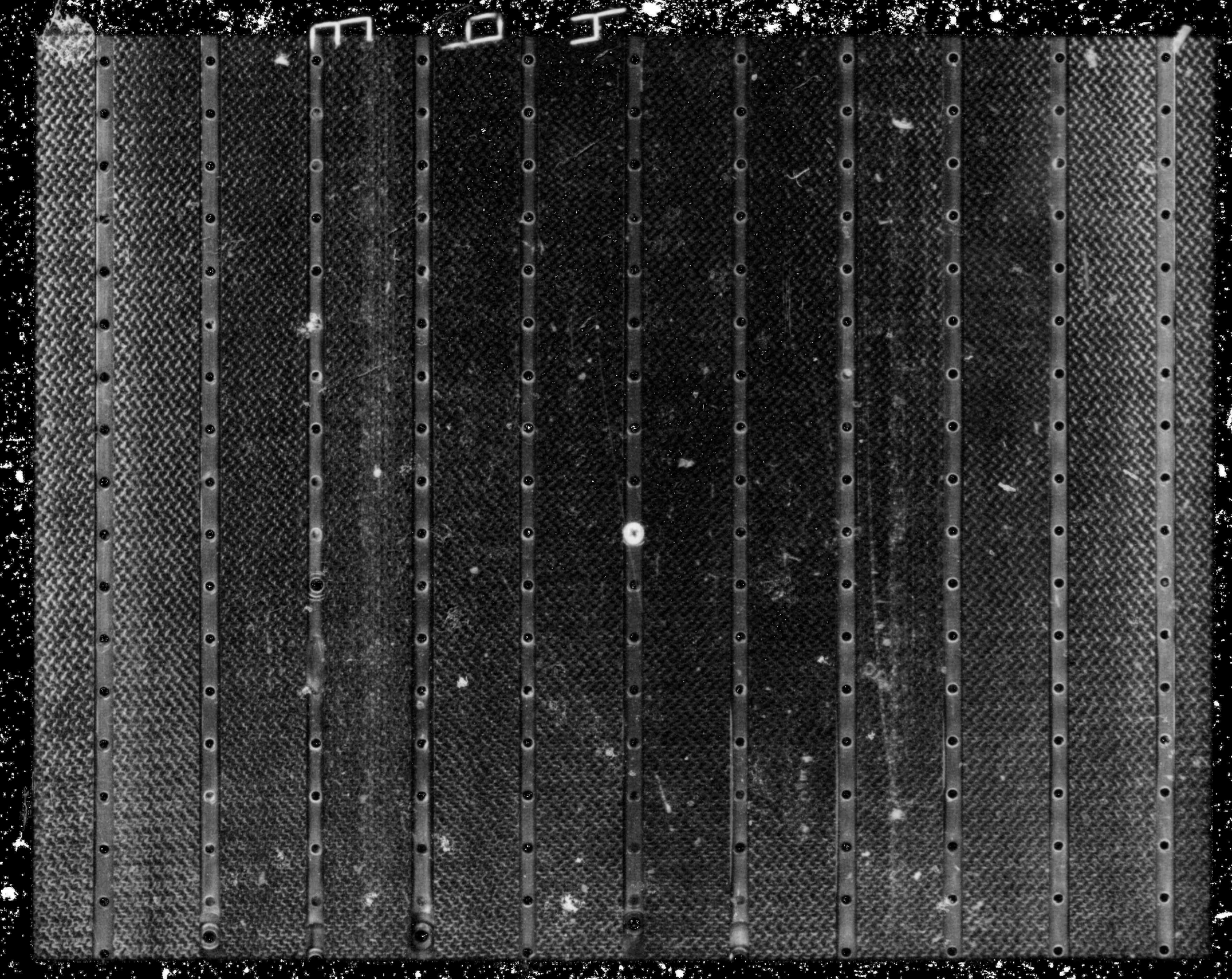
11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE

Misshaped NONE

Splits > .12" NONE

LNS / 6-1-85
Initial/Date



DATA SHEET 1

TENDON NO. 42 FO FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? LNS / 6-1-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 6-1-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO 6-1-85 LNS Data transferred from procedure SQ 12.7

Date 6/6/85

Temperature of Grease in Bulk Container 160°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. 42 FD
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: NONE
Number not properly formed: NONE

ANCHOR HEAD

Number: GL063
Degree of Corrosion: A
Cracks: None

SHIMS

Degree of Corrosion: A & B
Cracks: None

BEARING PLATE

Degree of Corrosion: A, B & C
Cracks: NONE

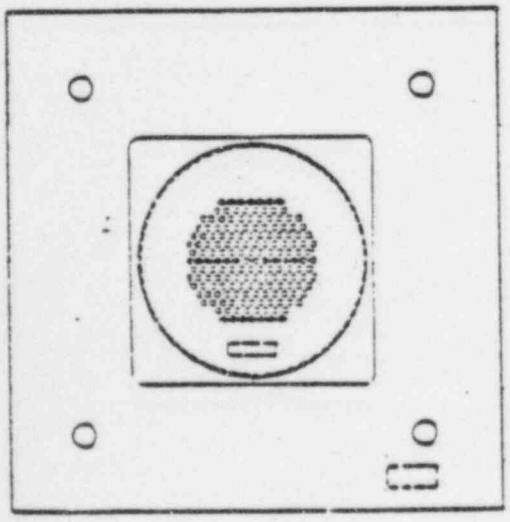
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
None

REMARKS: Much of corrosion on the bearing plate appears to have been transferred from the retainer plate.

gap between outside 4" shims halves measures 11/16", top only.
gap between halves of inside 4" shim is 7/16", top only

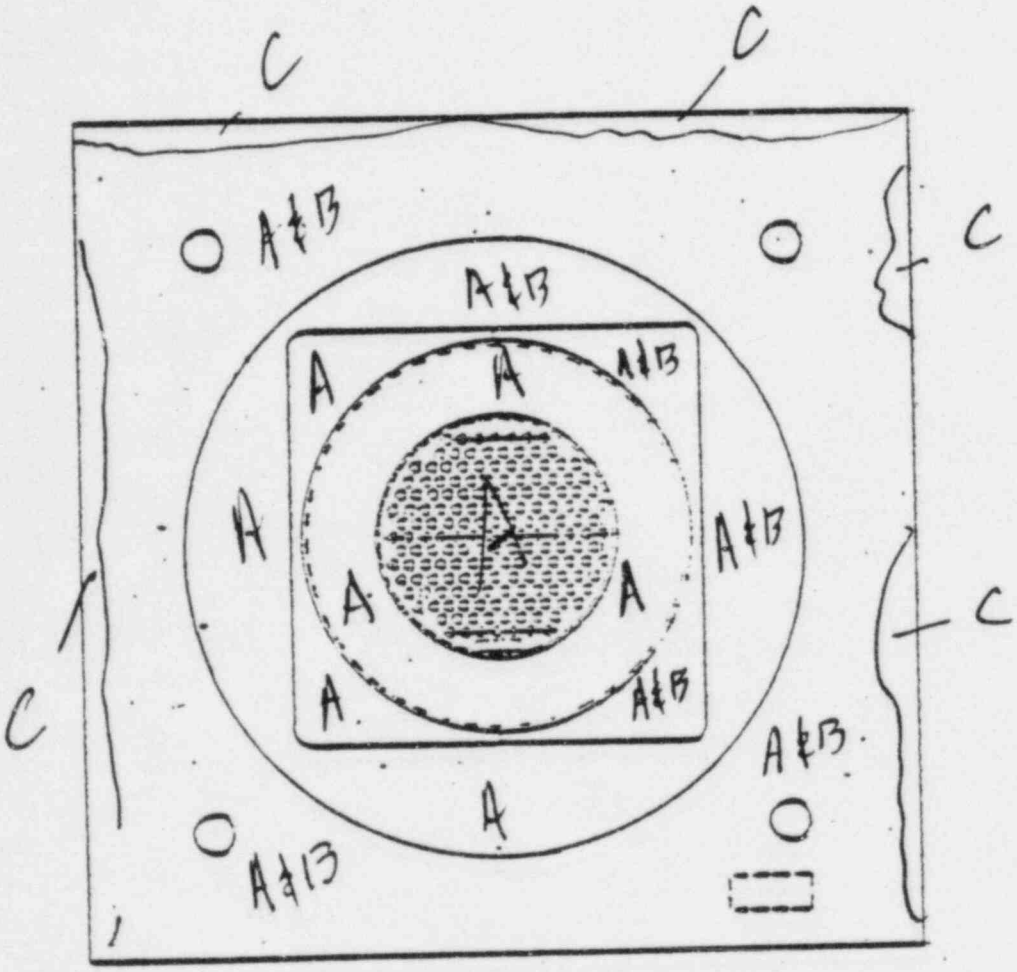
SKETCH



Date 6-1-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. 42 FD.



Date 6-1-85 Signature J. T. Shannon

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

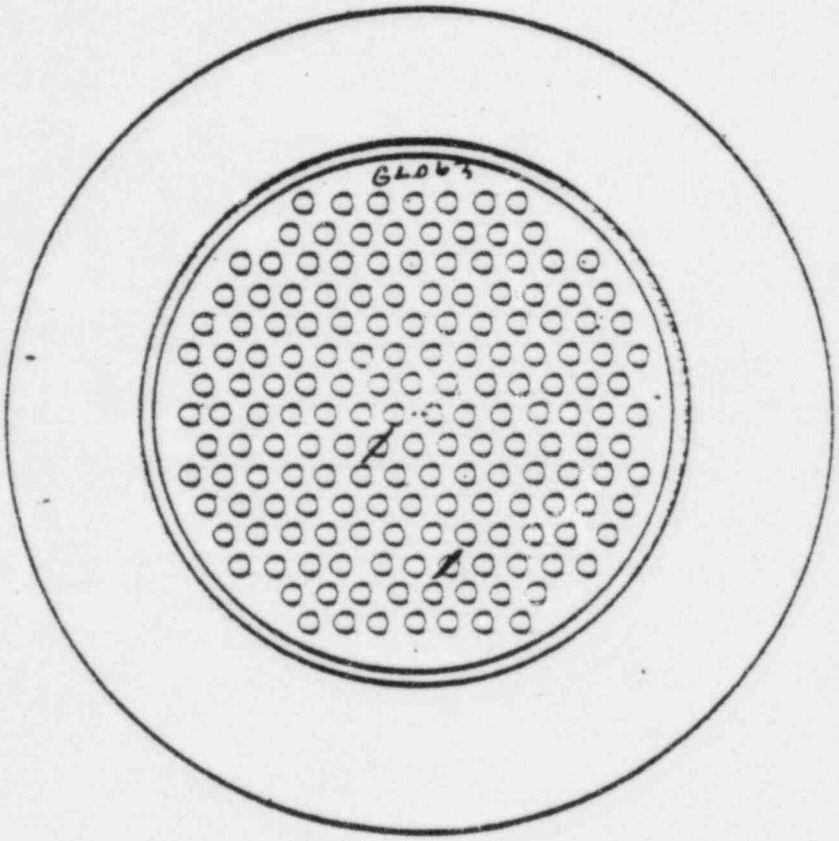
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON 42 FD

SIGNATURE 6-1-85 DATE



COMMENTS:

2 UNSEATED BUTTONHEADS - UNABLE TO TURN MORE THAN A HALF ROTATION ~~etc~~ WITH CHANNEL LOCK PLIERS. CWS 6-1-85

DATA SHEET 1

TENDON NO. D-109 (FIELD) SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, (B) or C).
BOTTOM AZ 345° 25' 39"

2. Last Date Stressed 6-13-77

3. Anchor End Number from Stressing Card Field LS069
Shop KA 115

4. Previous Shim Thickness from Stressing Card Field 5 3/4"
Shop 6 1/4

5. Remove Tendon End Cap SDL / 0905 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease BROWN AND BLACK TO DARK BROWN, ANCHORAGE HAD BEEN COLD PACKED BY INRYCO AFTER INRYCO INSPECTION, ANCHORAGE WELL COATED, NO VISIBLE MOISTURE
SDL / 6-10-85
Initial/Date

7. Grease Sample Taken
SDL / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 1/2 GAL
SDL / 6-10-85
Initial/Date

9. Anchor End Number As Found LS 069
SDL / 6-10-85
Initial/Date

10. Shim Thickness As Found 5 3/4"
SDL / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 1
Splits > .12" 0

SDL / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-109 (FIELD)/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL / 6-10-85
Initial/Date

13. Tendon End Caps Re-installed SDL / 6-10-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO
Data transferred from procedure SQ 12.8

Date 6/13/85

Temperature of Grease in Bulk Container 184°F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-109
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE

Cracks or splits: 0
Number not properly formed: 1

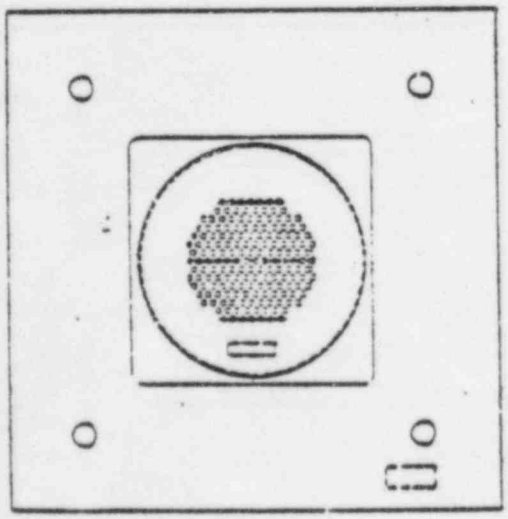
ANCHOR HEAD

Number: LS 069
Degree of Corrosion: A & B
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

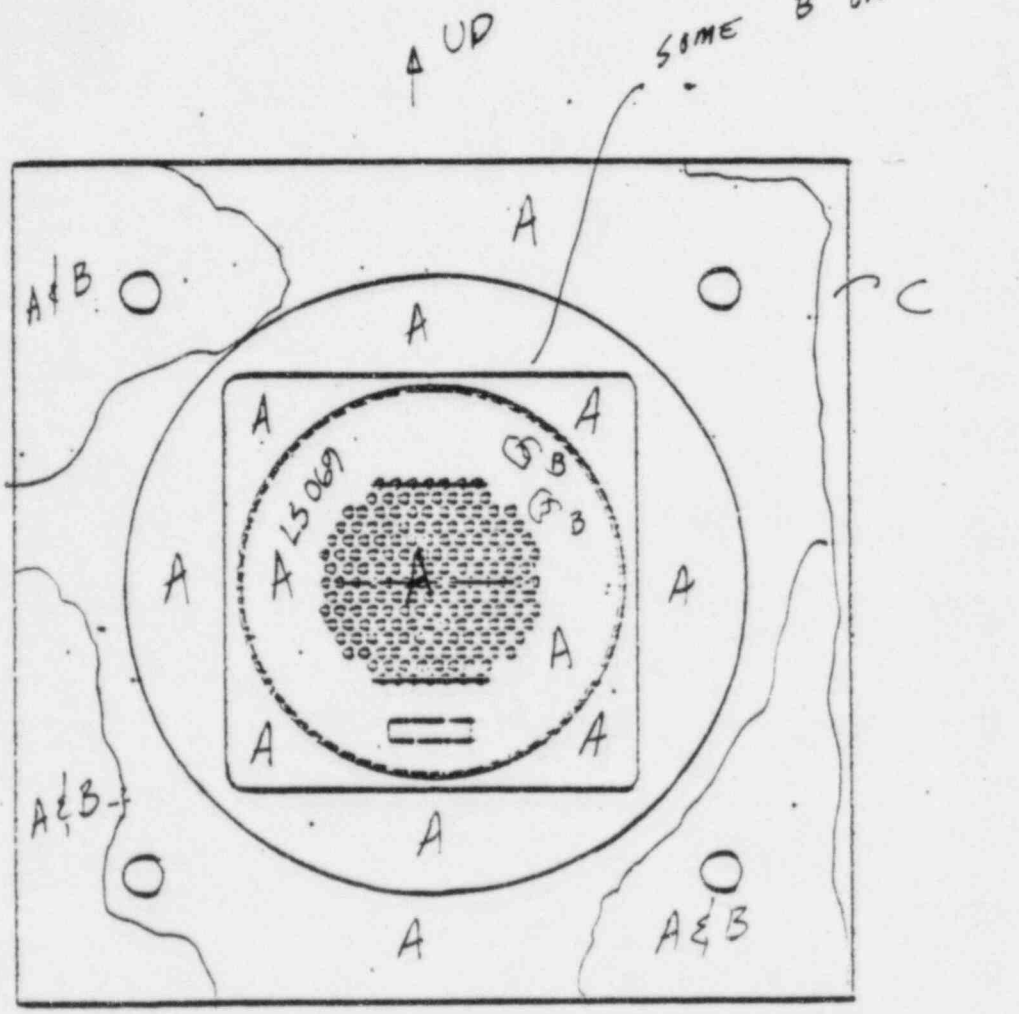
Cracks (width >0.01 in.)
NONE > 0.01"

REMARKS: SMALL METAL FILINGS AROUND BUTTONHEADS, SEEM TO BE FROM ANCHORHEAD MACHINING, REMOVED ALL FILINGS POSSIBLE, GOOD SHIM GAPS ON TOP, APPX 3/8" ON BOTTOM

Date 6-10-85 Signature Steven D. Low

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. D109



Date 6-10-85 Signature Steven D Crowe

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

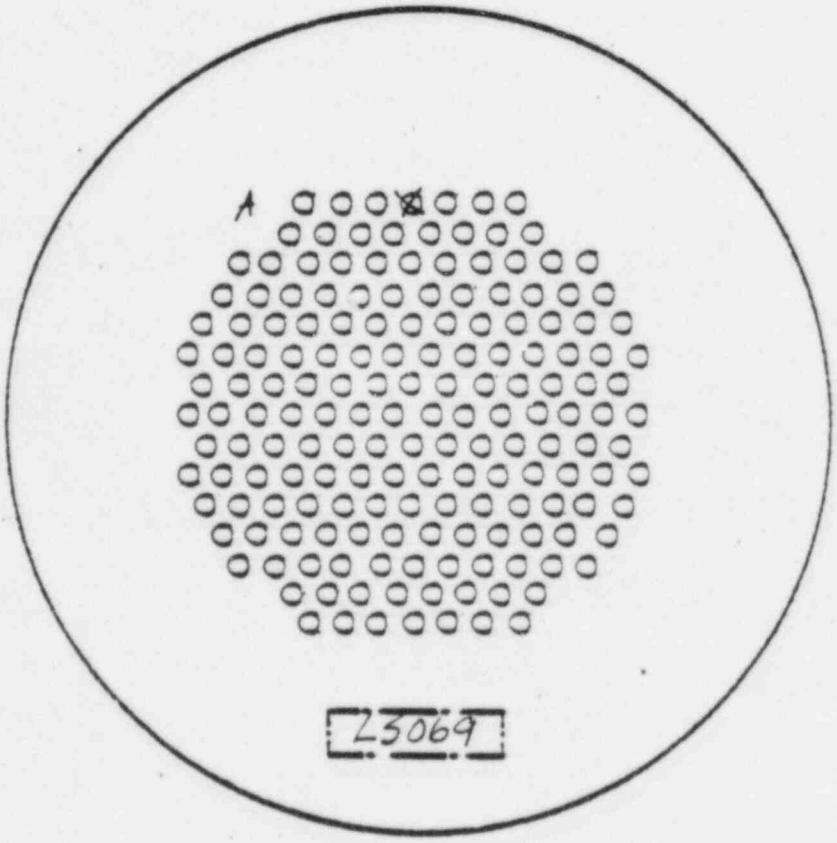
JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON D 109

Steve D. Lowe / 6-10-85

SIGNATURE DATE



COMMENTS:

1 DOUBLE BUTTONHEAD (A-4)

NO SPLITS > 0.12"

DATA SHEET 1

TENDON NO. D-109 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
BOTTOM AZ 204° 34' 21"

2. Last Date Stressed 6-13-77

3. Anchor End Number from Stressing Card Field LS 069
Shop KA 115

4. Previous Shim Thickness from Stressing Card Field 5 3/4"
Shop 6 1/4"

5. Remove Tendon End Cap SDL / 1546 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease BROWN WITH SOME BLACK PERSERVATIVE, NO VISIBLE MOISTURE, GOOD COVERAGE ON ANCHORAGE
SDL / 6-10-85
Initial/Date

7. Grease Sample Taken SDL / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 12 GAL SDL / 6-10-85
Initial/Date

9. Anchor End Number As Found LI 051 SDL / 6-10-85
BUSHING KA 115
Initial/Date

10. Shim Thickness As Found 6 1/4" SDL / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

SDL / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-109 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL 16-10-85
Initial/Date

13. Tendon End Caps Re-installed SDL 16-10-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO procedure 12.8

Date (see field end date)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

/
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-109
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: KA 115 LT 051
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

BEARING PLATE

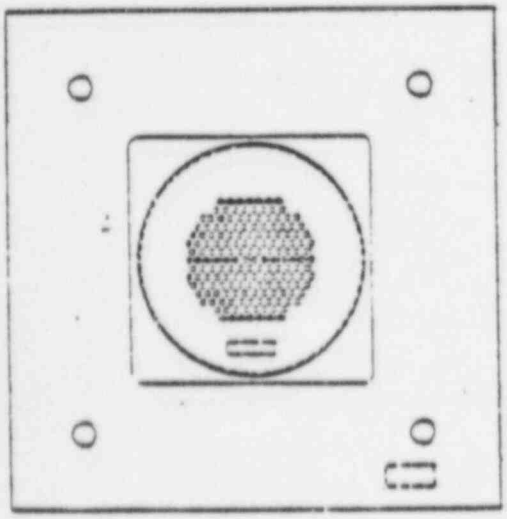
Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE >0.01"

REMARKS: BUSHING FULLY ENGAGED, SHIM GAPS ≈ 3/8" BEARING PLATE DOES NOT APPEAR TO HAVE BEEN PAINTED

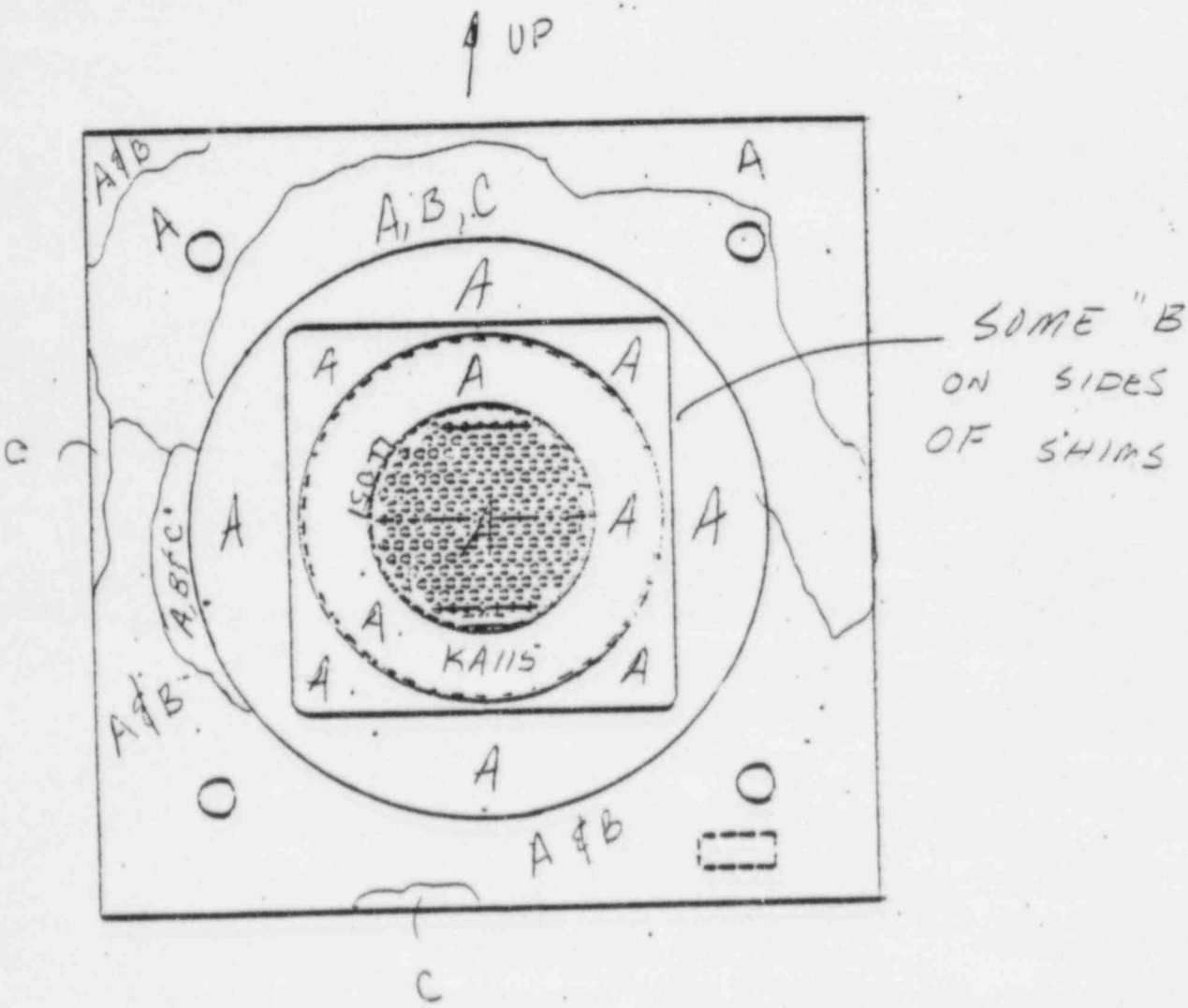
SKETCH



Date 6-10-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. D 109.



Date 6-10-85 Signature Steven D. Lowe

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

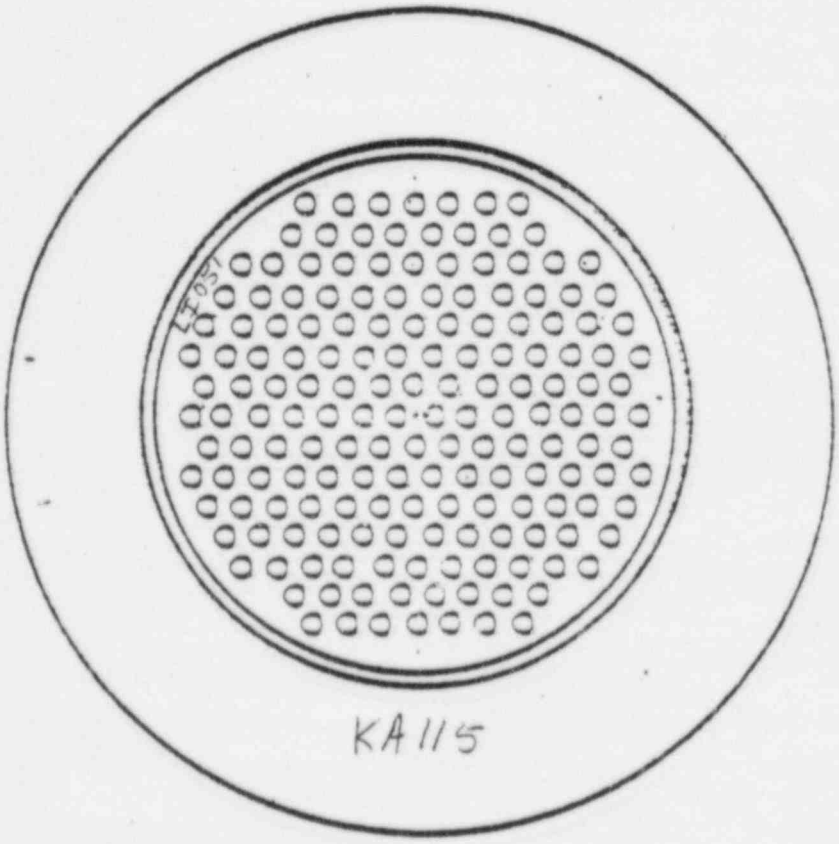
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON D 109

SIGNATURE 16-10-95 DATE



COMMENTS:

NONE MISSING OR MISSHAPED

NO SPLITS > 0.12"

0 5 2 2 5 0 2 8 7

TENDON STRESSING CARD

DATE 6-13-77

TENDON LOCATION D 109 JOB NO. 21T-505 JOB BARNEY UNIT #2

DO NOT EXCEED 80% OF ULT
1402 KIPS 7600 PSI

LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

JACK NO.	5		2	
GAUGE NO.	107		54	
END				
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 500 PSI		4.15		4.15
2. PRIOR TO STRESSING	1800 ~~2000~~	4.70	1800 ~~2000~~	4.78
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	—	—	—	—
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		—		—
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	—	—	—	—
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1812 KIPS 7200 PSI	7200	9.30	7200	7.80
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-6+7+4)		4.60		3.74
11. LOCKOFF 1402 KIPS 6444 PSI TO ~~6879~~ 6931 PSI	6800		6650	

REMARKS

SHIMS	5¾"	SHIMS	6¼"
FLD. HEAD	LS069	BUSHING	KA14"
BRG. PLATE	6W66	BRG. PLATE	N048
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN Fred Kingler

Q.C. INSPECTOR C J Bell DATE 6-13-77

FORM 780.67-60 APRIL 1975 INRYCO an INLAND STEEL company

0 5 2 2 4 2 3 3 7

TENDON BUTTON HEADING CARD

JOB NO.: 21T[illegible]5

JOB: FARLEY UNIT 2

TENDON LOCATION: D1 94A

DATE: 4-7-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 169	1
SPLITS	(OK) 170	0
ECCENTRICITY	(OK) 170	0
TOTAL UNACCEPTABLE HEADS		1

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS L5069

FOREMAN Fred Singles Q.C. INSPECTOR C. J. Bell DATE 4-7-77

FORM 780.65-60 APR. 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. D-119 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
CENTER AZ 176° 40' 38"

2. Last Date Stressed 6-17-77

3. Anchor End Number from Stressing Card Field HP 106
Shop HW 032

4. Previous Shim Thickness from Stressing Card Field 6 1/8"
Shop 6 1/4"

5. Remove Tendon End Cap MH / 9:40 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease GREASE AROUND ANCHORAGE IS LIGHT BROWN WITH GOOD CONSISTENCY AND NO APPARENT MOISTURE. 100% COVERAGE ON ANCHORAGE.
MH / 6-10-85
Initial/Date

7. Grease Sample Taken MH / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 19 GAL MH / 6-10-85
Initial/Date

9. Anchor End Number As Found HW032/ L1 017 MH / 6-10-85
Initial/Date

10. Shim Thickness As Found 6 1/8" MH / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0
MH / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-119 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ MH / 6-10-85
Initial/Date

13. Tendon End Caps Re-installed MH / 6-10-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO
Data transfered from procedure SQ 12.8

Date 6/12/85

Temperature of Grease in Bulk Container 210 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) Entire Tendon

DBH / 9/9/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-119
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

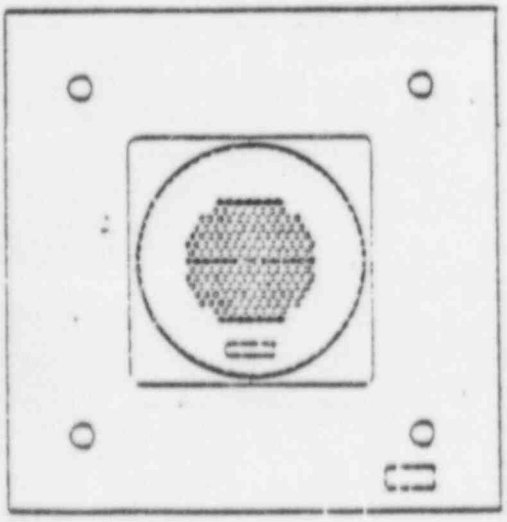
ANCHOR HEAD

Number: HW032/L1017
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A & B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NO CRACKS WITH A WIDTH GREATER THAN 0.01". CONSTRUCTION JOINT APPARENT.

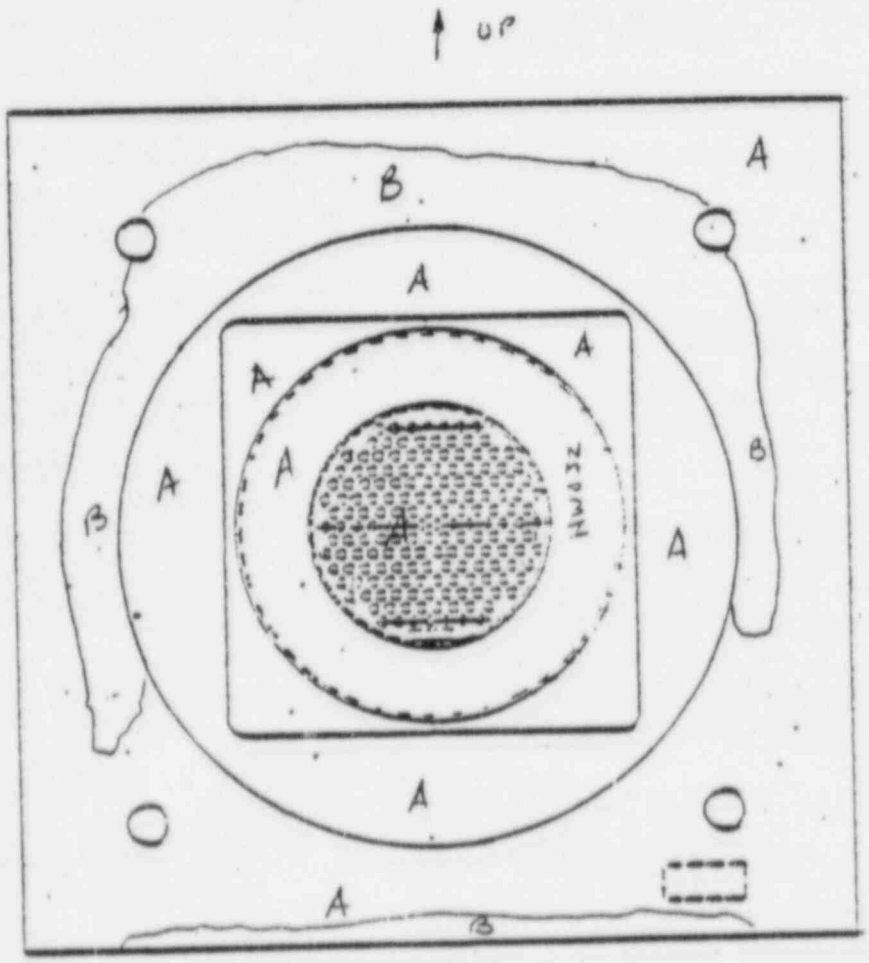
REMARKS: GASKET RETAINER PLATE HAS MOSTLY B CORROSION LEVEL. SHIM STACK IN GOOD SHAPE. BOTH GAPS ARE 1/4" OR LESS. SHOP BUSHING IS FULLY ENGAGED ON ANCHORHEAD.

REMOVED METAL SHAVINGS OF UNKNOWN ORIGIN FROM BUTTONHEAD AREA. SHAVINGS (3) WERE ≈ 1" LONG, SHINEY AND TIGHTLY CURLED.

Date 6-10-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. D-119.C



BEARING PLATE CORROSION APPEARS TO HAVE BEEN TRANSFERRED FROM THE GASKET RETAINER PLATE.

Date 6-10-85 Signature [signature]

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

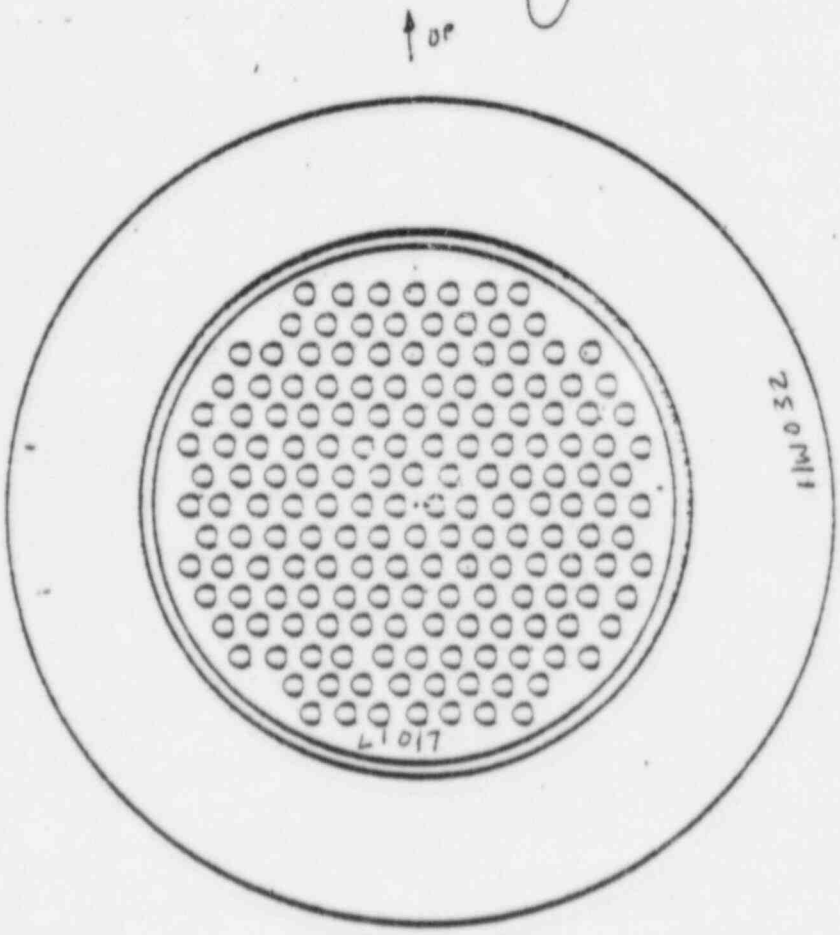
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON D-119-C

Joseph M. Hall 12-10-85
SIGNATURE DATE



COMMENTS:

NO UNSEATED, MISSING, OR IMPROPERY FORMED BUTTONHEADS.
ALL BUTTONHEADS ARE WELL ROUNDED WITH FLAT TOPS, AND
HAVE SHINEY NEW APPEARANCE

DATA SHEET 1

TENDON NO. D-119 (FIELD) SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or (C).

CENTER AZ 13° 19' 22"

2. Last Date Stressed 6-17-77

3. Anchor End Number from Stressing Card Field HP 106

Shop HW 032

4. Previous Shim Thickness from Stressing Card Field 6 1/8"

Shop 6 1/4"

5. Remove Tendon End Cap LNS / 0915 / 6-8-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease Good consistency, no apparent moisture, predominantly black preservative

LNS / 6-8-85
Initial/Date

7. Grease Sample Taken LNS / 6-8-85
Initial/Date

8. Bulk Filler Removed (Gal). 1 GAL. LNS / 6-8-85
Initial/Date

9. Anchor End Number As Found HP106 LNS / 6-8-85
Initial/Date

10. Shim Thickness As Found 6 3/8" LNS / 6-8-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE

Misshaped 1

Splits > .12" 2

LNS / 6-8-85
Initial/Date

DATA SHEET 1

TENDON NO. D-119 (FIELD) SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 6-8-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 6-8-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO procedure SQ 12.8

Date LNS 6-8-85 (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

_____ /
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-119
FIELD / SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: NONE
Cracks or splits: 2 > 0.12"
Number not properly formed: 1

ANCHOR HEAD

Number: HP 106
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

BEARING PLATE

Degree of Corrosion: A, B & C
Cracks: NONE

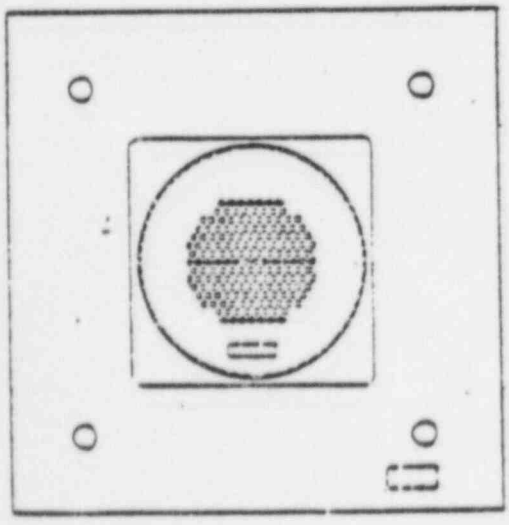
ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NONE

REMARKS:

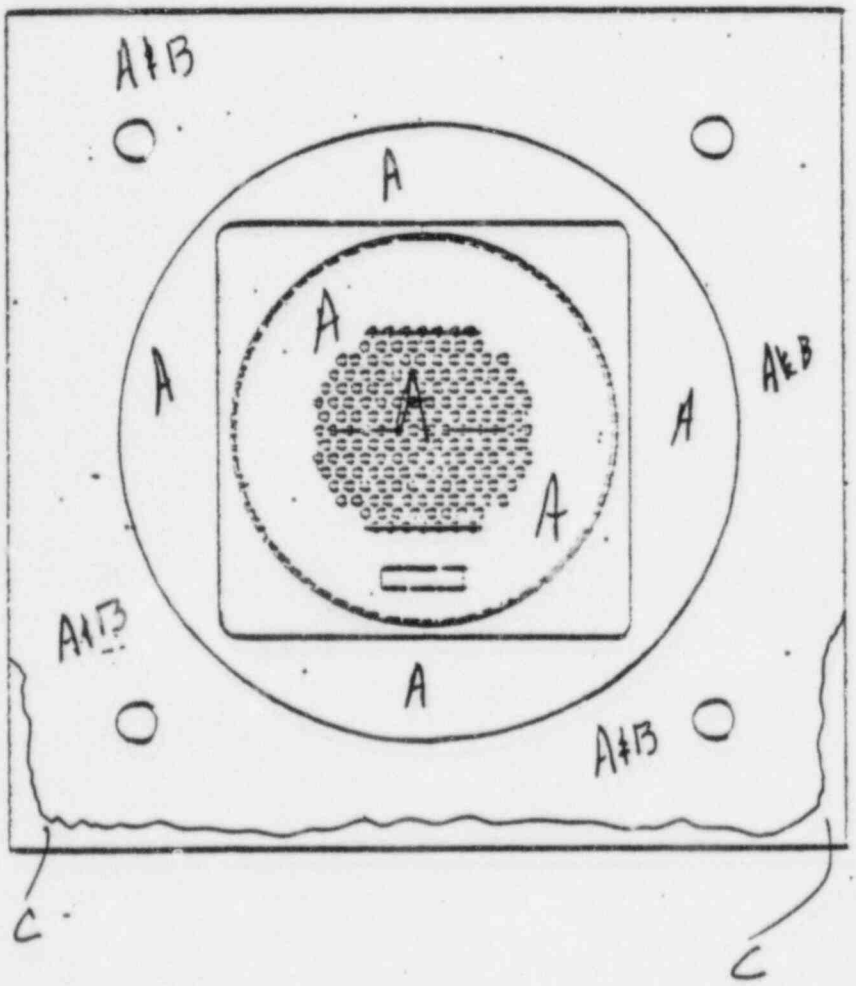
SKETCH



Date 6-8-95 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. D114



Date 6-8-85 Signature [signature]

LEGEND FOR BUTTONHEADS

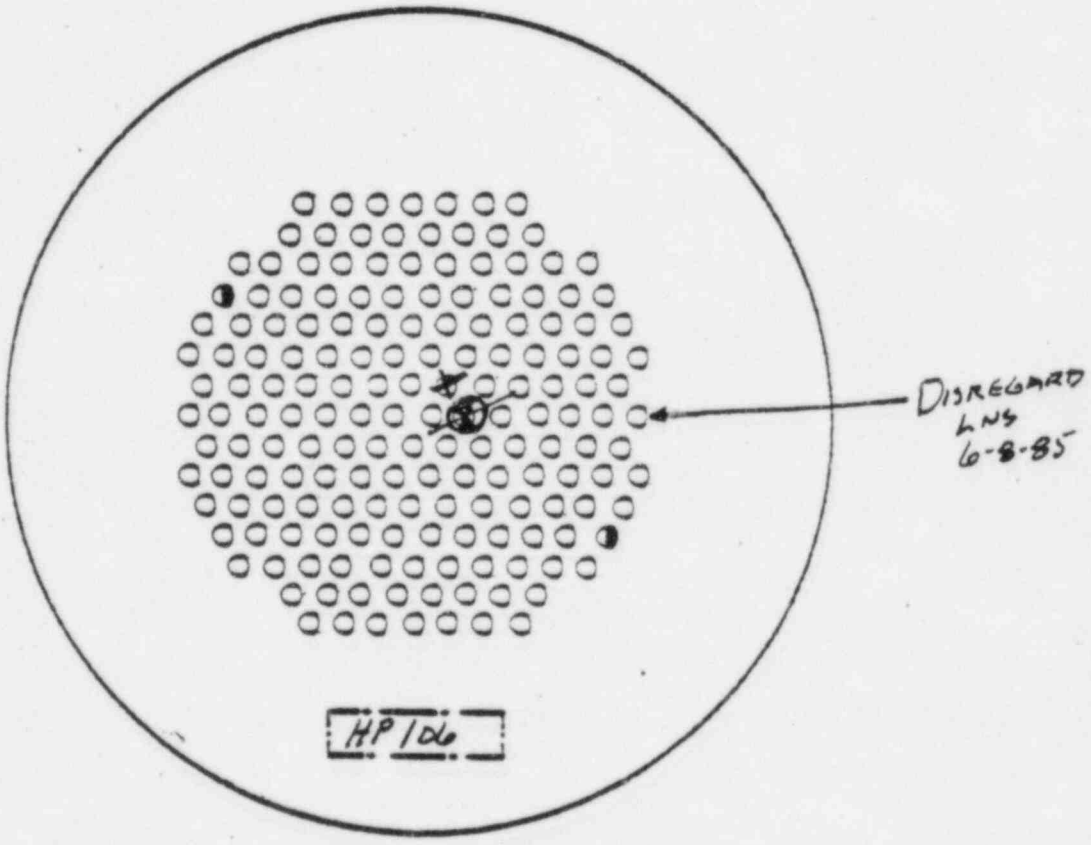
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON D119

SIGNATURE 6-8-85 DATE



COMMENTS:

2 splits approx. 0.15"

1 Double Buttonhead

0 5 2 2 5 0 2 9 9

TENDON STRESSING CARD

DATE 6-17-77

TENDON LOCATION D 119 JOB NO. 71T-505 JOB EARLEY UNIT 42

DO NOT EXCEED 80% OF ULT
1502 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO. 4 / GAUGE NO. 10 / END		JACK NO. 6 / GAUGE NO. 122 / END	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 500 PSI		4.70		4.70
2. PRIOR TO STRESSING	1500 ~~2000~~	5.80	1500 ~~2000~~	5.40
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	—	—	—	—
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		—		—
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	—	—	—	—
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1505 KIPS 7150 PSI	7150	10.50	7150	9.60
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-8+7+4)		4.70		4.20
11. LOCKOFF 1402 KIPS 5646 PSI TO 6931 PSI	6650		6800	

REMARKS

SHIMS	6 7/8"	SHIMS	6 7/8"
FLD. HEAD	HP106	BUSHING	HW032
BRG. PLATE	GN	BRG. PLATE	GN60
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN Fred Langhorn

Q.C. INSPECTOR C. J. Bell DATE 6-17-77

FORM 780.67-60 APRIL 1975 INRYCO an INLAND STEEL company

0 5 2 2 4 2 3 4 1

TENDON BUTTON HEADING CARD

JOB NO.: 21T-[illegible]5

JOB: FARLEY UNIT 2

TENDON LOCATION: 01 190C

DATE: 4-12-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 169	1
SPLITS	(OK) 168	2
ECCENTRICITY	(OK) 170	0
TOTAL UNACCEPTABLE HEADS		3

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS HP106

FOREMAN Fred Singleton Q.C. INSPECTOR C. J. Bee DATE 4-12-77

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. D-117 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

CENTER AZ 182° 13' 27"

2. Last Date Stressed 6-20-77

3. Anchor End Number from Stressing Card Field HP 091

Shop KA 116

4. Previous Shim Thickness from Stressing Card Field 5 1/2"

Shop 6 1/4"

5. Remove Tendon End Cap MH / 845 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease GREASE AROUND ANCHORAGE IS LIGHT BROWN, GOOD CONSISTENCY WITH NO APPARENT MOISTURE 100% COVERAGE OF ASSEMBLY. GREASE DRAINING FROM VOID IS DARK BROWN TO BLACK. FLOWS EASILY WITH NO APPARENT MOISTURE

MH / 6-10-85
Initial/Date

7. Grease Sample Taken MH / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 36 GALS MH / 6-10-85
Initial/Date

9. Anchor End Number As Found KA 116 / L1 003 MH / 6-10-85
Initial/Date

10. Shim Thickness As Found 5 5/16" MH / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

MH / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-117 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ MH / 6-10-85
Initial/Date

13. Tendon End Caps Re-installed MH / 6-10-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO
Data transfered from procedure SG 12.8

Date 6/13/85

Temperature of Grease in Bulk Container 184 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBN / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-117
FIELD / SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

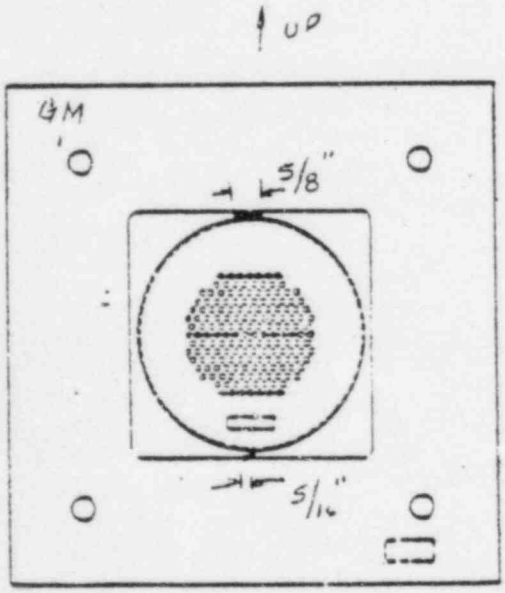
ANCHOR HEAD

Number: KA116 / L1003
Degree of Corrosion: A WITH B
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A & B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

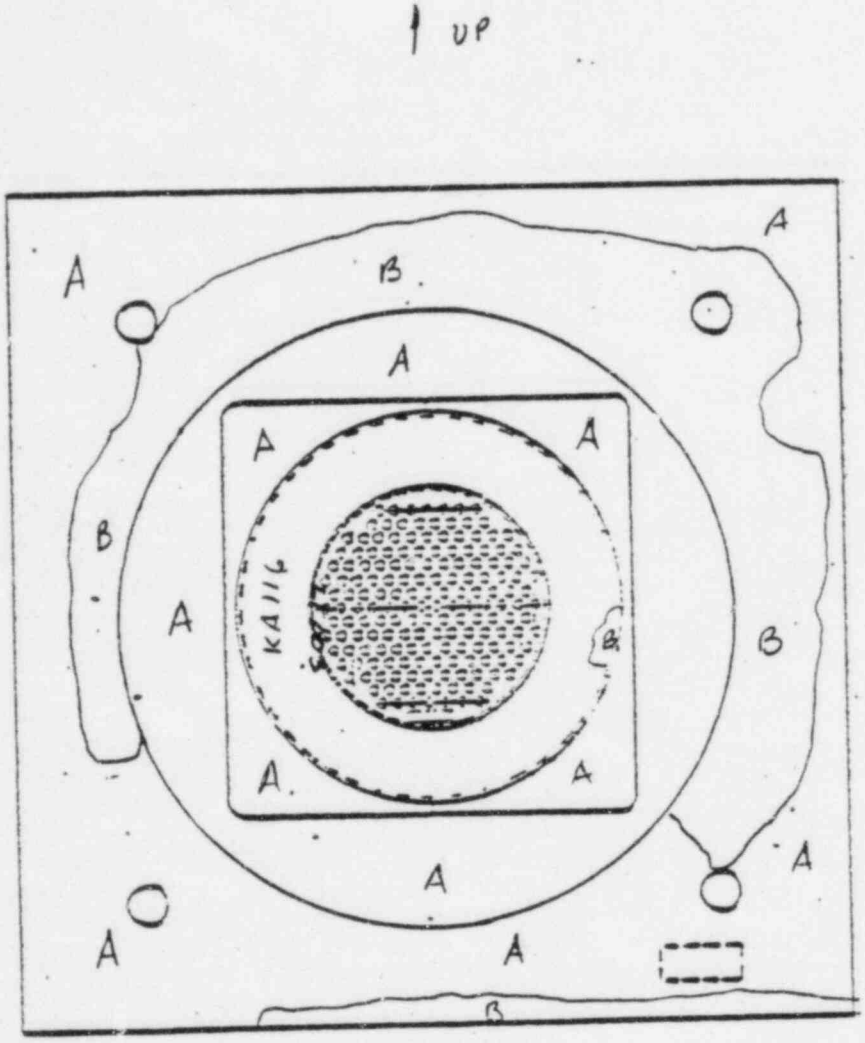
NO CRACKS WITH A WIDTH > 0.01" OBSERVED.

REMARKS: GASKET RETAINER PLATE HAS LEVEL 'B' CORROSION. SHIM STACK GAP ON TOP SIDE IS 5/8". BOTTOM SIDE IS 5/16". SHOP BUSHING REQUIRES ≈ ONE FULL TURN BEFORE BEING FULLY ENGAGED. (1/8" BELOW BUSHING FACE)

Date 6-10-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. D-117-C



CORROSION APPEARS TO BE TRANSFERRED FROM GASKET RETAINER PLATE.

Date 6-4-85 Signature Joyce M. Hall

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

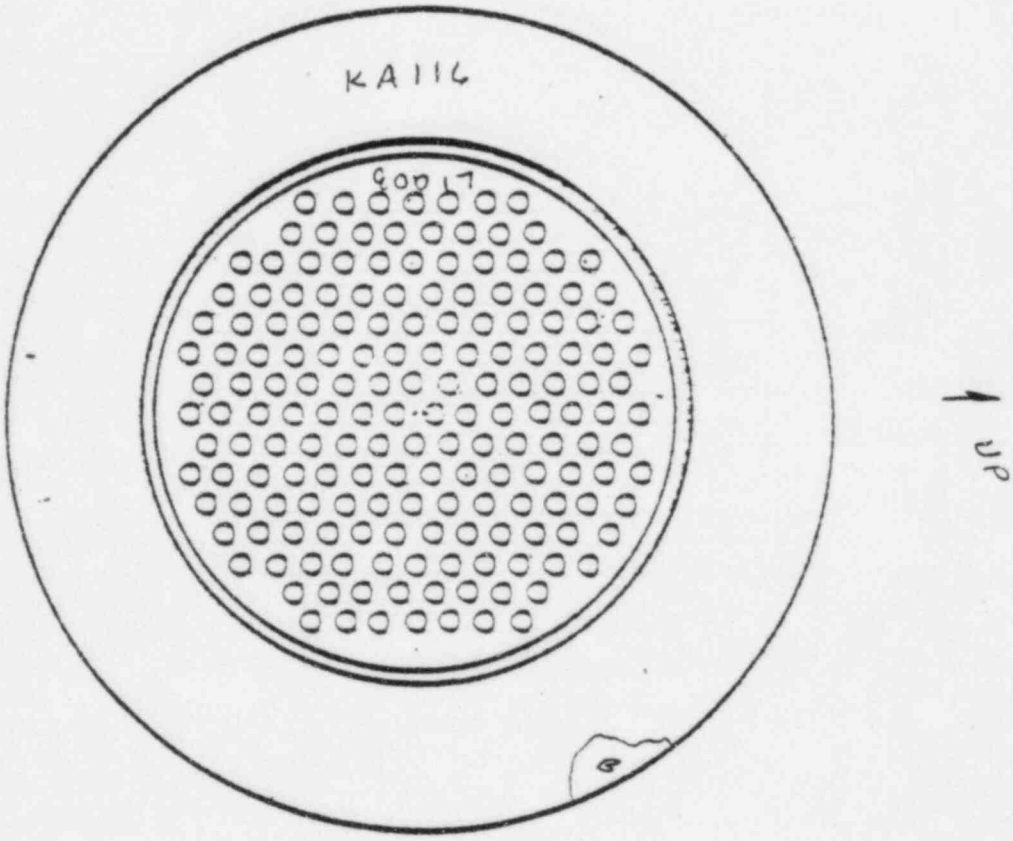
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON D-117-C

Joseph M. Hall 16-10-85
SIGNATURE DATE



COMMENTS:

NO MISSING, UNSEATED OR IMPROPERY FORMED BUTTONHEADS

NO SPLITS > 0.12". BUTTONHEADS HAVE SHINEY NEW

APPEARANCE, WELL ROUNDED WITH FLAT HEADS

DATA SHEET 1

TENDON NO. D-117 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
CENTER AZ 07° 46' 13"

2. Last Date Stressed 6-20-77

3. Anchor End Number from Stressing Card Field HP 091
Shop KA 116

4. Previous Shim Thickness from Stressing Card Field 5½"
Shop 6¼"

5. Remove Tendon End Cap LNS / 1015 / 6-8-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease DARK BROWN WITH 50% BLACK PRESERVATIVE, GOOD CONSISTENCY, NO APPARENT MOISTURE
LNS / 6-8-85
Initial/Date

7. Grease Sample Taken LNS / 6-8-85
Initial/Date

8. Bulk Filler Removed (Gal). 8 Gal. LNS / 6-8-85
Initial/Date

9. Anchor End Number As Found HP 091 LNS / 6-8-85
Initial/Date

10. Shim Thickness As Found 6¼" LNS / 6-8-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 1

Misshaped NONE

Splits > .12" NONE

LNS / 6-8-85
Initial/Date

DATA SHEET 1

TENDON NO. D-117 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☒ NO

If YES, why? _____ LNS / 6-8-85
Initial/Date

13. Tendon End Caps Re-installed LNS / 6-8-85
Initial/Date

14. Tendon Re-greasing: Per INRYCO procedure SQ 12.8 6-8-85 LNS

Date (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

_____ /
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-117
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: ~~NO~~ 4/8/85 1

Cracks or splits: NONE
Number not properly formed: NONE

ANCHOR HEAD

Number: AP091

Degree of Corrosion: A

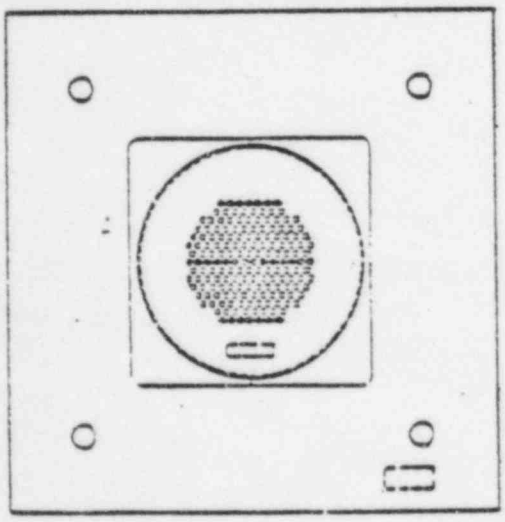
Cracks: None

SHIMS

Degree of Corrosion: A

Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A, B & C

Cracks: None

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

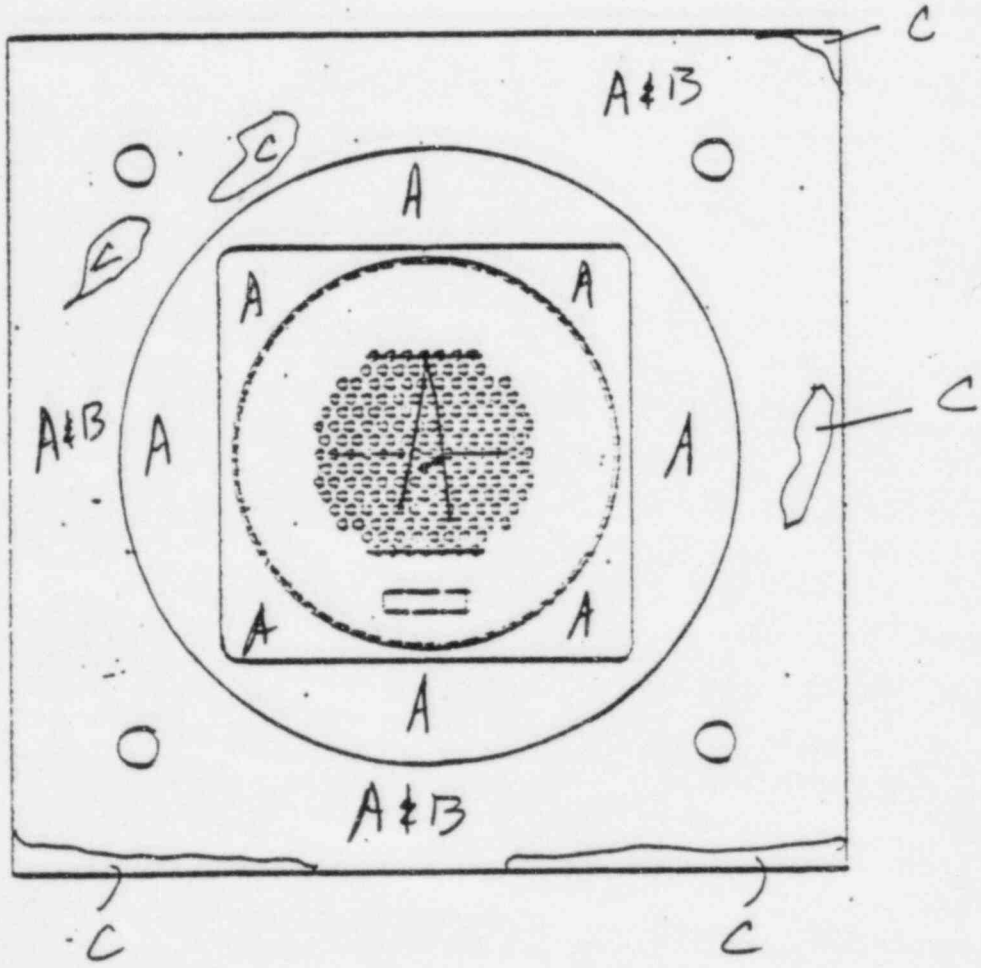
None

REMARKS:

Date 4-8-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. D117



Date 6-8-85 Signature [signature]

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

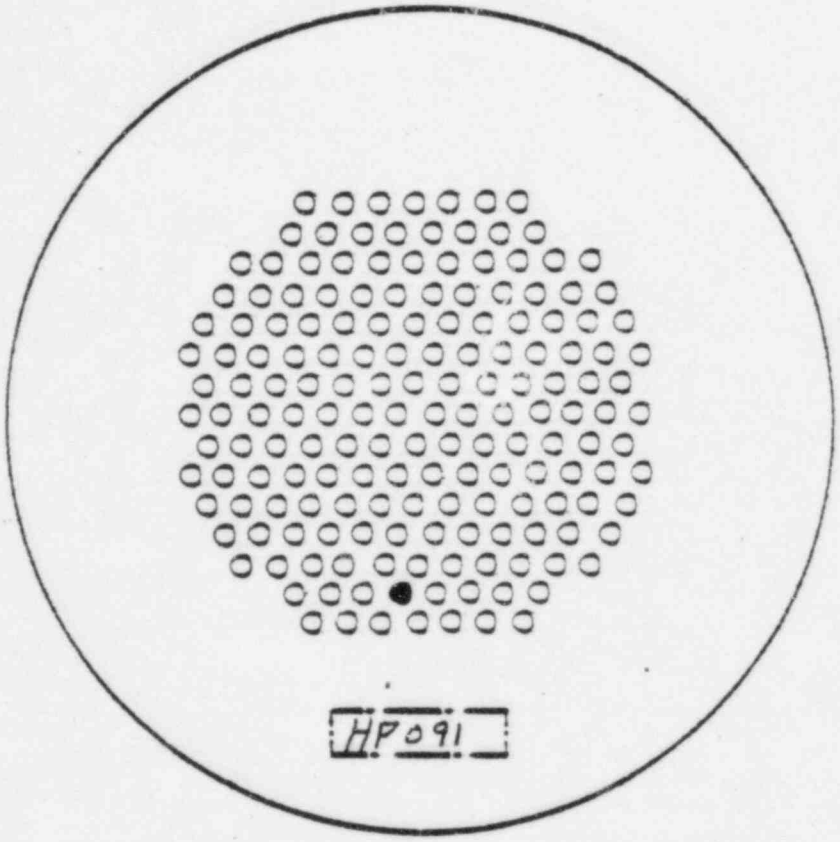
JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON D117

G. T. [illegible] 6-8-85

SIGNATURE DATE



COMMENTS:

One Missing Buttonhead

0 0 2 2 5 0 2 9 7

TENDON STRESSING CARD

DATE 6-20-77

TENDON LOCATION D 117 JOB NO. 217-505 JOB FARLEY UNIT #2

DO NOT EXCEED 80% OF ULT
1432 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO.	4	JACK NO.	6
	GAUGE NO.	10	GAUGE NO.	122
	END	G	END	G

	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 1500 PSI		4.35		4.35
2. PRIOR TO STRESSING	1500 ~~XX 2000~~	5.70	1500 ~~XX 2000~~	4.10
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	—	—	—	—
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		—		—
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	—	—	—	—
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1506 KIPS 7150 PSI	7150	9.30	7150	9.10
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-6+7+4)		3.60		5.00
11. LOCKOFF 1402 KIPS 6646 PSI TO 6931 PSI	6800		6900	

REMARKS

SHIMS	5½"	SHIMS	6¼"
FLD. HEAD	HP091	BUSHING	K4116
BRG. PLATE	NONE	BRG. PLATE	GN70
TENDON END PROTECTED	OK	TENDON END PROTECTED	OK

FOREMAN Fred Simpson

Q.C. INSPECTOR C. F. Bell DATE 6-20-77

FORM 780.67-60 APRIL 1975 INRYCO an INLAND STEEL company

[illegible] ITEM 10 AS FOLLOWS:

[illegible] 320, STACH (4+7+9-3)

0 5 2 2 4 2 3 4 5

TENDON BUTTON HEADING CARD

JOB NO.: 21T-5

JOB: FARLEY UNIT 2

TENDON LOCATION: D1 17CC

DATE: 4-12-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 170	0
SPLITS	(OK) 170	0
ECCENTRICITY	(OK) 170	0
TOTAL UNACCEPTABLE HEADS		0

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS HP091

FOREMAN Fred Singler Q.C. INSPECTOR C. J. Bose DATE 4-12-77

FORM 780.65-40 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. D-227 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
TOP AZ 213° 45' 11"

2. Last Date Stressed 6-10-77

3. Anchor End Number from Stressing Card Field HP 150
Shop HW 038

4. Previous Shim Thickness from Stressing Card Field 5"
Shop 5½"

5. Remove Tendon End Cap SDL / / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease BROWN WITH SOME BLACK PERSERVATIVE PRESENT, GOOD COVERAGE, SMALL (UN)COLLECTABLE) AMOUNT OF WATER DRIPPED OUT WHEN BOLT LOOSENED PROBABLY AROUND RETAINER PLATE, NO VISIBLE MOISTURE IN CAN OR ON ANCHORAGE SDL / 6-10-85
Initial/Date

7. Grease Sample Taken SDL / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 4 GAL SDL / 6-10-85
Initial/Date

9. Anchor End Number As Found HP 150 SDL / 6-10-85
Initial/Date

10. Shim Thickness As Found 5¼" SDL / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0

SDL / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-227 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL 16-10-85
Initial/Date

13. Tendon End Caps Re-installed SDL 16-10-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO Data transfered from procedure SQ 12.8

Date 6/15/85

Temperature of Grease in Bulk Container 190 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-5526 5-6359

Amount of Grease Replaced (Gal.) Entire Tendon

DBM 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-227
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: HP150
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

BEARING PLATE

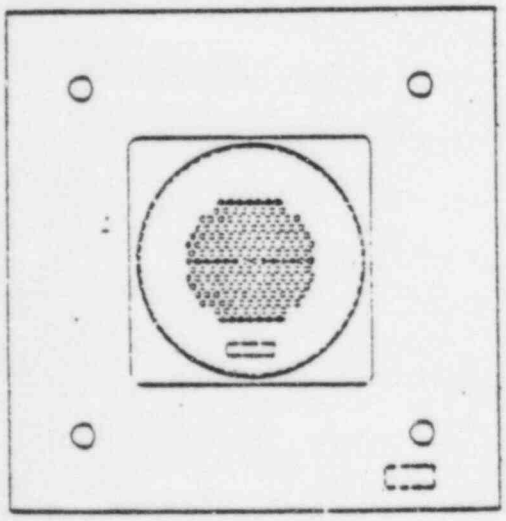
Degree of Corrosion: A, B & C
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE > 0.01"

REMARKS: ANCHORAGE Looks GOOD, GOOD SHIM GAPS

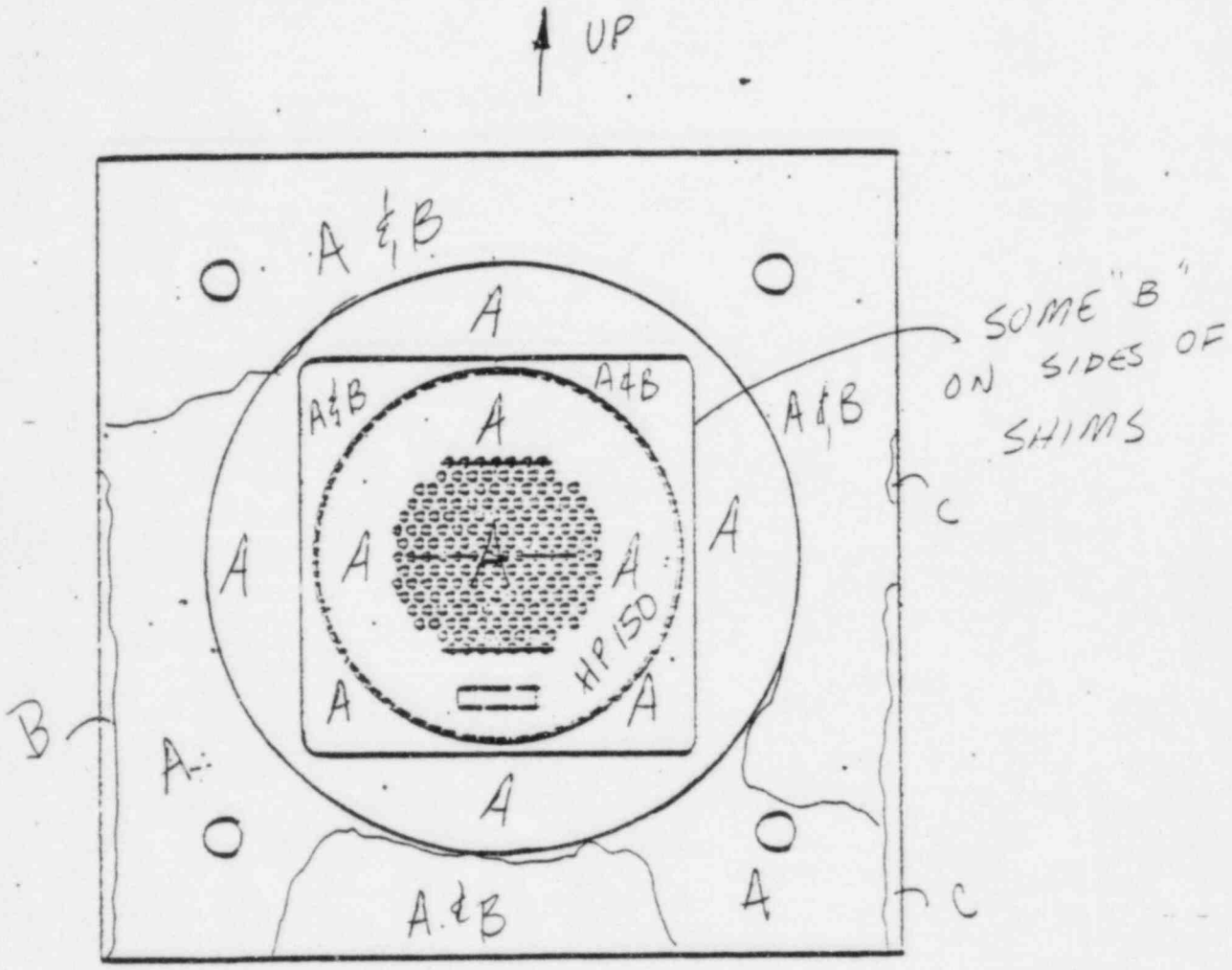
SKETCH



Date 6-10-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. D-227



Date 6-10-85 Signature Steven D. Lowe

LEGEND FOR BUTTONHEADS

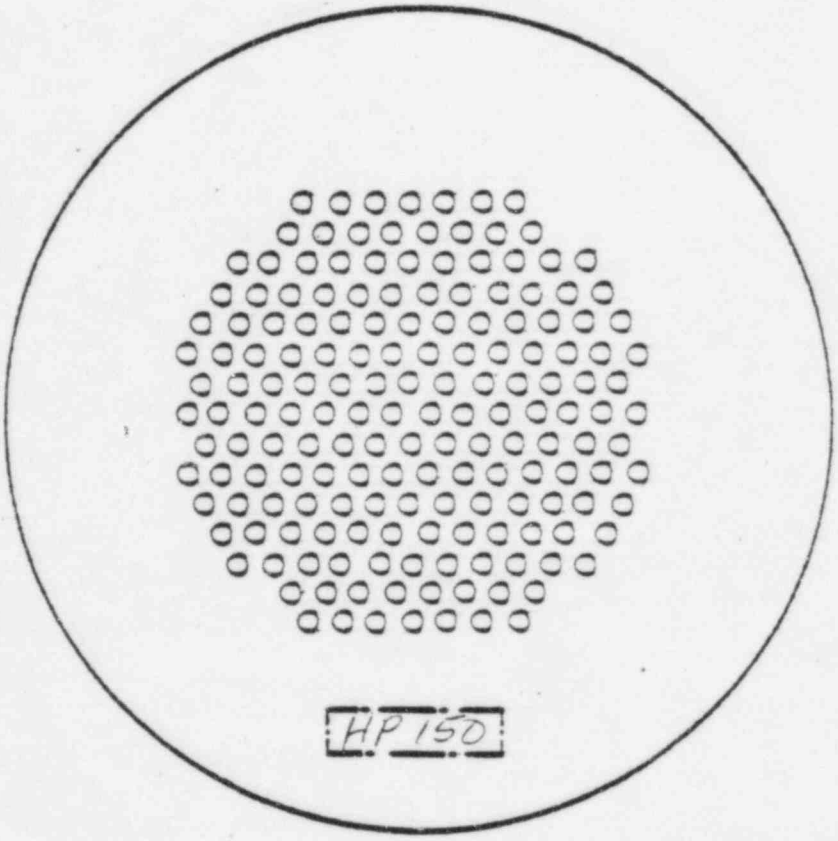
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON D-227

Steven D. Lowe 16-10-85
SIGNATURE DATE



COMMENTS:

NONE MISSING OR MISSHAPED

NO SPLITS > 0.12"

DATA SHEET 1

TENDON NO. D-227 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

BOTTOM AZ 96° 14' 49"

2. Last Date Stressed 6-10-77

3. Anchor End Number from Stressing Card Field HP 150

Shop HW 038

4. Previous Shim Thickness from Stressing Card Field 5"

Shop 5½"

5. Remove Tendon End Cap MH / 1500 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease LIGHT BROWN IN COLOR, GOOD CONSISTENCY WITH NO APPARENT MOISTURE, 100 % COVERAGE ON ANCHORAGE ASSEMBLY

MH / 6-10-85
Initial/Date

7. Grease Sample Taken MH / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 17 GAL MH / 6-10-85
Initial/Date

9. Anchor End Number As Found HW 038 / LI 047 MH / 6-10-85
Initial/Date

10. Shim Thickness As Found 4¾" MH / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

MH / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-227 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ JMH / 6-10-85
Initial/Date

13. Tendon End Caps Re-installed JMH / 6-10-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO procedure SQ 12.8

Date (see field end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

_____ / _____
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-227
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

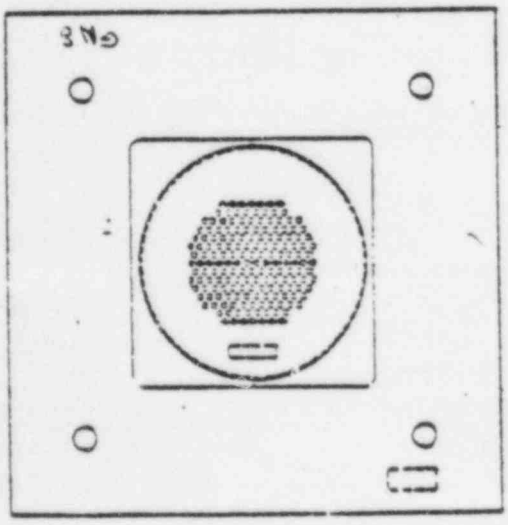
ANCHOR HEAD

Number: HW038/LI047
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A & SOME B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NO CRACKS WITH A WIDTH > 0.01"

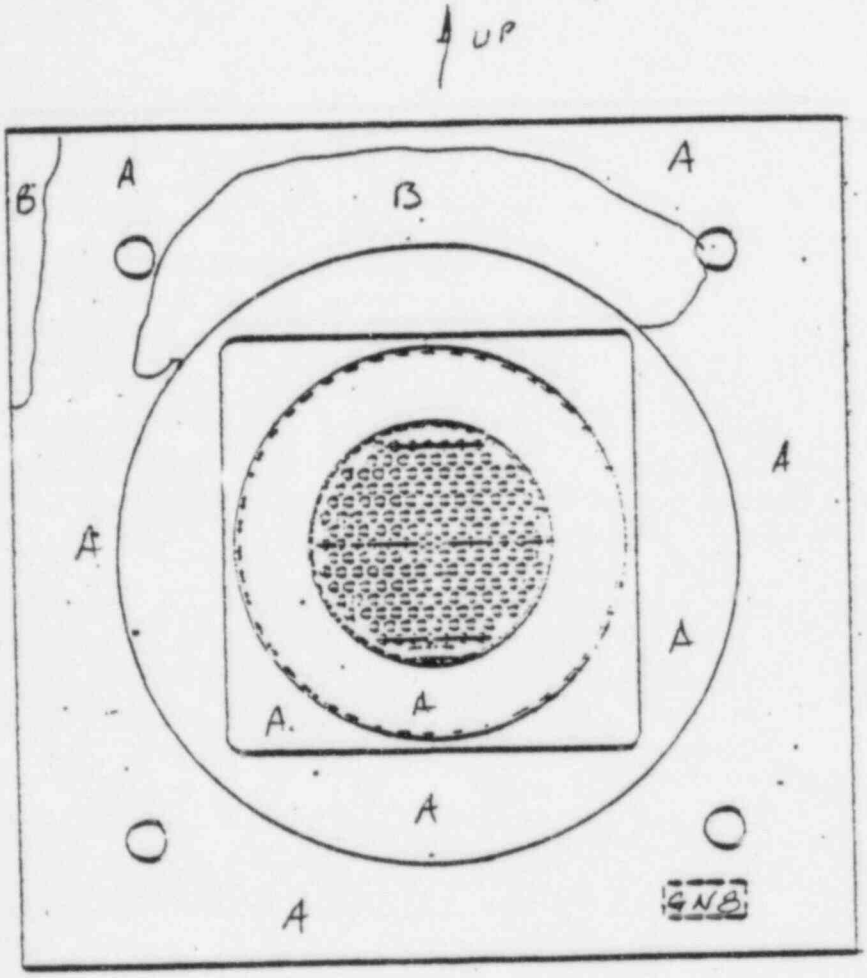
REMARKS: GASKET RETAINER PLATE HAS 'B' LEVEL CORROSION OVER 40% OF ITS SURFACE REST IS 'A' CORROSION LEVEL.

SHIM STACK IS STRAIGHT AND TIGHT. GAPS ARE GOOD ≈ 1/4" ON BOTH SIDES.

Date 6-10-85 Signature [signature]

ANCHORAGE ASSEMBLY INSPECTION

SECP END OF TENDON NO. D-227, Bottom



Date 6/10/85 Signature M. Hall

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

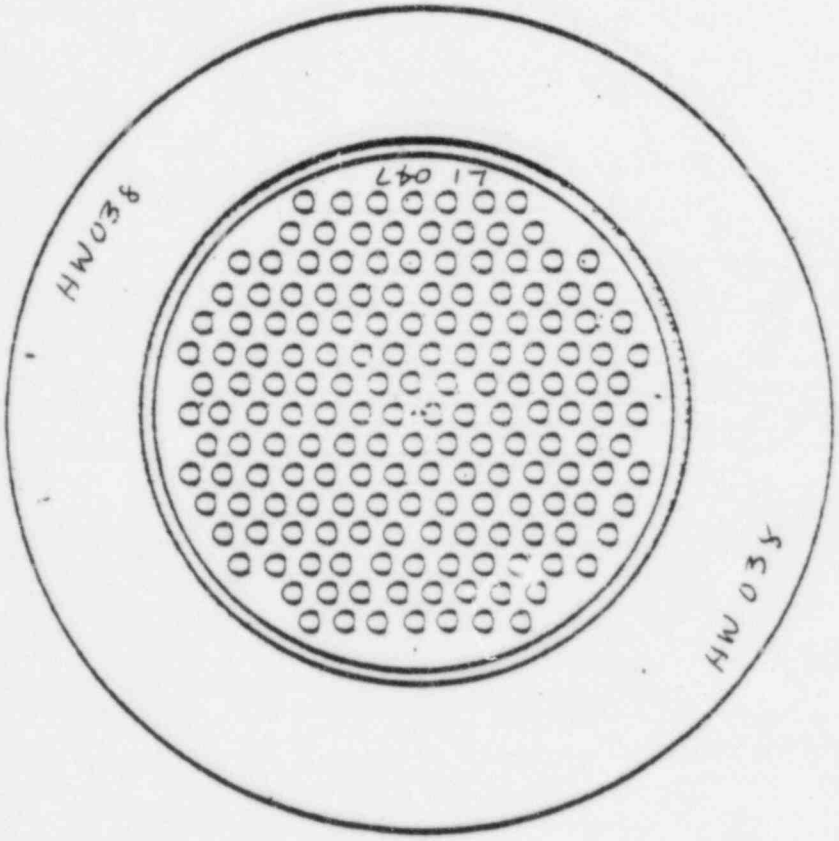
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◐ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON D-227 BOTTOM

Joseph M. Hall 16-10-85
SIGNATURE DATE



COMMENTS:

NO UNSEATED, IMPROPERLY FORMED OR MISSHAPED BUTTONHEADS. NO MISSING BUTTONHEADS. NO SPLITS GREATER THAN 0.12" ANCHORHEAD & BUTTONHEADS HAVE NEW SHINEY APPEARANCE. BUTTONHEADS ARE WELL ROUNDED WITH FLAT HEADS. BUSHING SHOWS SOME WATER SPOTS (LIGHT RUST) PROBABLY FROM INITIAL INSTALLATION. NO MOISTURE OBSERVED.

0 5 2 2 5 0 3 3 9

TENDON STRESSING CARD

DATE 6-10-77

TENDON LOCATION D 227 JOB NO. 21T-505 JOB EARLEY UNIT 42

DO NOT EXCEED 80% OF ULT
1602 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO.	4	JACK NO.	6
	GAUGE NO.	122	GAUGE NO.	24
	END	I	END	O

	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 1500 PSI		~~4.00~~		~~3.00~~
2. PRIOR TO STRESSING	1500 ~~XX 2000X~~	5.50	1500 ~~XX 2000X~~	3.30
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	—	—	—	—
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		—		—
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	—	—	—	—
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 7496 KIPS 7100 PSI	7100	8.80	7100	7.40
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-6+7+4)		3.30		4.10
11. LOCKOFF 1407 KIPS 5642 PSI TO 6921 ~~6970~~ PSI	6650		6900	

REMARKS

SHIMS	5"	SHIMS	5½
FLD. HEAD	HP150	BUSHING	HW638
BRG. PLATE	GN	BRG. PLATE	None
TENDON END PROTECTED	ok	TENDON END PROTECTED	Ok

FOREMAN Fred Singer

Q.C. INSPECTOR C J Bell DATE 6-10-77

FORM 780.67-40 APRIL 1975 INRYCO an INLAND STEEL company

- 0 5 2 2 2 3 8 7

TENDON BUTTON HEADING CARD

JOB NO.: 21T-[illegible]5

JOB: FARLEY UNIT 2

TENDON LOCATION: D2 274T

DATE: 4-8-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 170	0
SPLITS	(OK) 170	0
ECCENTRICITY	(OK) 170	0
TOTAL UNACCEPTABLE HEADS		0

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS HP 150

FOREMAN Fred Sipler Q.C. INSPECTOR C. J. Bell DATE 4-8-77

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. D-307 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
TOP AZ 99°39'55"

2. Last Date Stressed 6-13-77

3. Anchor End Number from Stressing Card Field LS 010
Shop LG 021

4. Previous Shim Thickness from Stressing Card Field 4 3/4"
Shop 7"

5. Remove Tendon End Cap MH / 16:30 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease LIGHT BROWN COLOR WITH GOOD CONSISTENCY, NO APPARENT MOISTURE. 90 % COVERAGE OVER ASSEMBLY
MH / 6-10-85
Initial/Date

7. Grease Sample Taken MH / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 18 GAL MH / 6-10-85
Initial/Date

9. Anchor End Number As Found LG021 / LI 002 MH / 6-10-85
Initial/Date

10. Shim Thickness As Found 7" MH / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0
MH / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-307 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ MH 16-10-85
Initial/Date

13. Tendon End Caps Re-installed MH 16-10-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO
Data transfered from procedure SQ 12.8

Date 6/13/85

Temperature of Grease in Bulk Container 184 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-307
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

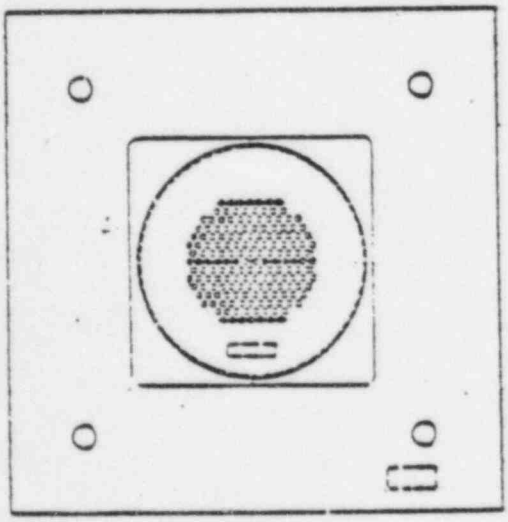
ANCHOR HEAD

Number: LG021/L1002
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A WITH B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

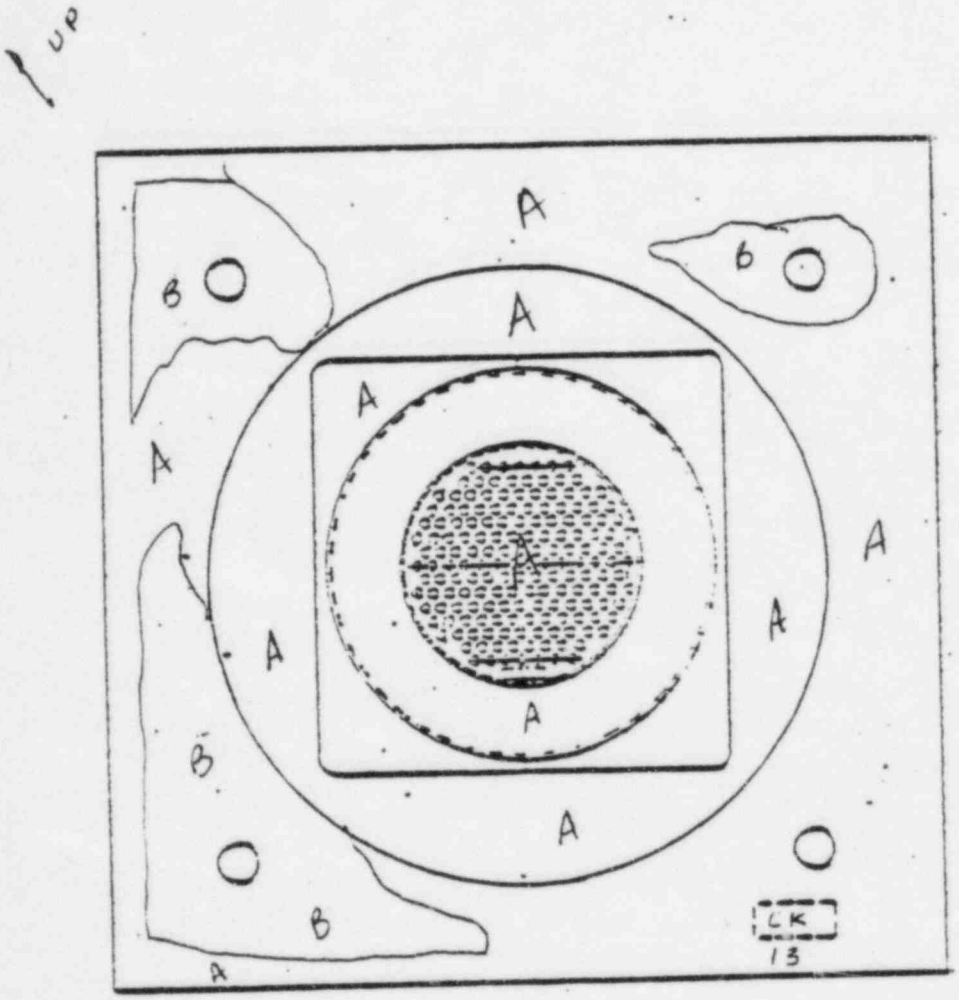
NO CRACKS WITH A WIDTH GREATER THAN 0.01".

REMARKS: GASKET RETAINER PLATE HAS 60% 'B' LEVEL CORROSION. SHOP BUSHING IS FULLY ENGAGED. SHIM STACK GAPS ARE GOOD. (<1/4") OVERALL GOOD SHIM STACK SHAPE.

Date 6-10-85 Signature Lynn M. Hall

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. D-307



Date 6-10-85 Signature Joseph M. Hall

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

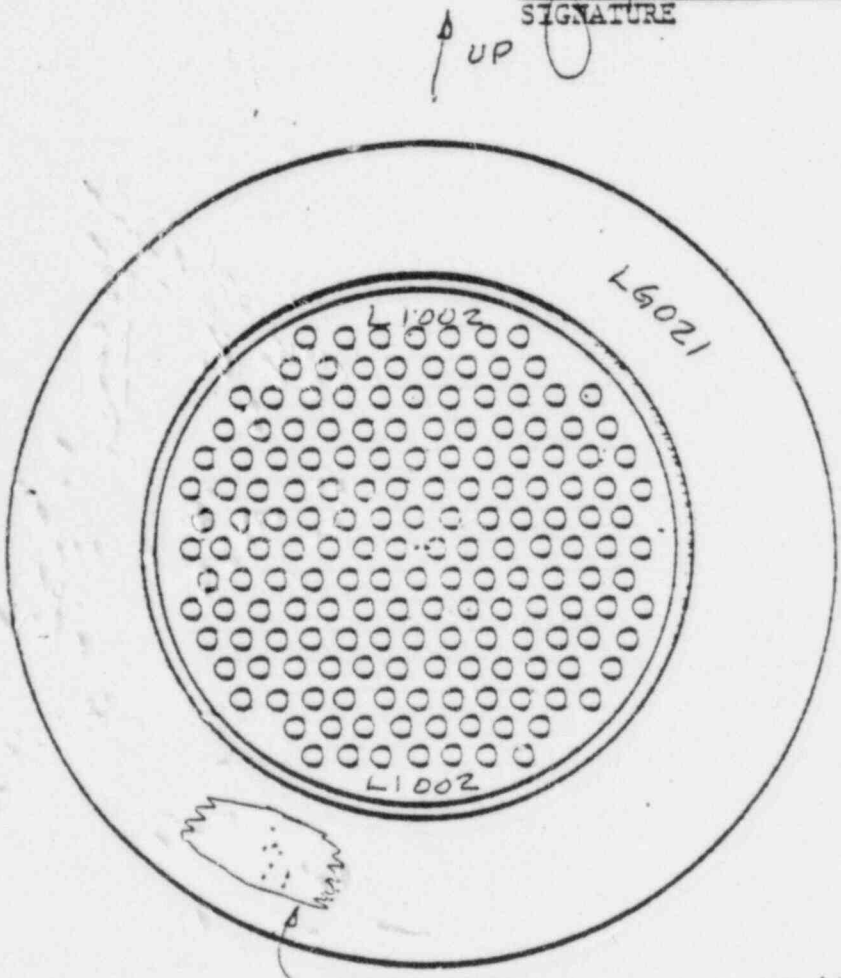
- ● Missing Buttonhead or Wire
- ⊘ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON D-307 TOP

Joseph M. Hall 10-10-85
SIGNATURE DATE



POLISHED AREA WITH SMALL HARDNESS TEST INDENTATIONS

COMMENTS:

NO MISSING, UNSEATED OR IMPROPERLY FORMED BUTTONHEADS NO SPLITS GREATER THAN 0.12" WIDE. BUTTONHEADS WELL ROUNDED WITH FLAT TOPS. SHINEY NEW APPEARANCE. BUSHING HAS POLISHED AREA WHERE SMALL INDENTATIONS ARE PRESENT (PROBABLY FROM HARDNESS TESTING).

DATA SHEET 1

TENDON NO. D-307 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

TOP AZ 330° 20' 05"

2. Last Date Stressed 6-13-77

3. Anchor End Number from Stressing Card Field LS 010

Shop LG 021

4. Previous Shim Thickness from Stressing Card Field 4¾"

Shop 7"

5. Remove Tendon End Cap SDL / 1030 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease GOOD COVERAGE. BROWN, DARK BROWN & BLACK COLOR MIXED, NO VISIBLE MOISTURE

SDL / 6-10-85
Initial/Date

7. Grease Sample Taken SDL / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 2½ GAL SDL / 6-10-85
Initial/Date

9. Anchor End Number As Found LS 010 SDL / 6-10-85
Initial/Date

10. Shim Thickness As Found 4⅞" SDL / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing NONE

Misshaped NONE

Splits > .12" NONE

SDL / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-307 FIELD/SHOP END (Circle One)

12 Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ SDL/ 6-10-85
Initial/Date

13. Tendon End Caps Re-installed SDL 6-10-85 ~~6~~ SDL/ 6-10-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO procedure 5912.8

Date (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

/
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-307
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: LS010
Degree of Corrosion: A & B
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

BEARING PLATE

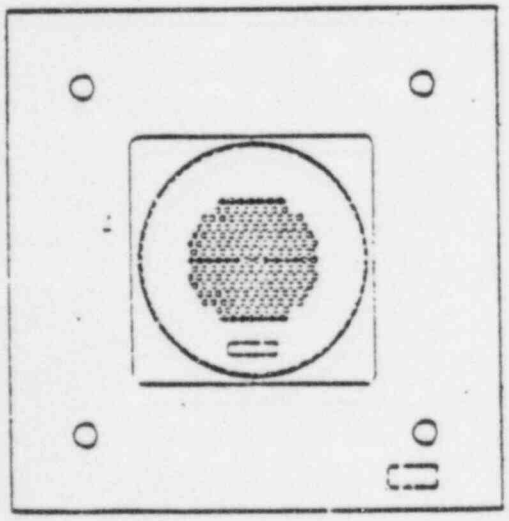
Degree of Corrosion: A & B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)
NONE > 0.01"

REMARKS: GOOD SHIM GAP, SMALL AMOUNT GROUT ON LOWER RIGHT HAND CORNER OF BEARING PLATE

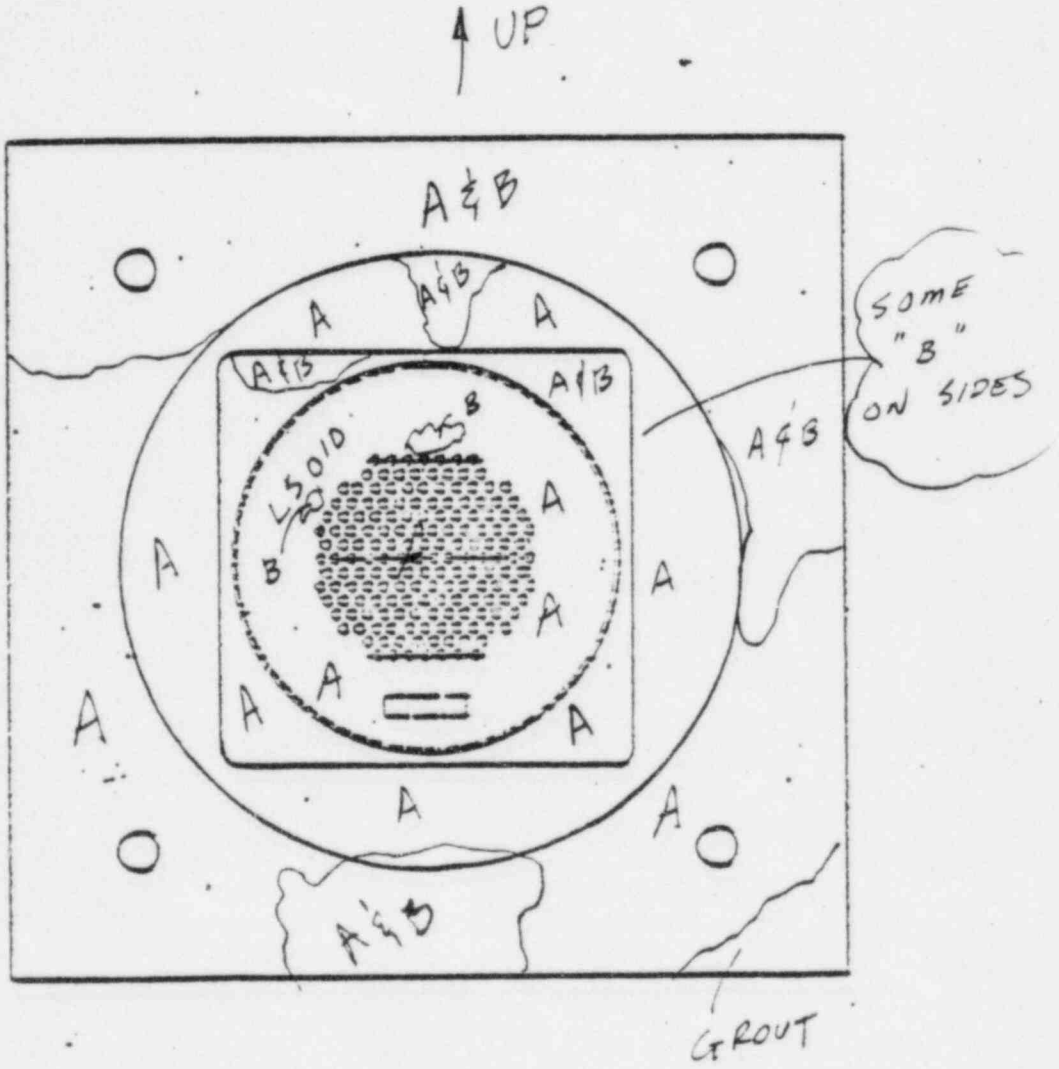
SKETCH



Date 6-10-85 Signature Steven D. Stile

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. D-307



Date 6-10-85 Signature Steven D. Joice

LEGEND FOR BUTTONHEADS

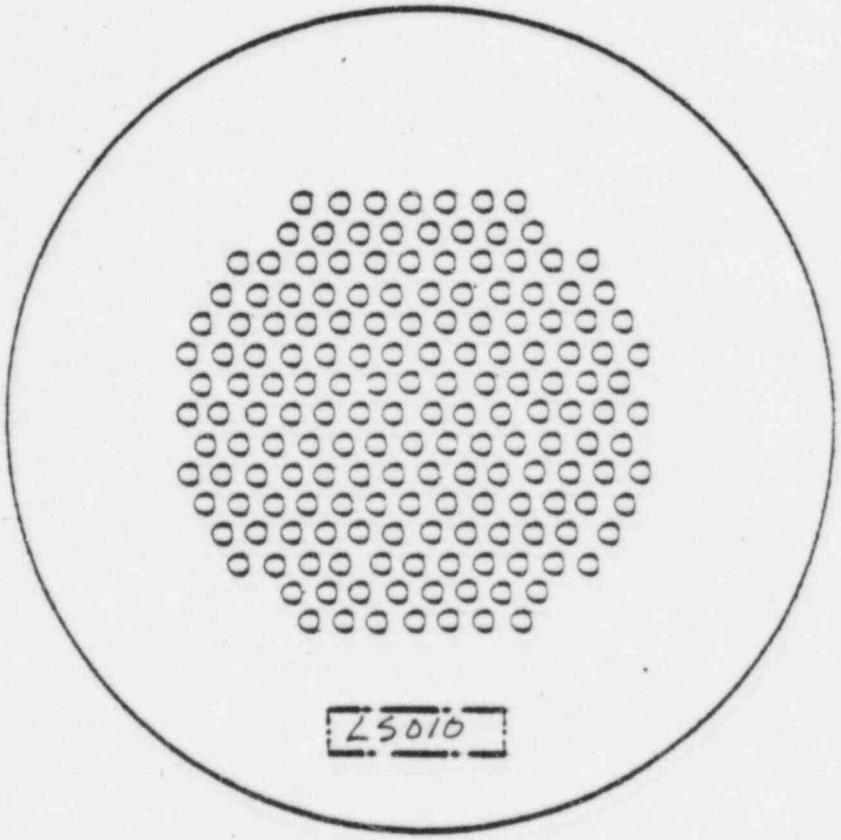
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON D-307

Steven D. Lowe 16-10-85
SIGNATURE DATE



COMMENTS:

NONE MISSING, OR MISSHAPED

NO SPLITS > 0.12"

U 5 2 2 5 0 3 5 1

TENDON STRESSING CARD

DATE 6-13-77

TENDON LOCATION D 307 JOB NO. 21T-505 JOB BADLEY UNIT #2

DO NOT EXCEED 80% OF ULT
1602 KIPS 7600 PSI
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY

	JACK NO. 5		JACK NO. 3	
	GAUGE NO. 107		GAUGE NO. 10	
	END +		END +	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 1500 PSI		3.76		3.76
2. PRIOR TO STRESSING	1500 ~~2000~~	4.80	1500 ~~2000~~	4.80
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	—	—	—	—
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		—		—
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	—	—	—	—
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1422 KIPS 7050 PSI	7050	8.20	7050	9.10
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-8+7-4) 6931		3.40		4.30
11. LOCKOFF 1402 KIPS 6640 PSI TO 6700 PSI	6700		6900	

REMARKS

SHIMS	4 3/4"	SHIMS	7"
FLD. HEAD	LS010	BUSHING	LG021
BRG. PLATE	GN176	BRG. PLATE	GK13
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN Fred Hughes

Q.C. INSPECTOR C. Reese DATE 6-13-77

FORM 780.67.60 APRIL 1975 INRYCO an INLAND STEEL company

0 5 2 2 4 2 3 9 9

TENDON BUTTON HEADING CARD

JOB NO.: 21T[illegible]5

JOB: FARLEY UNIT 2

TENDON LOCATION: 03 7TT

DATE: 4-20-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 170	0
SPLITS	(OK) 170	0
ECCENTRICITY	(OK) 170	0
TOTAL UNACCEPTABLE HEADS		0

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS LS010

FOREMAN Fred Sipple Q.C. INSPECTOR C. J. Beck DATE 4-20-77

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

DATA SHEET 1

TENDON NO. D-319 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).

CENTER AZ 133° 19' 22"

2. Last Date Stressed 6-17-77

3. Anchor End Number from Stressing Card Field HP033

Shop HW 159

4. Previous Shim Thickness from Stressing Card Field 6"

Shop 6 1/4"

5. Remove Tendon End Cap MH / 1400 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease LIGHT BROWN COLOR WITH GOOD CONSISTENCY, NO APPARENT MOISTURE 100% COVERAGE.

MH / 6-10-85
Initial/Date

7. Grease Sample Taken MH / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 24 MH / 6-10-85
Initial/Date

9. Anchor End Number As Found HW159 / LI021 MH / 6-10-85
Initial/Date

10. Shim Thickness As Found 6 5/16" MH / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0

Misshaped 0

Splits > .12" 0

MH / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-319 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ MH / 6-10-85
Initial/Date

13. Tendon End Caps Re-installed MH / 6-10-85
Initial/Date

14. Tendon Re-greasing: PER INRYCO Data transfered from procedure SQ 12.8

Date 6/14/85

Temperature of Grease in Bulk Container 178 °F

Type Grease (New/Used) NEW

If New Grease, Drum No. LOT NO. 5-6359

Amount of Grease Replaced (Gal.) ENTIRE TENDON

DBH / 8/8/85
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-319
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

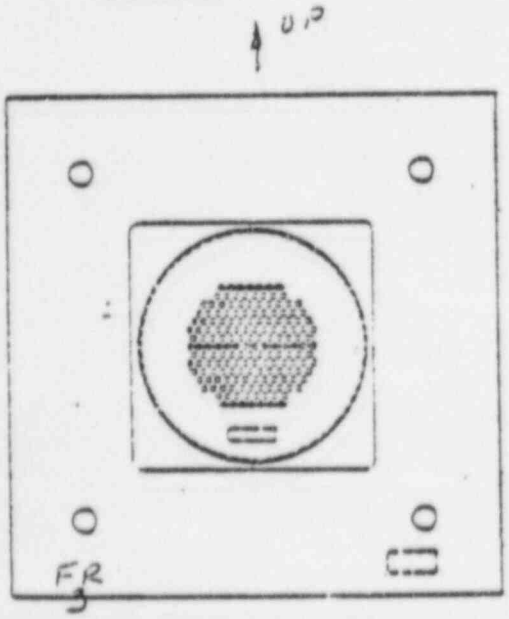
ANCHOR HEAD

Number: HN 159/LI 021
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A
Cracks: NONE

SKETCH



BEARING PLATE

Degree of Corrosion: A WITH SOME B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.)

NO CRACKS OBSERVED > 0.01"

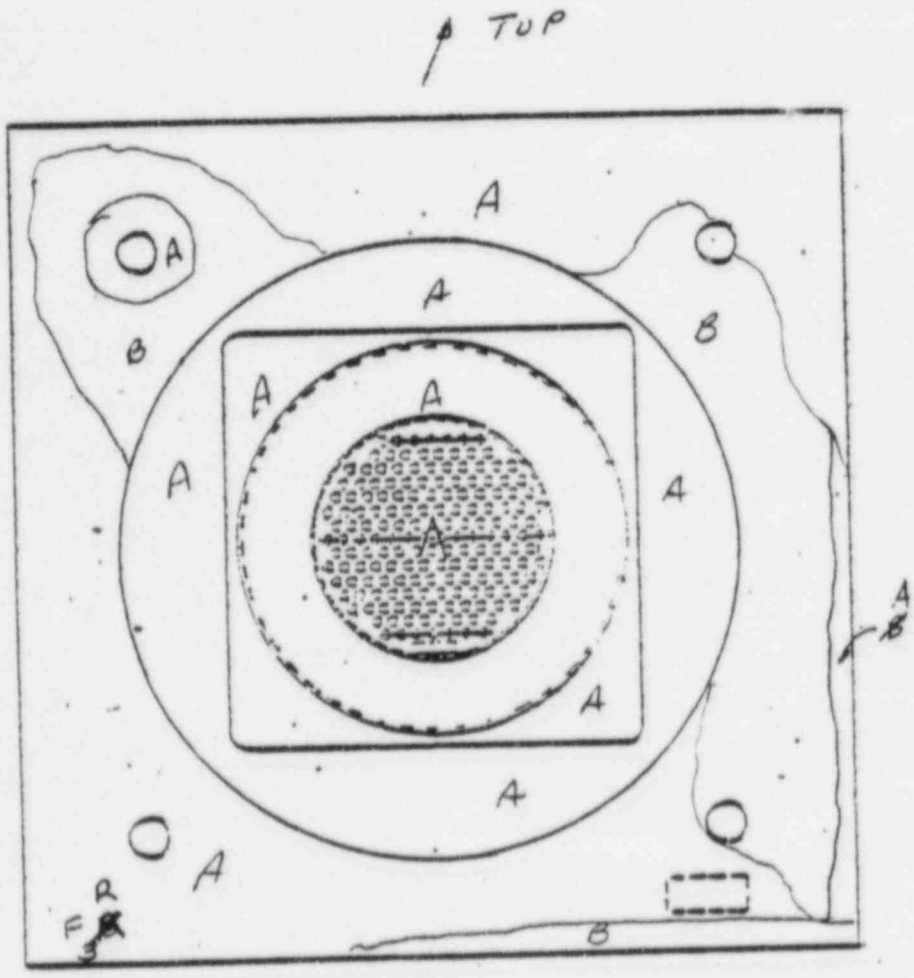
NOTE: CONSTRUCTION JOINT THRU LOWER QUARTER OF ANCHORAGE IN SOUND CONDITION. COSMETIC GROUT IN GOOD CONDITION.

REMARKS: GASKET RETAINER PLATE MOSTLY 'B' LEVEL CORROSION. SHOP BUSHING FULLY ENGAGED ON ANCHORHEAD. SHIM STACK GAPS < 1/4" GOOD UNIFORM STACK, STRAIGHT & SOUND.

Date 6-10-85 Signature Joseph M. Hall

ANCHORAGE ASSEMBLY INSPECTION

SHOP END OF TENDON NO. D-319



Date 6-10-85 Signature Joseph M. Hall

DATA SHEET 4a REV. 1

LEGEND FOR BUTTONHEADS

- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

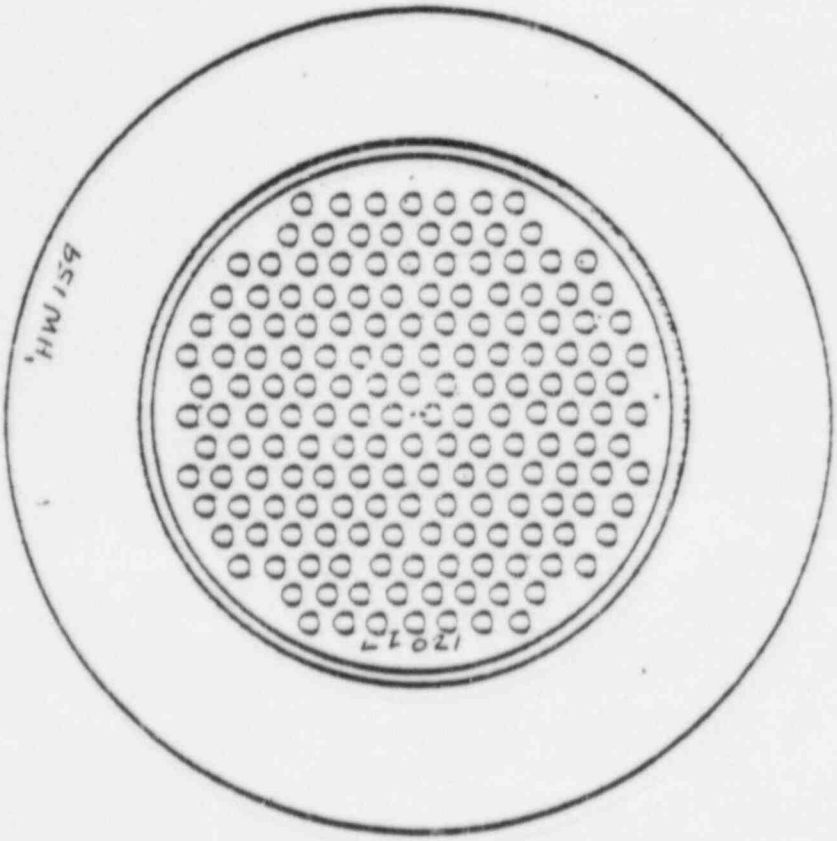
JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

SHOP END

TENDON D-319

Joseph M. Hall 6-10-85
SIGNATURE DATE

TOP



COMMENTS:

NO MISSING, UNSEATED OR IMPROPERLY FORMED BUTTONHEADS
NO SPLITS GREATER THAN 0.12" WIDE. BUTTONHEADS ARE
WELL ROUNDED WITH FLAT TOPS. BUTTONHEADS HAVE A SHINEY
NEW APPEARANCE

DATA SHEET 1

TENDON NO. D-319 FIELD/SHOP END (Circle One)

1. Location (Buttress, Elevation/Azimuth, and T, B or C).
CENTER AZ 296° 40' 38"

2. Last Date Stressed 6-17-77

3. Anchor End Number from Stressing Card Field HP 033
Shop HW 159

4. Previous Shim Thickness from Stressing Card Field 6"
Shop 6 1/4"

5. Remove Tendon End Cap SDL / 1306 / 6-10-85
Initials Time Date

6. Visual Examination of Bulk Filler Grease DARK BROWN & BLACK IN COLOR, NO VISIBLE MOISTURE, GOOD COVERAGE
SDL / 6-10-85
Initial/Date

7. Grease Sample Taken SDL / 6-10-85
Initial/Date

8. Bulk Filler Removed (Gal). 6 GAL SDL / 6-10-85
Initial/Date

9. Anchor End Number As Found HP 033 SDL / 6-10-85
Initial/Date

10. Shim Thickness As Found 6" SDL / 6-10-85
Initial/Date

11. Record Anchorage Assembly Inspection Results on Data Sheets 2 and 3 or 4 as applicable. (Attach Data Sheets)

Number of Buttonheads: Missing 0
Misshaped 0
Splits > .12" 0
SDL / 6-10-85
Initial/Date

DATA SHEET 1

TENDON NO. D-319 FIELD/SHOP END (Circle One)

12. Adjacent Tendon Inspection Required ☐ YES ☑ NO

If YES, why? _____ JMH / 6-10-85
Initial/Date

13. Tendon End Caps Re-installed SDL / 6-10-85
Initial/Date

14. Tendon Re-greasing: BY INRYCO procedure SQ12.8

Date (see shop end data)

Temperature of Grease in Bulk Container _____

Type Grease (New/Used) _____

If New Grease, Drum No. _____

Amount of Grease Replaced (Gal.) _____

/
Initial/Date

ANCHORAGE ASSEMBLY INSPECTION

TENDON NO. D-319
FIELD/SHOP END (Circle One)

BUTTONHEAD

Degree of Corrosion: A
Number missing, broken or damaged: 0
Cracks or splits: 0
Number not properly formed: 0

ANCHOR HEAD

Number: HP 033
Degree of Corrosion: A
Cracks: NONE

SHIMS

Degree of Corrosion: A & B
Cracks: NONE

BEARING PLATE

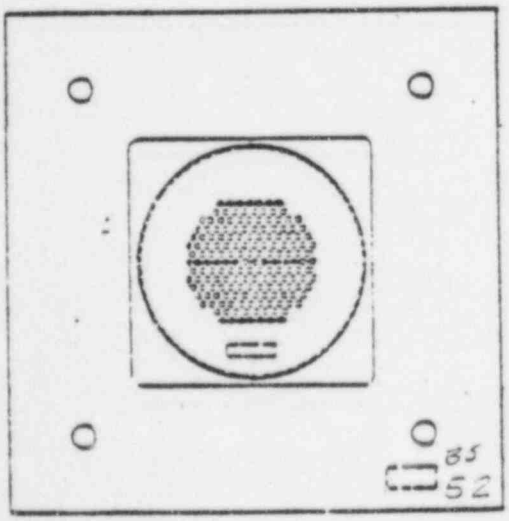
Degree of Corrosion: A & B
Cracks: NONE

ANCHORAGE AREA CONCRETE

Cracks (width >0.01 in.): NONE > 0.01"

REMARKS: ANCHORAGE LOOKS GOOD, BEARING PLATE # BS52

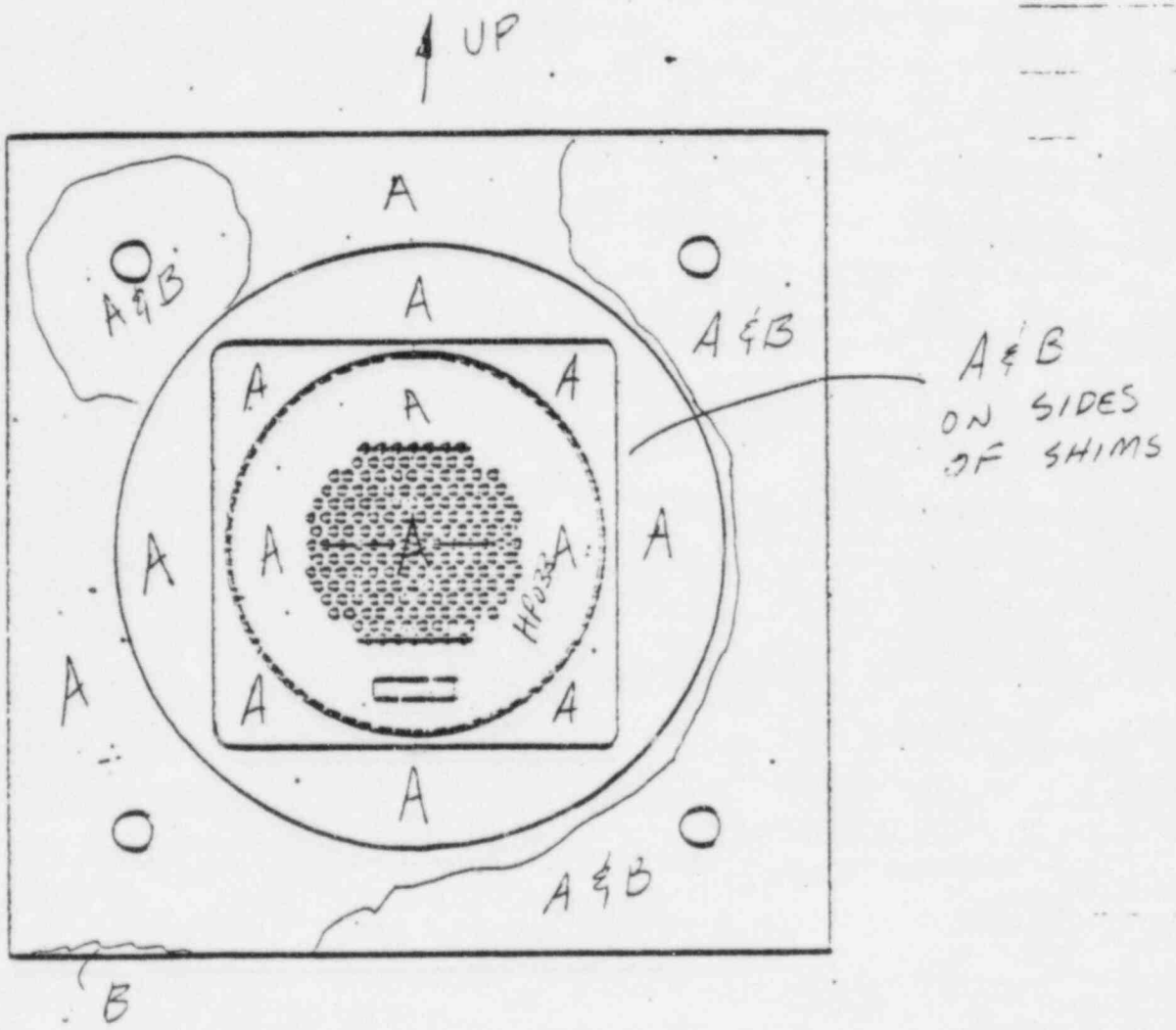
SKETCH



Date 6-10-85 Signature [illegible]

ANCHORAGE ASSEMBLY INSPECTION

FIELD END OF TENDON NO. D-310



Date 6-10-85 Signature Steven D. Lowe

LEGEND FOR BUTTONHEADS

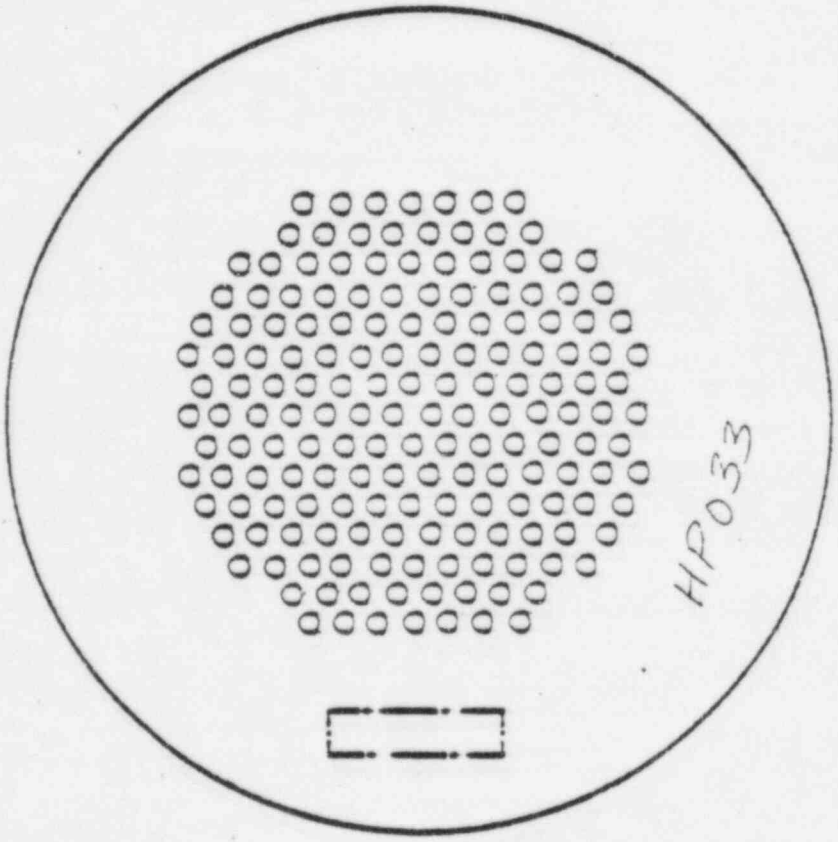
- ● Missing Buttonhead or Wire
- ∅ Unseated Buttonhead
- ⊗ Improperly Formed/Misshaped Buttonhead
- ◑ Buttonhead with Split (Document the Split Size)

JOSEPH M. FARLEY NUCLEAR PLANT UNIT 2

FIELD END

TENDON D-319

Steven D. Low 6-10-85
SIGNATURE DATE



COMMENTS:

NONE MISSING OR MISFORMED

NO SPLITS > 0.12"

0 5 2 2 5 0 3 6 4

TENDON STRESSING CARD

DATE 6-17-77

TENDON LOCATION 0 319 JOB NO. 21T-505 JOB FARLEY UNIT 42

DO NOT EXCEED 80% OF ULT		
1502 KIPS	7500 PSI	
LINES IN PARENTHESIS ( ) FOR STAGE STRESSING ONLY		

	JACK NO. 2		JACK NO. 1	
	GAUGE NO. 54		GAUGE NO. 51	
	END 0		END 0	
	PSI	ELONGATION	PSI	ELONGATION
1. CALCULATED ELONGATION OVER 2000 PSI 500 PSI		4.20		4.20
2. PRIOR TO STRESSING	1500 ~~2000~~	4.80	1500 ~~2000~~	4.60
3. 3500 TO 4000 PSI (OR FULL RAM EXTENSION)	—	—	—	—
4. (MEASURED 1ST STAGE ELONGATION) (LINE 3 MINUS LINE 2)		—		—
5. (NEW LIFT OFF – SAME PSI AS LINE 3)	—	—	—	—
6. (FULL RAM EXTENSION)	—	—	—	—
7. (MEASURED 2ND STAGE ELONGATION) (LINE 6 MINUS LINE 5)		—		—
8. (NEW LIFT OFF – SAME PSI AS LINE 6)	—	—	—	—
9. OVERSTRESS 1512 KIPS 7150 PSI	7150	8.80	7150	9.40
10. TOTAL MEASURED ELONGATION (4+7+9) LINE 9 MINUS LINE 2 (9-8+7+4)		4.00		4.80
11. LOCKOFF 1502 KIPS 5964 PSI TO 6931 PSI	6700		6850	

REMARKS

SHIMS	6"	SHIMS	6 1/4"
FLD. HEAD	HPD33	BUSHING	H40159
BRG. PLATE	FS	BRG. PLATE	FD3
TENDON END PROTECTED	ok	TENDON END PROTECTED	ok

FOREMAN Fred Singler

Q.C. INSPECTOR C. J. Beele DATE 6-17-77

FORM 140 67 60 APRIL 1975 INRYCO an INLAND STEEL company

U 5 2 2 4 2 4 1 2

TENDON BUTTON HEADING CARD

JOB NO.: 2KT-[illegible]5

JOB: FARLEY UNIT 2

TENDON LOCATION: 03 190C

DATE: 4-7-77

INSPECTION	ACCEPTABLE (CHECK)	REJECTABLE
GO; NO-GO	(OK) 170	0
SPLITS	(OK) 167	3
ECCENTRICITY	(OK) 170	0
TOTAL UNACCEPTABLE HEADS		3

TEMPORARY COVERING APPLIED TO TENDON ENDS (CHECK) ✓

(OR)

GREASE CANS INSTALLED BOTH ENDS (CHECK) N/A

COMMENTS HP033

FOREMAN [illegible] Q.C. INSPECTOR [illegible] DATE 4-7-77

FORM 780.65-60 APRIL 1975 INRYCO an INLAND STEEL company

APPENDIX A

JOSEPH M. FARLEY NUCLEAR PLANT
UNIT 2
TENDON SURVEILLANCE

TENDON SAMPLE SELECTION PROCEDURE

1.0 Purpose

This procedure provides guidelines to be applied when selecting the containment tendon surveillance test sample and alternate test sample. Its implementation will assure that the test population selection will be determined on a random but representative basis as required.

2.0 References

2.1 Nuclear Regulatory Commission (NRC) Regulatory Guide 1.35, Revision 2, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containment Structures".

2.2 Technical Specification 3/4.6.1.6.1, "Containment Structural Integrity".

2.3 Final Safety Analysis Report, Section 3.8.1.7.3.

2.4 Bechtel letter number AP-3029, dated 2-7-78.

3.0 Prerequisites

Prior to the selection of the test sample population, the following reviews should be conducted:

3.1 Plant operating status: Determine whether the scheduled tendon surveillance will be performed during plant operation.

3.2 ALARA conditions: Determine the radiation levels in the rooms where tendon access is required.

3.3 Previous tendon surveillance test reports: Review the previous tendon surveillance test reports for locations of previous test samples and test results.

4.0 Precautions

Compliance with this procedure will assure the following:

4.1 Regulatory requirements specify that tendon sample selection must be performed on a random but representative basis.

4.2 Some tendons are inaccessible during plant operational modes. Samples from these areas must be tested when conditions permit.

4.3 Technical Specification requirements necessitate that the tendons adjacent to each test sample be accessible for testing.

5.0 Instructions for Sample Selection

5.1 Review the regulatory requirements referenced in Section 2.0 and determine the required number of tendons to be tested during the next planned surveillance.

5.2 Review the precautions listed in Section 4.0 and determine applicability to the next planned surveillance as follows:

5.2.1 If the tendon surveillance is to be conducted concurrently with a plant outage, tendons which are inaccessible during operation (e.g., dome and vertical tendons adjacent to the main steam vents) should be tested during this surveillance, unless a review of previous test sample populations indicates that this portion of the containment has been representatively tested.

5.2.2 Plant operating status may affect the radiation levels in certain areas during operation or during an outage. Determine the expected radiation levels in rooms during the next surveillance and evaluate selection to minimize personnel exposure.

5.2.3 Review the previous tendon surveillance test reports and determine if any abnormal conditions were previously documented. Evaluate corrective action recommended for future surveillances and include these tendons in the test sample as appropriate.

5.2.4 Select tendons which have accessible adjacent tendons. Should a defective tendon be found, the Technical Specification

requires that containment integrity be evaluated based upon the acceptability of adjacent tendons.

5.3 Insure that selected tendons, including alternates, are equally spaced geometrically. An equal number of tendons shall be selected, to the extent practical, from each of the three 60° dome tendon groups, from the inner and outer vertical tendon groups and from the three hoop tendon groups. This will derive the most representative sample upon which to evaluate containment integrity.

5.4 Select tendons to limit their participation to not more than two surveillances, unless conditions evaluated in Section 5.2.3 require continued surveillance.

5.5 Select tendons to be tested, where possible, which had portions of their sheathing removed during installation of the tendon.

5.6 Select tendons which have both ends readily accessible. Avoid high radiation zones.

6.0 Documentation

Document the tendon sample population selection in accordance with Section 4.2 of FNP-2-STP-609.0.

APPENDIX B

FARLEY NUCLEAR PLANT
UNIT 2
TENDON SURVEILLANCE

SAFETY AND SERVICING GUIDELINES

1.0 Purpose

This procedure provides safety guidelines to be observed during tendon surveillance. This procedure also provides guidelines and a checklist to be followed for preoperational servicing and inspection of tendon surveillance equipment, load testing the work platform and spider staging, and preparing the equipment for storage after tendon surveillance is completed. Adherence to this procedure will insure that the tendon surveillance equipment is safe to use, and used safely.

2.0 References

2.1 U-421018, Spider Staging Operating, Assembly, Service and Inspection Manual.

2.2 U-421019, Spider Staging Service and Parts Manual - Model No. ST-18.

3.0 Procedure

3.1 During tendon surveillance and all associated activities the safety guidelines given in Attachment #1, "Safety Guidelines", shall be followed.

3.2 Prior to beginning tendon surveillance, the equipment will be serviced and inspected in accordance with Attachment #2, "Preoperational Service and Inspection Checklist". This service and inspection will be repeated after six months if tendon surveillance is still in progress.

3.3 Prior to using the A-frame, work platform or spider staging, they will be load tested in accordance with Attachment #3, "Load Test Checklist".

3.4 Upon completion of tendon surveillance, the equipment will be stored in accordance with Attachment #4, "Guidelines for Storage of Equipment".

4.0 Documentation

As the items on Attachments 2, 3 and 4 are completed, the blank on the checklist by that item should be initialed. When a checklist is completed, the Test Coordinator or his designee will sign and date the checklist to verify that it has been completed.

APPENDIX B

ATTACHMENT 1

FARLEY NUCLEAR PLANT
UNIT 2
TENDON SURVEILLANCE

SAFETY GUIDELINES

1. Wear hard hats and shoes or boots with good soles and leather uppers that afford some reasonable protection against impact or penetration. Tennis or sport shoes are not acceptable.

2. Wear ear protection when working in posted areas.

3. Wear a safety belt tied off to an independent safety line when in the spider staging or transferring between the spider staging and the A-frame or platform.

4. The Davcon ironworker foreman will inspect the hoist cables, and check the emergency cut-off switches and brakes daily.

5. Only one person on a section of ladder at one time.

6. All tools, etc., are to be pulled up by handline or cherry picker. DO NOT climb a ladder without the free use of both hands.

7. Be alert to potential pinch points especially when handling grease cans and drums.

8. Be alert to the potential for burns from drum heater or hot grease.

9. DO NOT lift or lower any load without either voice or visual signals.

10. Only one person to signal at a time.

11. Stay out from under loads being lifted or lowered.

12. No eating, drinking or smoking while in RCA.

13. Wear protective clothing as required while in RCA.

14. No more than 5 people on the platform at one time except in case of emergency.

ATTACHMENT 1
(Continued)

SAFETY GUIDELINES

15. No more than 2 people on the spider staging at one time except in case of emergency.

16. The following apply to the use of Viscosity Industrial #16 solvent:

    a. Material contains a high concentration of mineral spirits and, therefore, is extremely flammable.

    b. It must be used only in well ventilated areas.

    c. The area must be roped off and flammable caution signs and no smoking signs must be posted.

    d. A fire extinguisher must be readily available to include on the platform.

17. Platform locks shall be down when the platform is stationary.

18. All tools shall be secured when not in use.

19. Housekeeping and the cleanliness of the area are to be maintained throughout the surveillance. Grease spills are to be cleaned up as soon as practical.

20. Pulling winch on A-frame is not to be used for lifting people, only for repositioning the A-frame once it is on top of the Containment Building.

21. IW foreman to check oil level in all winches weekly.

ATTACHMENT 2

FARLEY NUCLEAR PLANT
UNIT 2
TENDON SURVEILLANCE

PREOPERATIONAL SERVICE AND INSPECTION CHECKLIST

PERFORMED UNDER INSPECTION AND REPAIR PROGRAM
DBN 8/8/85

A-FRAME		A-FRAME #1	A-FRAME #2
1.	Visually inspect welds and structural soundness.	_____	_____
2.	Replace plywood decking.	_____	_____
3.	Change oil in pulling winch gear box and test operation. Lubricate winch as needed.	_____	_____
4.	Change oil in lifting winch gear box and test operation. Lubricate winch as needed.	_____	_____
5.	Check electrical contacts and replace as needed.	_____	_____
6.	Check all bolts or pins used to support winch cables, platform cables, and spider staging cables for wear and corrosion. Replace as necessary.	_____	_____
7.	Inspect brakes and gears for wear on both winches.	_____	_____
8.	Inspect winch cables for wear, kinks, broken wires, corrosion and other defects. Grease cables, if dry.	_____	_____
9.	Inspect Hillman Rollers for wear, corrosion and proper operation. Replace chains, if needed. Be sure tapered chains are properly positioned to match rail diameter. Apply light coat of oil to chain rollers.	_____	_____

ATTACHMENT 2
(Continued)

PREOPERATIONAL SERVICE AND INSPECTION CHECKLIST

WORK PLATFORM		WORK PLATFORM #1	WORK PLATFORM #2
1.	Visually inspect for structural soundness.	_____	_____
2.	Inspect plywood decking - replace as needed.	_____	_____
3.	Check cable locking device for operation.	_____	_____
4.	Check all electrical controls and connections for good condition and proper operation.	_____	_____
5.	Change oil in winch gear boxes and test operation. Lubricate winch as needed.	_____	_____
6.	Inspect brakes and gears on winches for wear.	_____	_____
7.	Inspect winch cables for kinks, broken wires, corrosion, wear and other defects. Grease cables, if dry.	_____	_____

SPIDER STAGING		SPIDER STAGING #1	SPIDER STAGING #2
1.	Visually inspect for structural soundness.	_____	_____
2.	Check cable tension holder for proper operation, repair as needed.	_____	_____
3.	Check all electrical controls for good condition and proper operation.	_____	_____
4.	Change oil in winch transmission and test operation. Lubricate winch as needed.	_____	_____

ATTACHMENT 2
(Continued)

PREOPERATIONAL SERVICE AND INSPECTION CHECKLIST

SPIDER STAGING (Continued)	SPIDER STAGING #1	SPIDER STAGING #2
5. Check wire rope drum and automatic brake for wear.	_____	_____
6. Inspect transmission gears and motor brakes for wear.	_____	_____
7. Inspect winch cable for wear, kinks, broken wires, corrosion, and other defects. Grease cables, if dry.	_____	_____
8. Check operation of wire rope level wind system.	_____	_____

OTHER EQUIPMENT

1. Inspect 3/4" manila lifelines, replace if worn or cut.	_____
2. Inspect safety belts, lanyards and rope grabs.	_____
3. Inspect all slings and replace if worn, kinked or corroded.	_____
4. Inspect counterweight lifting lugs for corrosion or other defects.	_____
5. Check electrical power to top of containment. Check for proper voltage and grounding and for condition and operation of disconnects.	_____

COMMENTS: _____

_____

_____

_____

The above service and inspections have been completed.

_____ /_____
SIGNATURE /DATE

ATTACHMENT 3

FARLEY NUCLEAR PLANT
UNIT 2
TENDON SURVEILLANCE

LOAD TEST CHECKLIST

PERFORMED UNDER INSPECTION AND REPAIR PROGRAM
DBN 8/8/87

		EQUIPMENT SET #1	EQUIPMENT SET #2
1.	A-frame is in place on top of containment.	_____	_____
2.	Counterweights (22,160 lbs.) have been placed on A-frame.	_____	_____
3.	Service and inspecton checklist is completed.	_____	_____
4.	All electrical controls have been connected and tested for proper operation.	_____	_____
5.	Electrical power has been connected to platform.	_____	_____
6.	Electrical power has been connected to spider staging.	_____	_____
7.	Cables from platform have been connected to A-frame.	_____	_____
8.	Cable from spider staging has been connected to A-frame.	_____	_____
9.	Test weights totaling approximately 2600 lbs. have been placed on the platform.	_____	_____
10.	Test weights totaling approximately 1000 lbs. have been placed on spider staging.	_____	_____
11.	Test weight of approximately 8000 lbs. has been hung from the lifting winch on A-frame and raised above the work platform.	_____	_____
12.	Raise the platform approximately two feet and hold.	_____	_____

ATTACHMENT 3
(Continued)

FARLEY NUCLEAR PLANT
UNIT 2
TENDON SURVEILLANCE

LOAD TEST CHECKLIST

		EQUIPMENT SET	
		#1	#2
13.	Raise the spider staging approximately two feet and hold.	_____	_____
14.	Inspect A-frame for insufficient counterweight or signs of stress.	_____	_____
15.	Lower spider staging and platform and adjust overload shutoffs to trip at approximately 100 lbs. less than test weight.	_____	_____
16.	Remove test weight from A-frame lifting winch.	_____	_____

The above load test of both equipment sets has been successfully completed.

_____
SIGNATURE DATE

ATTACHMENT 4

FARLEY NUCLEAR PLANT
UNIT 2
TENDON SURVEILLANCE

GUIDELINES FOR STORAGE OF EQUIPMENT

1. All partial grease cans consolidated and covered. Do not consolidate grease from different batches. DBH

2. All tools and equipment boxed and returned to storage building. DBH

3. Both platforms and spider stagings returned to storage building. DBH

4. All bolts used to hold platform, spider staging or lifting winch cables removed from A-frame, boxed and placed in storage building. DBH

5. A-frames and counterweithts stored. DBH

All tendon surveillance equipment has been properly stored.

David Hawthorne 12/5/85
SIGNATURE DATE

FARLEY NUCLEAR PLANT

INRYCO QUALITY CONTROL PROCEDURE

ANCHORHEAD REPLACEMENT PROGRAM

GREASE REPLACEMENT TO COMPLETELY FILL
THE TENDON VOID OF VERTICAL TENDONS.

APPROVED BY: [illegible] TITLE: Sr. Quality Assurance DATE: 5-7-85

REVIEWED BY: Craig Mitchell TITLE: Sr. Design Engineer DATE: 5-2-85

ALABAMA POWER COMPANY - FNP REVIEW

REVIEWED BY: Robert D. Benefield TITLE: SP Supt DATE: 5-2-85

PROJECT: _____ UNIT: ____ DATE: _____

TENDON NO.: _____ TENDON END/BUTTRESS NO.: _____

	QC SIGNOFF
(8.4) Concrete Temp: ____ °F. Thermo. No.: _____ Recal Date: _____	_____
(10.1.1) Predraining Waived YES NO Name _____	_____
(10.3) Void Drained YES NO Method: _____ _____	_____
(12.6.1) Grease Temp. Storage Container _____ °F.	_____
Thermometer No. _____ Recal Date: _____	_____
(13.1) Grease Leaks YES NO	_____
Leaks Repaired YES NO	_____
(13.1.1) Refill Acceptable: _____	_____
(13.1.2) COMMENTS: _____ _____ _____	_____
(13.1.3) FNP Drum Control No.: _____ Viscosity Batch No. _____	_____

Q.C. REVIEW: _____ LEVEL ____ DATE: _____

TITLE: _____

1. PURPOSE

This procedure will establish the requirements for the Replacement of Grease to fill the Tendon Voids (Ducts) of Vertical Tendons for purposes of establishing the integrity of the corrosion protection compound (Viscosity Oil Co. Visconorust 2090P4) as part of the Anchorhead Replacement Program for the Post-Tensioning System Tendons at Farley Nuclear Generating Station.

2. SCOPE

This procedure shall only apply to Vertical Tendons. This is intended to be the complete filling of the Tendon Void, but not necessarily the complete removal of all the grease that might be in that Void at the time of filling.

2.1 Subsequent inspection will be required outside of the scope of this procedure to assure that the grease cans at the shop anchorhead end of the tendon are appropriately filled with grease.

3. RESPONSIBILITY

As stated in Inryco Procedure QA 4.0.

4. QUALIFICATIONS

As stated in Inryco Procedure QA 4.1.

5. EQUIPMENT

5.1 CONSTRUCTION

5.1.1 Visconorust 2090P4 in 55 gallon drums from FNP controlled inventory or as stored in a large bulk storage grease container.

5.1.2 Drum heaters, electrical connections and power source.

5.1.3 Miscellaneous hand tools, wrenches, sockets, lifting devices, rags, solvent (Viscor #16), teflon thread tape, bushing plugs, etc.

5.1.4 Grease Pumping System, Hoses, Y-Devices, etc.

5.2 QUALITY CONTROL

5.2.1 Data Sheets, thermometer, tapeline or other measuring device.

6. PRECAUTIONS

Review the Safety Comments provided in Inryco Procedure SC 1 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; Stressing Operations: Overstress Force.

6.3 Section 3.2.2; Personnel Safety.

6.4 Section 3.6; Construction Safety: Personnel Safety.

6.5 During Grease Replacement, the grease is usually pumped under pressure with an exit temperature of 120°F. If being pumped from the heated storage tank, the temperature will be in excess of 150°F. It is, therefore, essential to avoid direct contact with the hot grease and to make sure all connections are secure.

6.6 Where drum heaters are used, operating temperatures are usually not as high, but exit temperature is still not less than 120°F. and injury could occur through carelessness.

6.7

CAUTION
DURING GREASING, BE AWARE THAT THE GREASE IS HOT AND BEING PUMPED UNDER PRESSURE.

7. QUALITY CONTROL

All Quality Control Documentation (QCD) points noted in this procedure are Hold Points. The work shall not progress past or through a QCD without a release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 12.6 of this procedure.

8. PREREQUISITES

8.1 All Inspections will be complete.

8.2 The tendon will be in a stressed condition.

8.3 The Grease Can has already been installed.

8.4 QCD - Document the exterior concrete temperature near the tendon.

9. GENERAL

This refilling is intended to completely fill the Tendon Void of a Vertical Tendon, but does not necessarily mean that all the grease presently in that Tendon Void will be removed or displaced by this refilling.

9.1 The grease may be in a large storage container or in 55 gallon drums. The large storage container shall have an automatic thermostat control for temperature, while drum heaters shall be used to heat the grease in drums.

9.2 It shall be necessary to maintain specific grease temperatures and to monitor the exit temperature of the grease. It is important to have the grease in a completely liquid state so that congealing does not occur before the correct quantity is replaced. Provide venting of air while pumping the grease into the grease can.

9.3 The original installation temperature of the grease was not less than 120°F. This represents the maximum expansion of the grease under maximum plant operating conditions. As the grease cools, it shrinks back into the tendon void or duct leaving a coating of grease on all steel within the void and grease can. This shrink-back also causes the formation of an air pocket extending from the grease can, a short distance into the trumpet tube. Shrink-back will not occur at the Gallery or Bottom End of a Vertical Tendon. Shrink-back might not occur in Dome Tendons. The coefficient of expansion for this grease will be about 1% for every 20°F. temperature rise from 68°F.

10. PRE-DRAINING OF TENDON VOID

In order to provide a successful refilling of the Tendon Void, it may become necessary to drain the Tendon Void in an effort to provide a relatively clear path for the new grease. It will not be necessary to drain all the grease, but if a complete draining occurs, it will only assist in the refilling of the Void. Have a sufficient quantity of waste containers available to collect the drained grease.

10.1 Predraining of the Tendon Void described in Section 10 of this Procedure is optional and may be waived by the direction of the authorized Alabama Power Company personnel provided that the grease can be injected without exceeding a maximum sustained pressure of 350 psig at the pump discharge and a maximum transient pressure of 400 psig at the pump discharge.

10.1.1 QCD - Document the name of the person waiving the predraining, when applicable.

10.2 It is recommended that compressed air be injected at the grease filling hole of the Shop End of the Tendon Grease Can. This will speed up the draining process and perhaps cut a hole through the remaining grease in the Tendon Void, which would permit pumping the grease in from the Gallery Grease Can at lower pressures. It will be acceptable to use Y-Devices and hoses to assist in the draining operation.

10.2.1 Do not inject the compressed air through the Gallery Grease Can.

10.2.2 Do not use compressed air to assist the grease pumping from the Gallery Grease Can. The Grease Pump will probably exert a higher pressure than the compressed air and could force grease into the compressed air lines.

10.3 QCD - Document the method of draining the Tendon Void.

11. SET-UP FOR REFILLING THE TENDON DUCT

Two types of hook-ups have been developed for the various types of tendon ducts to be filled and will be explained in the following procedures. Refer to the flow diagram sketches where noted, for a visual view of each system and the recirculating patterns used, to prevent hose blockages.

11.1 Before starting the tendon filling operations, the storage facility, pump, hoses and equipment shall be set up.

11.2 A Grease Control Station shall be set up near the tendons to be filled and a communications network established so that the personnel at the furthest end of the tendon to be filled, will be able to communicate with the crew leader or the control station attendant. The general physical make-up of the Grease Control Station will be seen in Sketch 8.0. This configuration may vary from time to time, based on the needs at hand and access to the Tendon Voids.

11.3 At the end of each day of filling operations, the pump shall be shut off and the feed-in supply, return and jumper hoses shall be drained. The gate valve on the suction hose shall be closed and that hose drained. It will be acceptable to allow the grease to continue to circulate in the hose lines, providing that responsibility has been assigned for monitoring this recirculation, so that the system can be shut down in the event of system or equipment failure.

11.4 Refer to each specific system procedure for the proper selection. Then follow the Tendon Duct Refilling requirements for the actual operation.

11.5 The terms casing-filler, grease, corrosion protection compound, tendon void filler are all meant to be another name for the product which is used to fill the Tendon Void. That product is Visconorust 2090P4 as manufactured by Viscosity Oil Company.

12. SINGLE FILL SYSTEM

This method of Tendon Void filled has the grease pumped through a Y-Device attached to the Gallery Grease Can of a Vertical Tendon. The grease is pumped up from the Gallery, through the Tendon Void and out the filler bushing of the Grease Can at the Dome end of the Vertical Tendon. This system does not require recirculation through the Void, nor is it recommended. Refer to Sketch 8-4 for a pictorial presentation of this system.

12.1 Attach a Grease Can Filler Bushing pipe plug to the operating shaft wrench of each Y-Device to be used. Be sure the plug is pulled back far enough into the body, so as to allow an unobstructed flow of casing filler. A sketch of a typical Y-Device will be seen in Sketch 8-1.

12.2 Connect the Y-Device to the grease can filler bushing in the Gallery and attach the waste line to the upper end of the tendon. A waste container will be available at the Dome end of the tendon. It will be acceptable to utilize a Y-Device for the Grease Can at the Dome end of the tendon.

12.3 Be sure all the grease hoses are clear of blockages before connecting them to the Y-Device.

12.4 Before hook-up operations, the 4 port-control valve is set to recirculate the grease flow from the pump to the storage facility, as noted in Sketch 8-2, System A.

12.5 Before and after filling operations the feed-line from the 4 port-control valve will be coupled to the return-line completing the recirculating closed loop, and the grease allowed to circulate through the hoses back to the storage facility, as noted in Sketch 8-2, System B.

12.6 The grease in the bulk storage container should be in a temperature range of 150°F. to 210°F. Greasing operations should not be performed when the grease temperature is less than 150°F.

12.6.1 QCD - The temperature of the grease in the bulk storage container shall be documented once a day during greasing operations utilizing that container along with the thermometer identification and recalibration data.

12.7 The 4 port-control valve will be set for the small loop recirculation pattern as noted in Sketch 8-2, System A.

12.8 The pump is operating to circulate the casing filler. The grease temperature during recirculation should not be lower than 140°F. at the thermometer of the Grease Control Station shown in Sketch 8-0.

12.9 All connections to the tendon are made. Refer to Sketch 8-4.

12.10 The 3 port-outflow valve or waste line is set so that the initial flow of casing filler will be into the waste container. It may not be necessary to incorporate this waste line and the outflow end of the valve shall be plugged.

12.11 Open the 4 port-control valve allowing the flow of casing filler into the Tendon Void.

12.12 Hot grease shall be pumped into the Tendon Void until it exits at the Vertical Tendon Dome Grease Can. The grease will continue to be pumped out of the can into the waste container until the grease emerging from the waste line is clean and free of air bubbles. It usually takes from 2 to 8 gallons of grease being pumped out until it is clean and clear of dirt or other debris.

12.13 When the casing filler appears to be clean, shift the 3 port-outflow valve so the flow is directed through the 4 port-control valve and back to the storage facility.

12.14 Before stopping the pumping of grease into the grease can, the grease can filler bushing pipe plug shall be inserted into the grease can filler bushing at the Dome to aid in completely filling the Void. It will be acceptable to apply teflon tape to the pipe plugs to aid in sealing the filler bushing.

12.15 Install the grease can filler bushing pipe plug into the Gallery Grease Can and proceed with the valve shifting stated in Section 12.13 above.

12.16 QCD - The temperature of the casing filler at the waste line for either system shall not be less than 120°F. when measured with a thermometer. The last portion of the grease exiting from the waste line will be caught in a container and a thermometer dipped into the grease until the temperature stops rising on the thermometer, or 120°F. is reached. If this temperature is not reached, it shall be necessary to recirculate the grease through the tendon duct and the grease hoses in a closed loop until the minimum 120°F. reading is obtained. <u>DO NOT RECIRCULATE THIS GREASE BACK TO THE BULK STORAGE CONTAINER</u>. Also document the thermometer identification and recalibration date.

12.17 Remove the waste line, Y-Devices and quick couplers from this tendon and move to the next tendon to be filled.

12.18 While moving the hoses after uncoupling, take care not to spill any grease from the hose.

12.19 Any grease spilled on concrete or other surfaces shall be removed and solvent-cleaned.

12.20 <u>A FINAL WORD OF CAUTION</u>: The casing filler is being pumped under pressure and at temperatures in excess of 120°F., poor connections or the use of the wrong procedures could result in injuries.

13. <u>OTHER CONTROLS</u>

13.1 Verify that no grease is leaking. If there is some leakage, the deficiency shall be corrected and cleanup performed.

13.1.1 QCD - Document the acceptability of the refilling.

13.1.2 QCD - Document any comments of unusual occurrences or references that could assist in evaluating the refill or for future surveillance.

13.1.3 QCD - Document the FNP control number for that drum or drums of grease. If that is not visible, document the Viscosity Oil Co. batch numbers.

14. DOCUMENTATION

The items requiring documentation shall be documented on Data Sheet 12.6 shown in this procedure in reduced form.

14.1 The Data Sheet references the applicable section number of the procedure for each QCD point.

14.2 DATA SHEET 12.6

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GREASE VERTICAL TENDON-FULL REFILL
DATA SHEET 12.6
APRIL 24, 1985, Revision 0
PAGE 1 OF 1

PROJECT: _____ UNIT: ____ DATE: _____

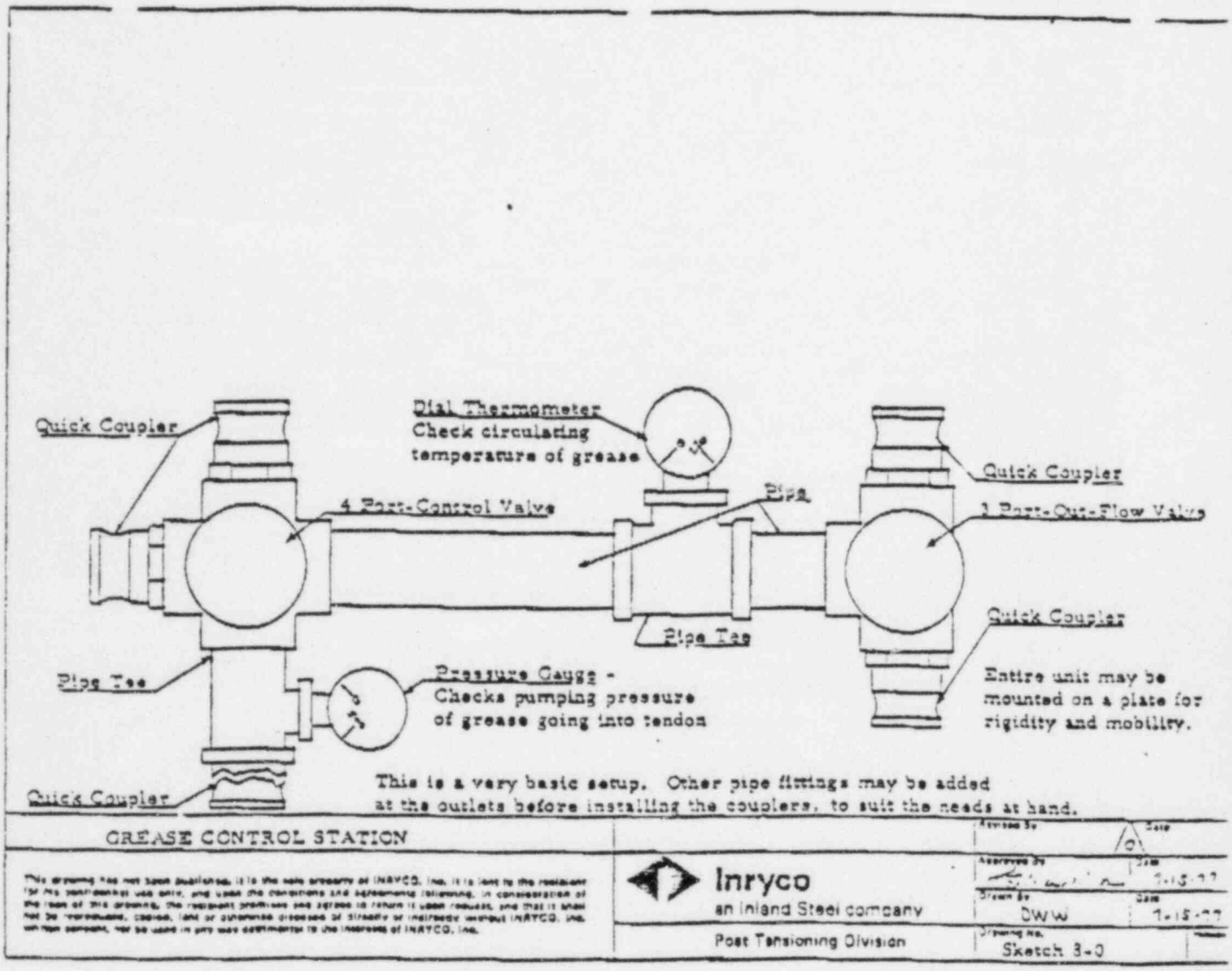
TENDON NO.: _____ TENDON END/BUTTRESS NO.: _____

	QC SIGNOFF
(8.4) Concrete Temp: ____ °F. Thermo. No.: _____ Recal Date: _____	_____
(10.1.1) Predraining Waived YES NO Name _____	_____
(10.3) Void Drained YES NO Method: _____	_____
_____	
(12.6.1) Grease Temp. Storage Container _____ °F.	_____
Thermometer No. _____ Recal Date: _____	_____
(13.1) Grease Leaks YES NO	_____
Leaks Repaired YES NO	_____
(13.1.1) Refill Acceptable: _____	_____
(13.1.2) COMMENTS: _____	
_____	
_____	_____
(13.1.3) FNF Drum Control No.: _____ Viscosity Batch No. _____	_____

Q.C. REVIEW: _____ LEVEL ____ DATE: _____

TITLE: _____

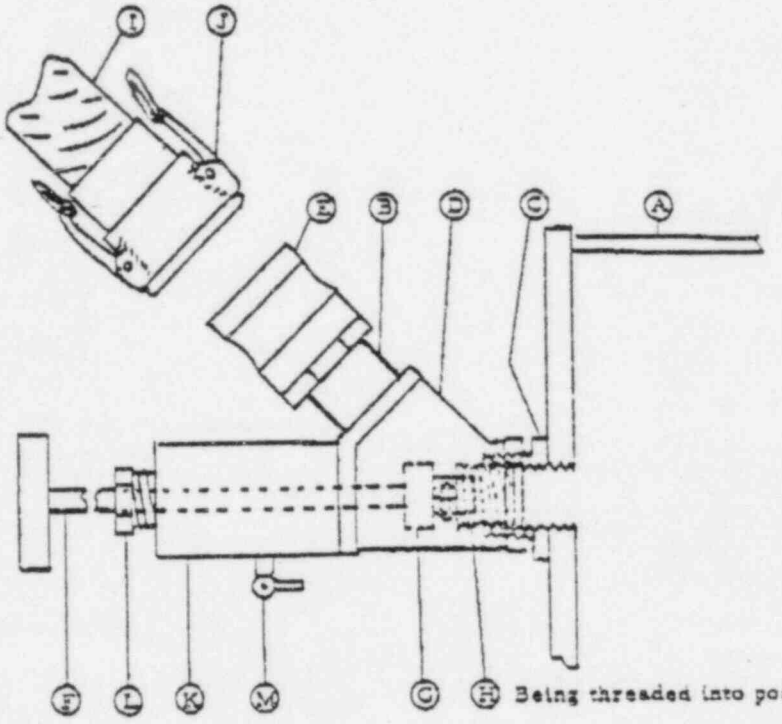
15.1 Sketch 8-0



15.2 Sketch 8-1

TYPICAL HOOK-UP FOR FILLING TENDON VOIDS

A - Grease Can Body
B - Pipe
C - Grease Can Filler Bushing
D - Y-Device Body
E - Male Quick Coupler
F - Operating Shaft & Handle
G - Square Male Pipe Plug Wrench
H - Pipe Plug
I - Casing Filler Hose
J - Female Quick Coupler
K - Packing Box
L - Packing Box Gland
M - Relief Valve - Optional



Refer Procedure F9.0 Section 1.4 for operation.

Special Tendon Void Filling Tool	Y-DEVICE	Revised By	Date
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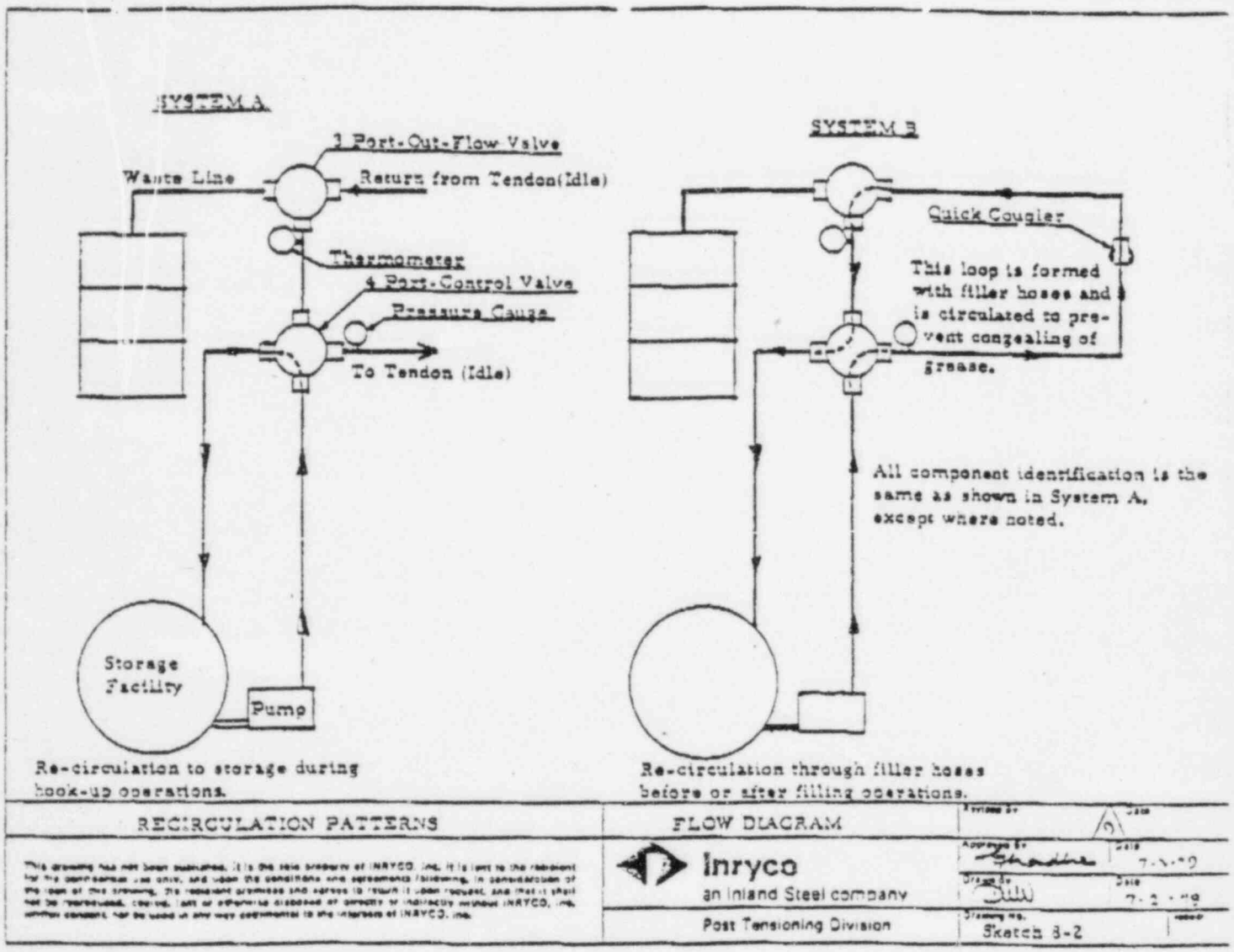
		Drawn By DAW	Date 7-2-79
	Post Tensioning Division	Drawing No. Sketch 8-1	

15.3 Sketch 8-2



RECIRCULATION PATTERNS	FLOW DIAGRAM	Revised By	Date
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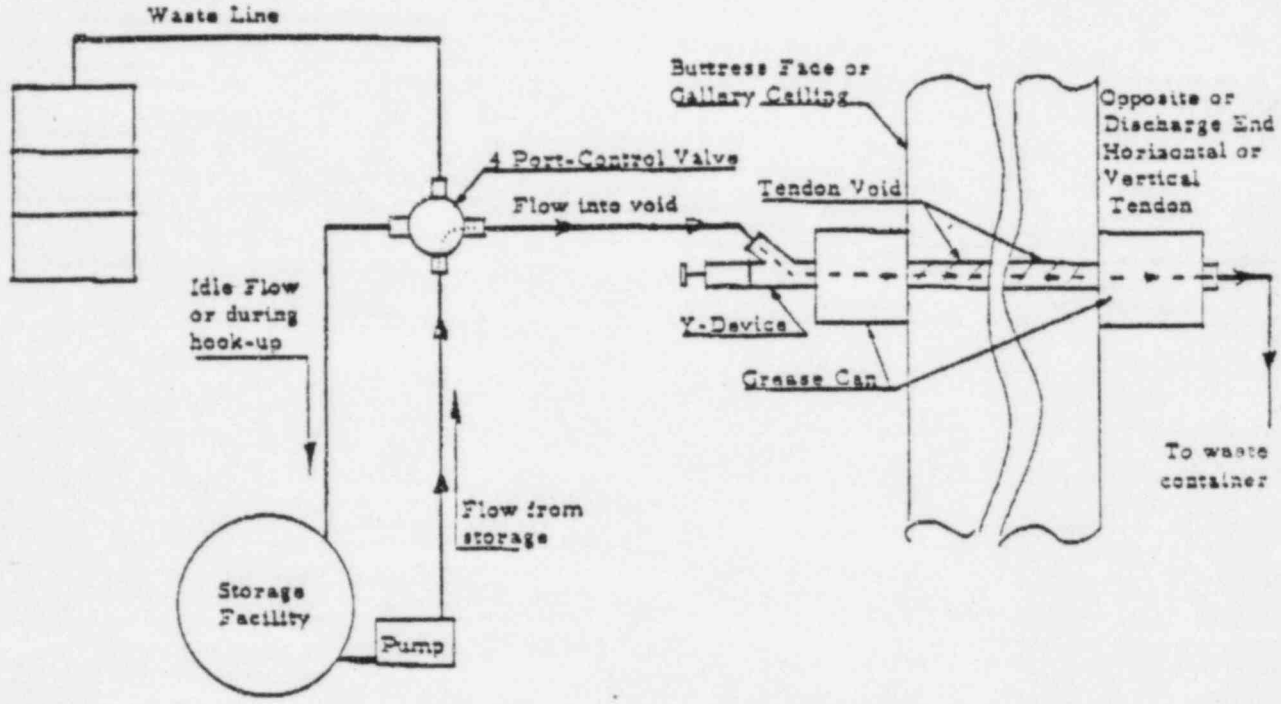
		Drawn By	Date 7-1-79
	Post Tensioning Division	Drawing No. Sketch 8-2	Rev.

15.4 Sketch 8-4



Single Fill System Type 1 or Type 2	FLOW DIAGRAM	Revised By	Date
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		Drawn By	Date 7-2-79
	Post Tensioning Division	Drawing No. Sketch 8-4	

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PROJECT: Farley UNIT: 2 DATE: 5/15/85

TENDON NO.: V-4 TENDON END/BUTTRESS NO.: Stay

	QC SIGNOFF
(8.4) Concrete Temp: 68 °F. Thermo. No.: FNP TDT 9357 Recal Date: 10/4/85	[illegible]
(10.1.1) Predraining Waived (YES) NO Name Joe Hall	[illegible]
(10.3) Void Drained YES (NO) Method: N/A	[illegible]
(12.6.1) Grease Temp. Storage Container 171 °F.	[illegible]
Thermometer No. FNP TDT 9357 Recal Date: 10/4/85	[illegible]
(13.1) Grease Leaks YES (NO)	[illegible]
Leaks Repaired YES (NO)	[illegible]
(13.1.1) Refill Acceptable: YES	[illegible]
(13.1.2) COMMENTS: Exit Temp 148°F, FNP TDT 9357	
	[illegible]
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. 5-6202	[illegible]

Q.C. REVIEW: [signature] LEVEL II DATE: 5/16/85

TITLE: A.E. INSPECTOR

PROJECT: FARLEY UNIT: 2 DATE: 5/15/85

TENDON NO.: V-28 TENDON END/BUTTRESS NO.: Step

	QC SIGNOFF
(8.4) Concrete Temp: 84 °F. Thermo. No.: FNP TOT 935 Recal Date: 10/4/84	[illegible] 5/15/85
(10.1.1) Predraining Waived (YES) NO Name JOE HALL	[illegible] 5/15/85
(10.3) Void Drained YES (NO) Method: N/A	[illegible] 5/15/85
(12.6.1) Grease Temp. Storage Container 171 °F.	[illegible] 5/15/85
Thermometer No. FNP TOT 935 Recal Date: 10/4/84	[illegible] 5/15/85
(13.1) Grease Leaks YES (NO)	[illegible] 5/15/85
Leaks Repaired YES (NO)	[illegible] 5/15/85
(13.1.1) Refill Acceptable: YES	[illegible] 5/15/85
(13.1.2) COMMENTS: Exit Temp. 140°F, FNP TOT 935	[illegible] 5/15/85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. F-6242	[illegible] 5/15/85

Q.C. REVIEW: Joe Thakur LEVEL II DATE: 5/16/85

TITLE: Q.C. INSPECTOR

INKYCO INC. PROCEDURE SQ 12.6
GREASE VERTICAL TENDON-FULL REFILL
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PROJECT: Farley UNIT: 2 DATE: 5/15/85

TENDON NO.: V-52 TENDON END/BUTTRESS NO.: Stop

	QC SIGNOFF
(8.4) Concrete Temp: 64 °F. Thermo. No.: FNP TDT 9311 Recal Date: 11/4/84	[illegible] 5/15/85
(10.1.1) Predraining Waived (YES) NO Name Joe Hall	[illegible] 5/15/85
(10.3) Void Drained YES (NO) Method: N/A	[illegible] 5/15/85
(12.6.1) Grease Temp. Storage Container 171 °F.	[illegible] 5/15/85
Thermometer No. FNP TDT 9350 Recal Date: 10/4/84	[illegible] 5/15/85
(13.1) Grease Leaks YES (NO)	[illegible] 5/15/85
Leaks Repaired YES (NO)	[illegible] 5/15/85
(13.1.1) Refill Acceptable: YES	[illegible] 5/15/85
(13.1.2) COMMENTS: Exit Temp 142°F. FNP TDT 9350	[illegible] 5/15/85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ Lot No. 5-6202	[illegible] 5/15/85

Q.C. REVIEW: [illegible] LEVEL II DATE: 5/16/85

TITLE: Q.E. INSPECTOR

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PROJECT: Farley UNIT: 2 DATE: 5/15/85

TENDON NO.: V-79 TENDON END/BUTTRESS NO.: Step

	QC SIGNOFF
(8.4) Concrete Temp: 58 °F. Thermo. No.: FNP TDT 9250 Recal Date: 10/4/85	[illegible] 5/15/85
(10.1.1) Predraining Waived YES (NO) Name Jim Hall	[illegible] 5/15/85
(10.3) Void Drained YES (NO) Method: N/A	[illegible] 5/15/85
(12.6.1) Grease Temp. Storage Container 171 °F.	[illegible] 5/15/85
Thermometer No. FNP TDT 9250 Recal Date: 10/4/85	[illegible] 5/15/85
(13.1) Grease Leaks YES (NO)	[illegible] 5/15/85
Leaks Repaired YES (NO)	[illegible] 5/15/85
(13.1.1) Refill Acceptable: YES	[illegible] 5/15/85
(13.1.2) COMMENTS: Exit Temp 145°F, FNP TDT 9250	[illegible] 5/15/85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ Lot No. E-6202	[illegible] 5/15/85

Q.C. REVIEW: [illegible] LEVEL II DATE: 5/16/85

TITLE: Q.C. INSPECTOR

INRYCO INC. PROCEDURE SQ 12.6
GREASE VERTICAL TENDON-FULL REFILL
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PROJECT: FARLEY UNIT: 2 DATE: 5/13/85

TENDON NO.: V-100 TENDON END/BUTTRESS NO.: SHP

	QC SIGNOFF
(8.4) Concrete Temp: 110 °F. Thermo. No.: 959 Recal Date: 3/15/86	ISAT 5/13/85
(10.1.1) Predraining Waived (YES) NO Name Joe Hall	ISAT 5/13/85
(10.3) Void Drained YES (NO) Method: N/A	ISAT 5/13/85
(12.6.1) Grease Temp. Storage Container 165 °F.	ISAT 5/13/85
Thermometer No FNP TDT 9357 Recal Date: 10/4/85	ISAT 5/13/85
(13.1) Grease Leaks YES (NO)	ISAT 5/13/85
Leaks Repaired YES (NO) N/A	ISAT 5/13/85
(13.1.1) Refill Acceptable: YES	ISAT 5/13/85
(13.1.2) COMMENTS: ISAT 5/13/85 ~~N/A~~	
EXIT TEMP EXCEEDS 120°F, FNP TDT 9357	ISAT 5/13/85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. 5-5224	ISAT 5/13/85

Q.C. REVIEW: Joe Thackery LEVEL II DATE: 5/16/85

TITLE: Q.E. INSPECTOR

FARLEY NUCLEAR PLANT

INRYCO QUALITY CONTROL PROCEDURE

ANCHORHEAD REPLACEMENT PROGRAM

GREASE REPLACEMENT TO FILL THE TENDON
VOID OF HORIZONTAL TENDONS.

APPROVED BY: _____ TITLE: Supt Quality Assurance DATE: 5-15-85

REVIEWED BY: _____ TITLE: Sr. Design Engineer DATE: 5-15-85

ALABAMA POWER COMPANY - FNP REVIEW

REVIEWED BY: _____ TITLE: SP Supt DATE: 5-23-85

1. PURPOSE

This procedure will establish the requirements for the Replacement of Grease to fill the Tendon Voids (Ducts) of Horizontal Tendons for purposes of establishing the integrity of the corrosion protection compound (Viscosity Oil Co. Visconorust 2090P4) as part of the Anchorhead Replacement Program for the Post-Tensioning System Tendons at Farley Nuclear Generating Station.

2. SCOPE

This procedure shall only apply to Horizontal Tendons. This is intended to provide a refilling of the Tendon Void, but not necessarily the complete removal of all the grease that might be in that Void at the time of filling.

2.1 As the Tendon Voids are nearly completely full at this time, it is highly unlikely that this quantity of grease could be displaced during the refilling. This procedure will provide reasonable assurance that the Tendon Void will be filled to capacity while fully assuring that the Grease Cans and Trumpet Tubes will be completely full and the Tendon End Anchorage Assembly completely coated with grease.

3. RESPONSIBILITY

As stated in Inryco Procedure QA 4.0.

4. QUALIFICATIONS

As stated in Inryco Procedure QA 4.1.

5. EQUIPMENT

5.1 CONSTRUCTION

5.1.1 Visconorust 2090P4 in 55 gallon drums from FNP controlled inventory and/or as stored in a large bulk storage grease container.

5.1.2 Drum heaters, electrical connections and power source.

5.1.3 Miscellaneous hand tools, wrenches, sockets, lifting devices, rags, solvent (Viscor #16), teflon thread tape, bushing plugs, etc.

5.1.4 Grease Pumping System, Hoses, Y-Device, etc.

5.2 QUALITY CONTROL

5.2.1 Data Sheets, thermometer, tapeline or other measuring device.

6. PRECAUTIONS

Review the Safety Comments provided in Inryco Procedure SC 1 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; Stressing Operations: Overstress Force.

6.3 Section 3.2.2; Personnel Safety.

6.4 Section 3.6; Construction Safety: Personnel Safety.

6.5 During Grease Replacement, the grease is usually pumped under pressure with an exit temperature of 120°F. If being pumped from the heated storage tank, the temperature will be in excess of 150°F. It is, therefore, essential to avoid direct contact with the hot grease and to make sure all connections are secure.

6.6 Where drum heaters are used, operating temperatures are usually not as high, but exit temperature is still not less than 120°F. and injury could occur through carelessness.

6.7

CAUTION
DURING GREASING, BE AWARE THAT THE GREASE IS HOT AND BEING PUMPED UNDER PRESSURE.

7. QUALITY CONTROL

All Quality Control Documentation (QCD) points noted in this procedure are Hold Points. The work shall not progress past or through a QCD without a release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 12.7 of this procedure.

8. PREREQUISITES

8.1 All Inspections will be complete.

8.2 The tendon will be in a stressed condition.

8.3 The Grease Can has already been installed.

8.4 QCD - Document the exterior concrete temperature near the tendon.

9. GENERAL

This refilling is intended to provide a fill of the Tendon Void of a Horizontal Tendon, but does not necessarily mean that all the grease presently in that Tendon Void will be removed or displaced by this refilling. There also remains a possibility that there may be some entrapped air in the grease within the Sheathing portion of the Tendon Void.

9.1 The grease may be in a large storage container or in 55 gallon drums. The large storage container shall have an automatic thermostat control for temperature, while drum heaters shall be used to heat the grease in drums.

9.2 It shall be necessary to maintain specific grease temperatures and to monitor the exit temperature of the grease. It is important to have the grease in a completely liquid state so that congealing does not occur before the correct quantity is replaced. Provide venting of air while pumping the grease into the grease can.

9.3 The original installation temperature of the grease was not less than 120°F. This represents the maximum expansion of the grease under maximum plant operating conditions. As the grease cools, it shrinks back into the tendon void or duct leaving a coating of grease on all steel within the void and grease can. This shrink-back also causes the formation of an air pocket extending from the grease can, a short distance into the trumpet tube. Shrink-back will not occur at the Gallery or Bottom End of a Vertical Tendon. Shrink-back might not occur in Dome Tendons. The coefficient of expansion for this grease will be about 1% for every 20°F. temperature rise from 68°F.

10. SET-UP FOR REFILLING THE TENDON DUCT

Several types of hook-ups have been developed for the various types and locations of Tendon Ducts to be filled and will be explained in the following procedures. Refer to the flow diagram sketches where noted, for a visual view of each system and the recirculating patterns used, to prevent hose blockages.

10.1 Before starting the tendon filling operations, the storage facility, drums, heaters, pump, hoses and equipment shall be set up.

10.2 A Grease Control Station shall be set up near the tendons to be filled and a communications network established so that the personnel at the furthest end of the tendon to be filled, will be able to communicate with the crew leader or the control station attendant. The general physical make-up of the Grease Control Station will be seen in Sketch 8.0. This configuration may vary from time to time, based on the needs at hand and access to the Tendon Voids.

10.2.1 It may not be possible or reasonable to utilize the bulk filling setup (Grease Control Station and hoses) in Radiologically Controlled Areas. Therefore, instead of using the bulk filling equipment, drums of grease with a high pressure pump will be substituted. Variations in operation will be explained in the following refilling operations.

10.3 At the end of each day of filling operations, the pump shall be shut off and the feed-in supply, return and jumper hoses shall be drained. The gate valve on the suction hose shall be closed and that hose drained. It will be acceptable to allow the grease to continue to circulate in the hose lines, providing that responsibility has been assigned for monitoring this recirculation, so that the system can be shut down in the event of system or equipment failure.

10.4 Refer to each specific system procedure for the proper selection. Then follow the Tendon Duct Refilling requirements for the actual operation.

10.5 The terms casing-filler, grease, corrosion protection compound, tendon void filler are all meant to be another name for the product which is used to fill the Tendon Void. That product is Visconorust 2090P4 as manufactured by Viscosity Oil Company.

11. <u>SINGLE FILL SYSTEM</u>

This method of Tendon Void filled has the grease pumped through a Y-Device attached to the Grease Can of a Horizontal Tendon. The grease is pumped into the Grease Can at one end of the tendon and out through the filler bushing of the Grease Can opposite end of the tendon or out through the Auxiliary filling pipe at the pumping end of the tendon. This system does not require recirculation through the Void, nor is it recommended. Refer to Sketch 12.7.1 for a pictorial presentation of this system. The Grease Can Filler Bushing Pipe Plug has been removed from the Grease Cans at each end of the tendon.

11.1 Attach the Grease Can Filler Bushing pipe plug to the operating shaft wrench of each Y-Device to be used. Be sure the plug is pulled back far enough into the body, so as to allow an unobstructed flow of casing filler. A sketch of a typical Y-Device will be seen in Sketch 8-1.

11.2 Connect the Y-Device to the grease can filler bushing at one end of the tendon and attach the waste line to the opposite end of the tendon. A waste container should be available at the opposite end of the tendon. It will be acceptable to utilize a Y-Device for the Grease Can at the opposite end of the tendon.

11.2.1 The Auxiliary Filler Pipe Plug shall be removed from the Auxiliary Grease Filling Pipe at that end of the tendon where the grease will be pumped in. It would be practical to attach a hose to this pipe so that the waste grease could be directed into a waste container. Refer to Sketch 12.7 for a view of the Tendon End Anchorage Assembly.

11.2.2 If there is a Vent Valve attached to the Grease Can, be sure that this Valve is closed, so that the venting can take place through the Grease Can Filler Bushing at the opposite end of the tendon and/or the Auxiliary Grease Filling Piper. Refer to Sketch 12.7.

11.3 Be sure all the grease hoses are clear of blockages before connecting them to the Y-Device.

11.4 Before hook-up operations, the 4 port-control valve is set to recirculate the grease flow from the pump to the storage facility, as noted in Sketch 8-2, System A.

11.4.1 When the grease is being pumped directly from 55 gallon drums, the grease will not be recirculated. Pumping the grease from 55 gallon drums is a direct filling method with no requirements for a Grease Control Station.

11.5 Before and after filling operations the feed-line from the 4 port-control valve will be coupled to the return-line completing the recirculating closed loop, and the grease allowed to circulate through the hoses back to the storage facility, as noted in Sketch 8-2, System B.

11.6 The grease in the bulk storage container should be in a temperature range of 150°F. to 210°F. Greasing operations should not be performed when the grease temperature is less than 150°F, when being pumped from bulk storage or directly from 55 gallon drums.

11.6.1 QCD - The temperature of the grease in the bulk storage container shall be documented once a day during greasing operations utilizing that container along with the thermometer identification and recalibration data. The temperature of the grease being pumped from a 55 gallon drum shall be documented for each tendon filled in this manner.

11.6.2 The temperature of the grease in a 55 gallon drum should not exceed 300°F. Temperatures in excess of 300°F. causes frothing of the grease which introduces air bubbles into the grease; it further causes the release of undesirable fumes and brings the grease close to its flash point.

11.7 The 4 port-control valve will be set for the small loop recirculation pattern as noted in Sketch 8-2, System A.

11.8 The pump is operating to circulate the casing filler. The grease temperature during recirculation should not be lower than 140°F. at the thermometer of the Grease Control Station shown in Sketch 8-0.

11.9 All connections to the tendon are made. Refer to Sketch 12.7.1.

11.10 The 3 port-outflow valve or waste line is set so that the initial flow of casing filler will be into the waste container. It may not be necessary to incorporate this waste line and the outflow end of the valve shall be plugged.

11.11 Open the 4 port-control valve allowing the flow of casing filler into the Tendon Void.

11.11.1 The grease in 55 gallon drums will be pumped directly into the Grease Can.

11.12 As the grease is being pumped in, the pumping pressure will cause the grease to exit from the venting hole at the Grease Can Filler Bushing of the opposite end of the tendon and/or the Auxiliary Grease Filling Pipe at the pumping end of the tendon.

11.12.1 If the grease exits the opposite end of the tendon without exiting the Auxiliary, allow about one gallon of grease or more to exit and replace the Grease Can Filler Bushing Pipe Plug.

11.12.2 If the grease exits the opposite end of the tendon and the Auxiliary Grease Filling Pipe at about the same time, allow about one gallon of grease or more to exit either location and then replace the Grease Can Filler Bushing Pipe Plug at the opposite end of the tendon. Take the temperature of the grease exiting the Auxiliary Grease Filling Pipe after about one gallon of grease exits the pipe.

11.12.3 If the grease only exits the Auxiliary Grease Filler Pipe, take the temperature of the grease after about one gallon of grease exits the Filler Pipe. This grease could be caught in a smaller container for purposes of temperature sampling.

11.12.4 QCD - Document the temperature of the grease exiting the Auxiliary Grease Filler Pipe at the pumping end of the tendon. Document thermometer identification and recalibration date.

11.13 Continue pumping in hot grease until the temperature of the grease exiting the Auxiliary Grease Filler Pipe is at least 10 degrees higher than the Ambient Grease Temperature documented in Section 11.12.4 above. If the Grease Can Filler Bushing Pipe Plug has not been installed at the opposite end of the tendon, it shall be replaced at this point, while continuing to pump grease.

11.13.1 QCD - Document the final exiting temperature of the grease, the thermometer identification and recalibration date.

11.14 Once the exiting grease has reached the correct temperature, shift the 3 port-outflow valve so the flow is directed through the 4 port-control valve and back to the storage facility.

11.15 Before stopping the pumping of grease into the grease can, the grease can filler bushing pipe plug shall be inserted into the grease can filler bushing at the opposite end of the tendon to aid in completely filling the Void. It will be acceptable to apply teflon tape to the pipe plugs to aid in sealing the filler bushing.

11.16 Install the grease can filler bushing pipe plug into the Grease Can where the pumping of grease is taking place and proceed with the valve shifting stated in Section 11.14 above.

11.17 Remove the waste line, Y-Devices and quick couplers from the Grease Can at the pumping end of the tendon and move to the next tendon to be greased. The opposite end of the tendon will now be greased following the requirements of Section 12 below.

11.18 While moving the hoses after uncoupling, take care not to spill any grease from the hose.

11.19 Any grease spilled on concrete or other surfaces shall be removed and solvent-cleaned.

11.20 <u>A FINAL WORD OF CAUTION</u>: The casing filler is being pumped under pressure and at temperatures in excess of 120°F., poor connections or the use of the wrong procedures could result in injuries.

12. GREASING THE OPPOSITE END OF THE TENDON - SINGLE FILL

Greasing the opposite end of the tendon just filled may take place at any time after the Grease Can at the pumping end of the tendon has the Grease Can Filler Bushing Pipe Plug installed. This method of Tendon Void filled has the grease pumped through a Y-Device attached to the Grease Can of a Horizontal Tendon. The grease is pumped into the Grease Can at this end of the tendon and out through the Auxiliary filling pipe at this end of the tendon. This system does not require recirculation through the Void, nor is it recommended. Refer to Sketch 12.7.1 for a pictorial presentation of this system. The Grease Can Filler Bushing Pipe Plug has been removed from the Grease Cans only at this end of the tendon.

12.1 Attach the Grease Can Filler Bushing pipe plug to the operating shaft wrench of the Y-Device. Be sure the plug is pulled back far enough into the body, so as to allow an unobstructed flow of casing filler. A sketch of a typical Y-Device will be seen in Sketch 8-1.

12.2 Connect the Y-Device to the grease can filler bushing at this end of the tendon.

12.2.1 The Auxiliary Filler Pipe Plug shall be removed from the Auxiliary Grease Filling Pipe at this end of the tendon, where the grease will be pumped in. It would be practical to attach a hose to this pipe so that the waste grease could be directed into a waste container. Refer to Sketch 12.7 for a view of the Tendon End Anchorage Assembly.

12.2.2 If there is a Vent Valve attached to the Grease Can, be sure that this Valve is closed, so that the venting can take place through the Auxiliary Grease Filling Piper. Refer to Sketch 12.7.

12.3 Be sure all the grease hoses are clear of blockages before connecting them to the Y-Device.

12.4 Before hook-up operations, the 4 port-control valve is set to recirculate the grease flow from the pump to the storage facility, as noted in Sketch 8-2, System A.

12.4.1 When the grease is being pumped directly from 55 gallon drums, the grease will not be recirculated. Pumping the grease from 55 gallon drums is a direct filling method with no requirements for a Grease Control Station.

12.5 Before and after filling operations the feed-line from the 4 port-control valve will be coupled to the return-line completing the recirculating closed loop, and the grease allowed to circulate through the hose back to the storage facility, as noted in Sketch 8-2, System B.

12.6 The grease in the bulk storage container should be in a temperature range of 150°F. to 210°F. Greasing operations should not be performed when the grease temperature is less than 150°F, when being pumped from bulk storage or directly from 55 gallon drums.

12.6.1 QCD - The temperature of the grease in the bulk storage container shall be documented once a day during greasing operations utilizing that container along with the thermometer identification and recalibration data. The temperature of the grease being pumped from a 55 gallon drum shall be documented for each tendon filled in this manner.

12.6.2 The temperature of the grease in a 55 gallon drum should not exceed 300°F. Temperatures in excess of 300°F. causes frothing of the grease which introduces air bubbles into the grease; it further causes the release of undesirable fumes and brings the grease close to its flash point.

12.7 The 4 port-control valve will be set for the small loop recirculation pattern as noted in Sketch 8-2, System A.

12.8 The pump is operating to circulate the casing filler. The grease temperature during recirculation should not be lower than 140°F. at the thermometer of the Grease Control Station shown in Sketch 8-0.

12.9 All connections to the tendon are made. Refer to Sketch 12.7.1.

12.10 The 3 port-outflow valve or waste line is set so that the initial flow of casing filler will be into the waste container. It may not be necessary to incorporate this waste line and the outflow end of the valve shall be plugged.

12.11 Open the 4 port-control valve allowing the flow of casing filler into the Tendon Void.

12.11.1 The grease in 55 gallon drums will be pumped directly into the Grease Can.

12.12 As the grease is being pumped in, the pumping pressure will cause the grease to exit from the Auxiliary Grease Filling Pipe at this end of the tendon. Take the temperature of the grease after about one gallon of grease exits the Filler Pipe. This grease could be caught in a smaller container for purposes of temperature and sampling.

12.12.1 QCD - Document the temperature of the grease exiting the Auxiliary Grease Filler Pipe at the pumping end of the tendon. Document thermometer identification and recalibration date.

12.13 Continue pumping in hot grease until the temperature of the grease exiting the Auxiliary Grease Filler Pipe is at least 10 degrees higher than the Ambient Grease Temperature documented in Section 11.12.4 above. If the Grease Can Filler Bushing Pipe Plug has not been installed at the opposite end of the tendon, it shall be replaced at this point, while continuing to pump grease.

12.13.1 QCD - Document the final exiting temperature of the grease, the thermometer identification and recalibration date.

12.14 Once the exiting grease has reached the correct temperature, shift the 3 port-outflow valve so the flow is directed through the 4 port-control valve and back to the storage facility.

12.15 Install the grease can filler bushing pipe plug into the Grease Can and proceed with the valve shifting stated in Section 12.14 above.

12.16 Remove the waste line, Y-Devices and quick couplers from the Grease Can at the pumping end of the tendon and move to the next tendon to be greased.

12.17 While moving the hoses after uncoupling, take care not to spill any grease from the hose.

12.18 Any grease spilled on concrete or other surfaces shall be removed and solvent-cleaned.

12.19 <u>A FINAL WORD OF CAUTION</u>: The casing filler is being pumped under pressure and at temperatures in excess of 120°F., poor connections or the use of the wrong procedures could result in injuries.

13. OTHER CONTROLS

13.1 Verify that no grease is leaking at both ends of the tendon. If there is some leakage, the deficiency shall be corrected and cleanup performed.

13.1.1 QCD - Document the acceptability of the refilling.

13.1.2 QCD - Document any comments of unusual occurrences or references that could assist in evaluating the refill or for future surveillance.

13.1.3 QCD - Document the FNP control number for that drum or drums of grease. If that is not visible, document the Viscosity Oil Co. batch numbers.

14. DOCUMENTATION

The items requiring documentation shall be documented on Data Sheet 12.7 shown in this procedure in reduced form.

14.1 The Data Sheet references the applicable section number of the procedure for each QCD point.

14.2 DATA SHEET 12.7

PROJECT: _____ UNIT: ____ DATE: _____

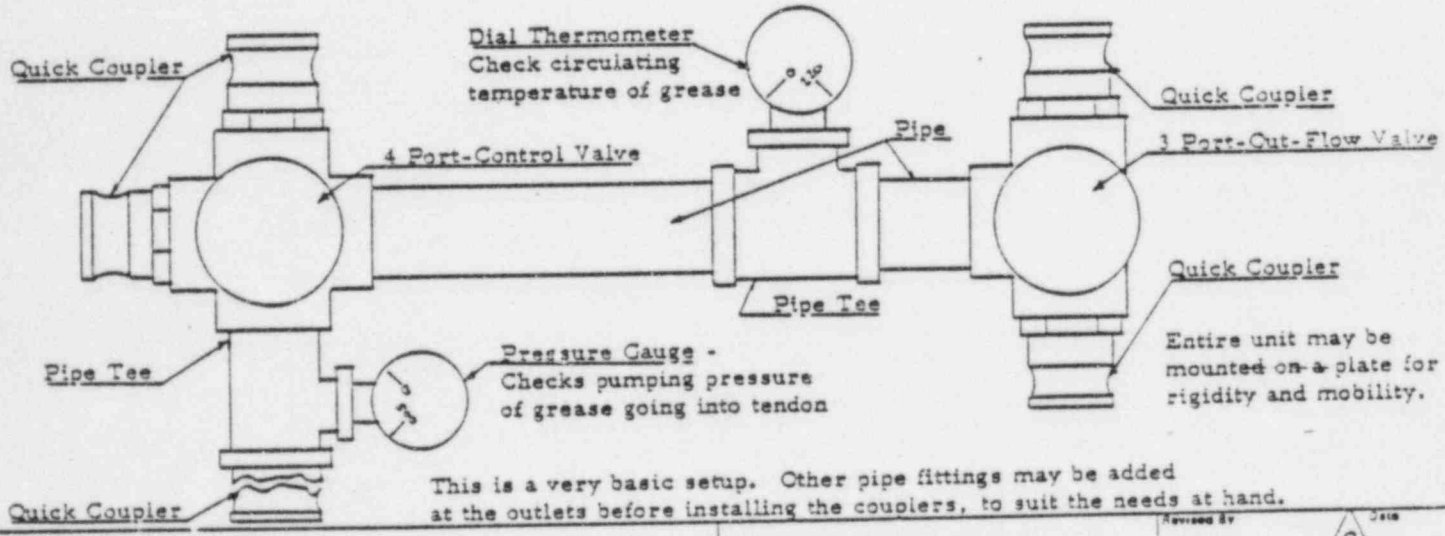
TENDON NO.: _____ TENDON END/BUTTRESS NO.: _____

	QC SIGNOFF
(8.4) Concrete Temp: ____°F. Thermo. No.: _____ Recal Date: _____	_____
(11.6.1) Grease Temp. Storage Container _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(11.12.4) Grease Temp. Ambient _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(11.13.1) Grease Temp. Exiting _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(12.6.1) Grease Temp. Storage Container _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(12.12.1) Grease Temp. Ambient _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(12.13.1) Grease Temp. Exiting _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(13.1) Grease Leaks YES NO	_____
Leaks Repaired YES NO	_____
(13.1.1) Refill Acceptable: _____	_____
(13.1.2) COMMENTS: _____	
_____	
_____	_____
(13.1.3) FNP Drum Control No.: _____ Viscosity Batch No. _____	_____

Q.C. REVIEW: _____ LEVEL ____ DATE: _____

TITLE: _____

15.1 Sketch 8-0



This is a very basic setup. Other pipe fittings may be added at the outlets before installing the couplers, to suit the needs at hand.

GREASE CONTROL STATION

Inryco
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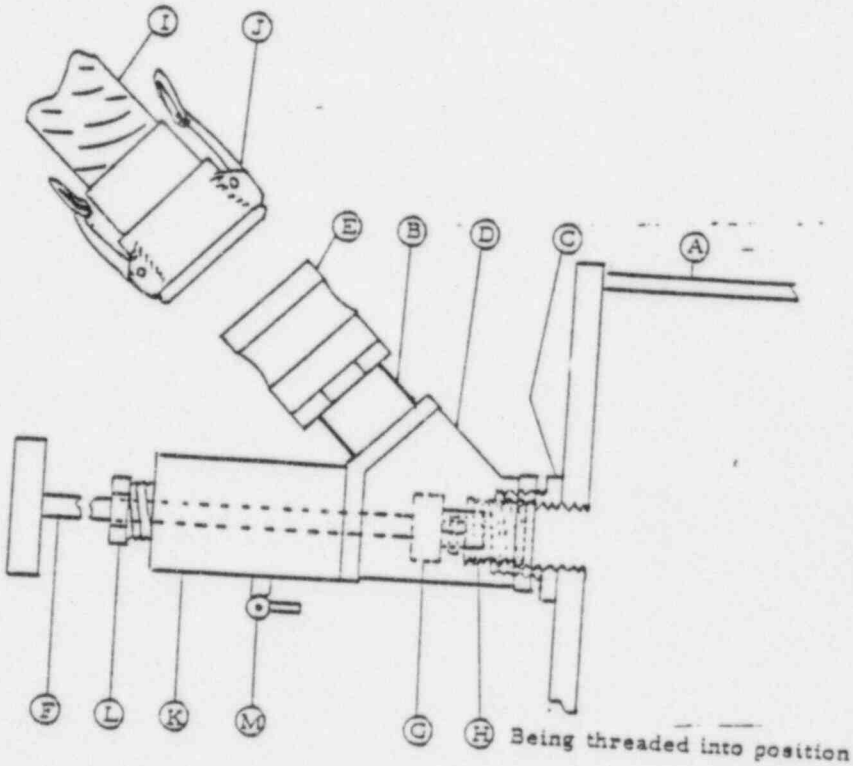
Post Tensioning Division

Revised By		Date	0
Approved By		Date	7-15-77
Drawn By	DWW	Date	7-15-77
Drawing No.	Sketch 8-0		

15.2 Sketch 8-1

TYPICAL HOOK-UP FOR FILLING TENDON VOIDS

A - Grease Can Body
B - Pipe
C - Grease Can Filler Bushing
D - Y-Device Body
E - Male Quick Coupler
F - Operating Shaft & Handle
G - Square Male Pipe Plug Wrench
H - Pipe Plug
I - Casing Filler Hose
J - Female Quick Coupler
K - Packing Box
L - Packing Box Gland
M - Relief Valve - Optional



Refer Procedure F3.0 Section 1.4 for operation.

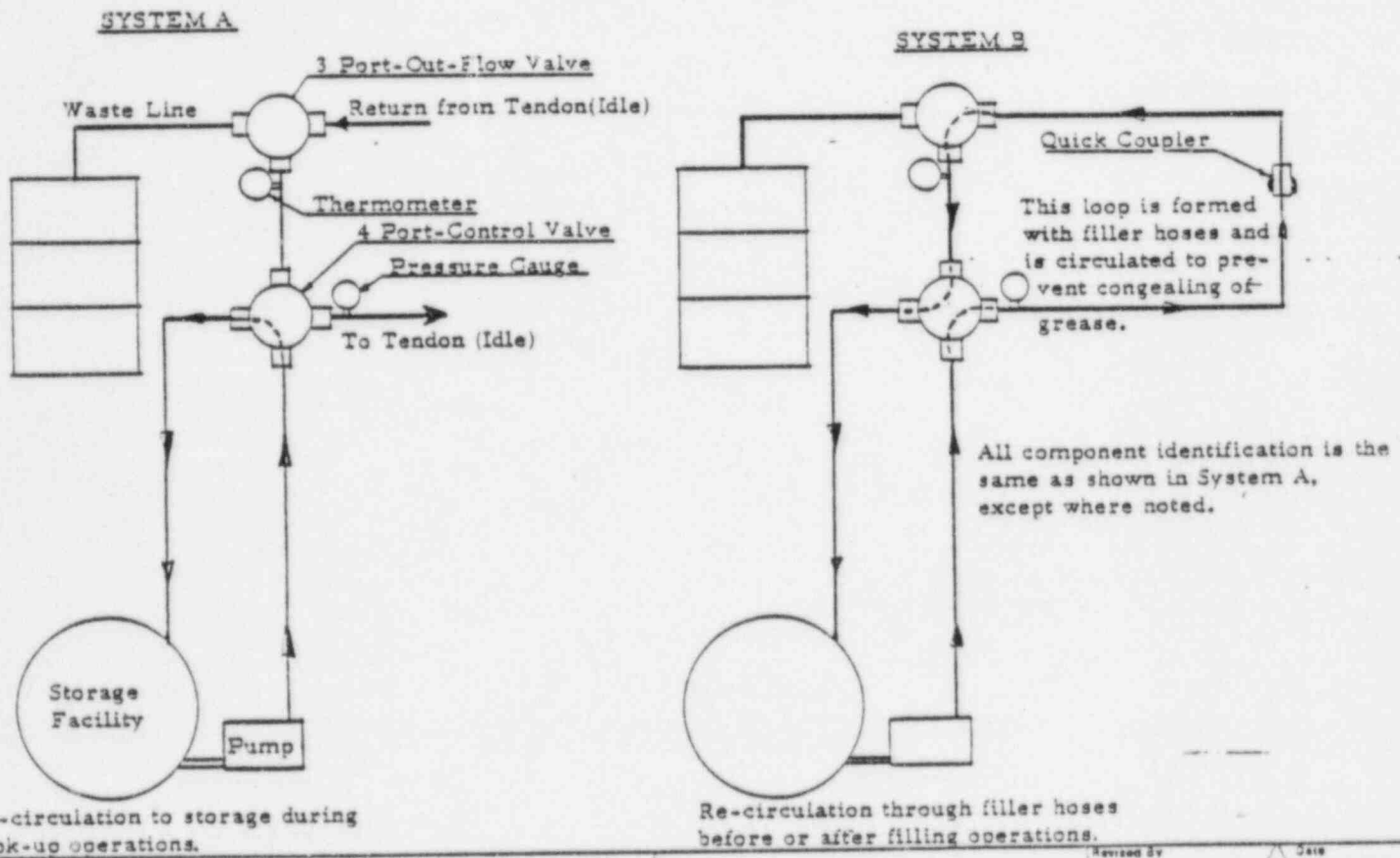
Special Tendon Void Filling Tool

Y-DEVICE

Inryco
an Inland Steel company
Post Tensioning Division

Revised By	Date
Approved By Ghadha	Date 7-2-
Drawn By DMN	Date 7-2-
Drawing No. Sketch 8-1	

15.3 Sketch 8-2



RECIRCULATION PATTERNS

FLOW DIAGRAM

Inryco
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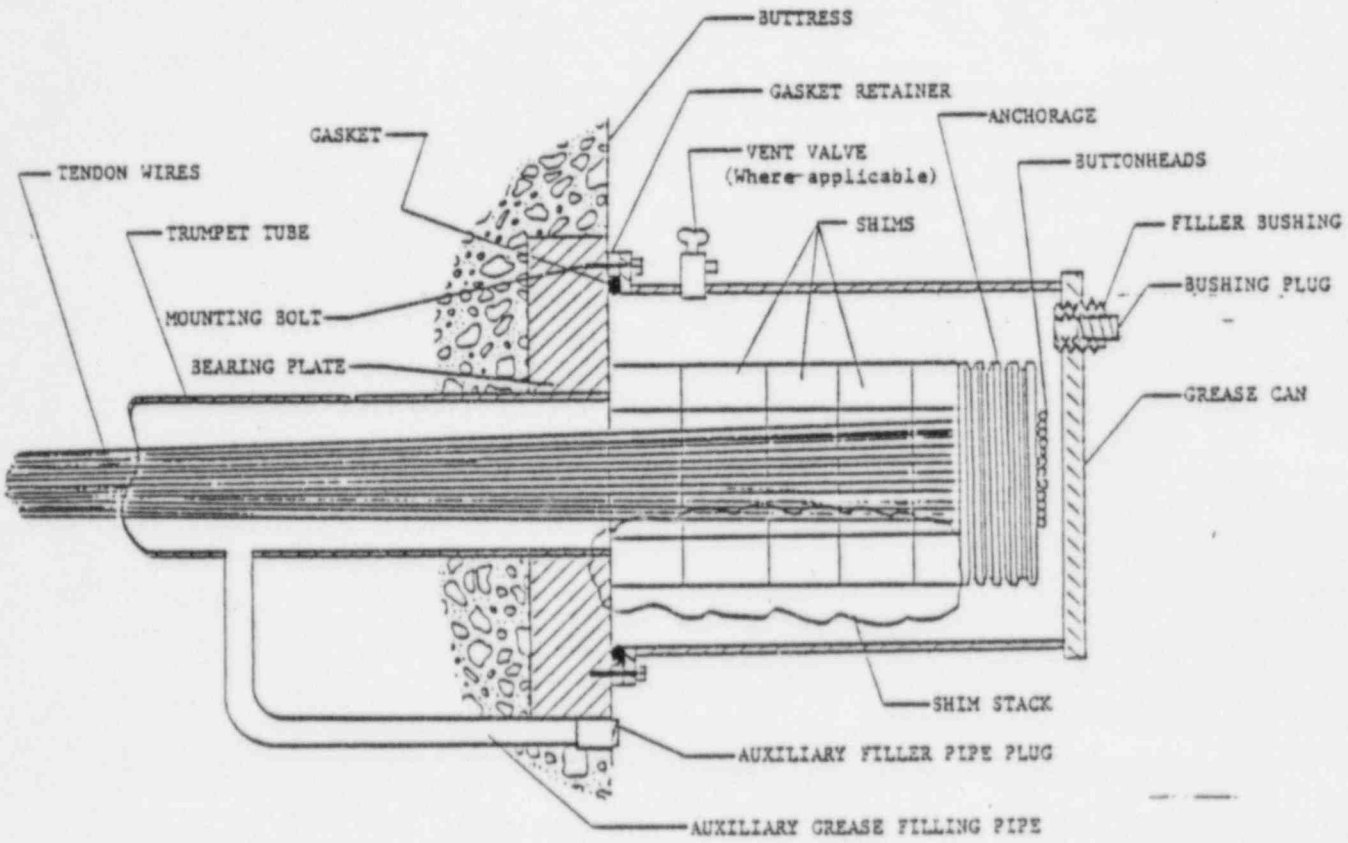
Post Tensioning Division

Revised By		Date
Approved By		Date 7-2-79
Drawn By		Date 7-2-79
Drawing No.	Sketch 8-2	

15.4 Sketch 12.7



GREASE REPLACEMENT - HORIZONTAL TENDON	PROCEDURE SQ 12.7	Revised By	Date
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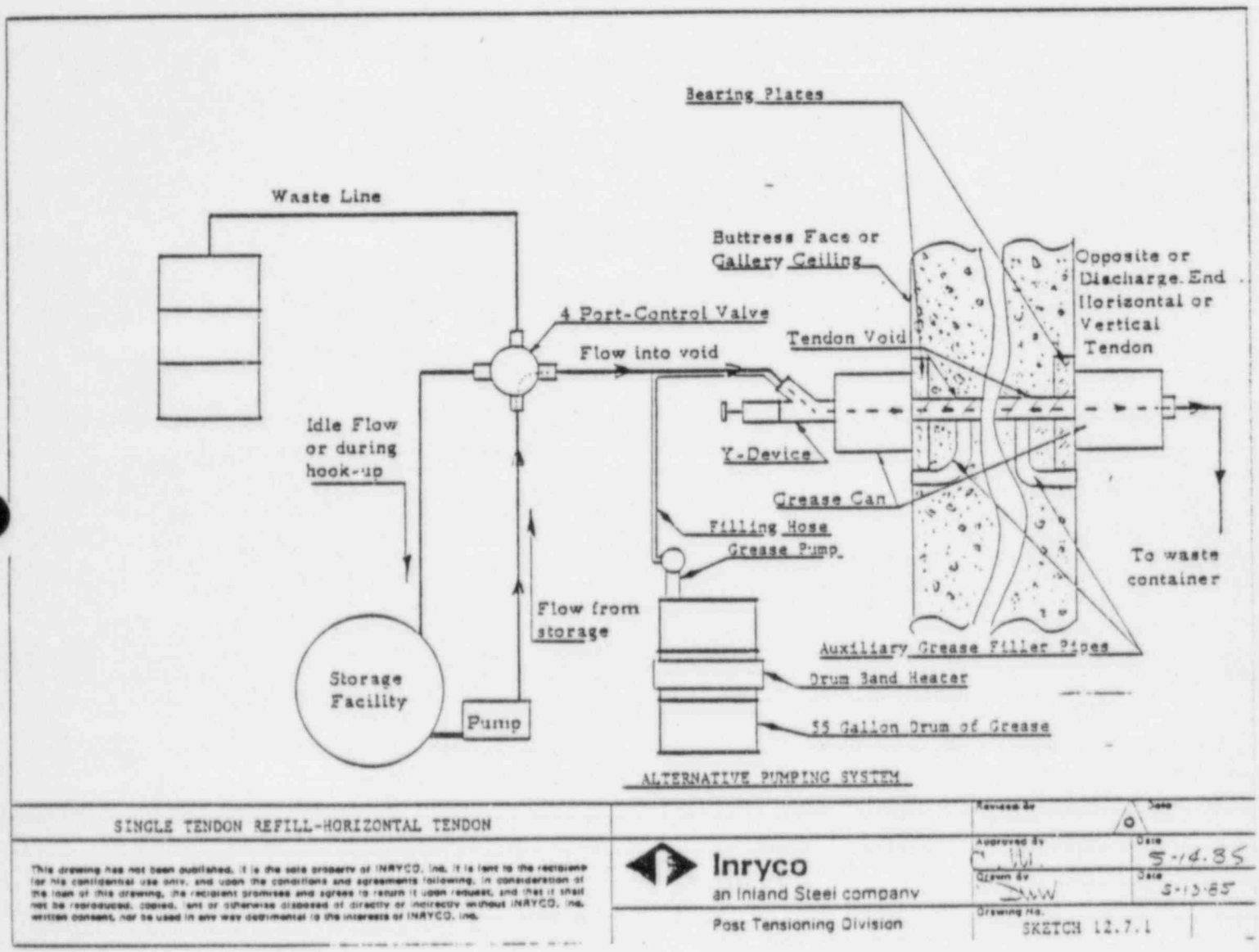
		Drawn By DAW	Date 5-8-85
	Post Tensioning Division	Drawing No. SKETCH 12.7	

15.5 Sketch 12.7.1



SINGLE TENDON REFILL-HORIZONTAL TENDON

Inryco
an Inland Steel company
Post Tensioning Division

Revised By		Date	0
Approved By		Date	5-14-85
Drawn By	SNW	Date	5-13-85
Drawing No.	SKETCH 12.7.1		

PROJECT: _____ UNIT: ____ DATE: _____

TENDON NO.: _____ TENDON END/BUTTRESS NO.: _____

	QC SIGNOFF
(8.4) Concrete Temp: ____°F. Thermo. No.: _____ Recal Date: _____	_____
(11.6.1) Grease Temp. Storage Container _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(11.12.4) Grease Temp. Ambient _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(11.13.1) Grease Temp. Exiting _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(12.6.1) Grease Temp. Storage Container _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(12.12.1) Grease Temp. Ambient _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(12.13.1) Grease Temp. Exiting _____°F.	_____
Thermometer No. _____ Recal Date: _____	_____
(13.1) Grease Leaks YES NO	_____
Leaks Repaired YES NO	_____
(13.1.1) Refill Acceptable: _____	_____
(13.1.2) COMMENTS: _____	
_____	
_____	_____
(13.1.3) FNP Drum Control No.: _____ Viscosity Batch No. _____	_____

Q.C. REVIEW: _____ LEVEL ____ DATE: _____

TITLE: _____

PROJECT: FARLEY UNIT: 2 DATE: 5-31-85

TENDON NO.: 1DE TENDON END/BUTTRESS NO.: E

		QC SIGNOFF
(8.4) Concrete Temp: 78 °F. Thermo. No.: ST-22 Recal Date: 5-22-86		BB 5-31-85
(11.6.1) Grease Temp. Storage Container ___ °F.		
Thermometer No. ___ Recal Date: ___		
(11.12.4) Grease Temp. Ambient ___ °F.		
Thermometer No. ___ Recal Date: ___		N A
(11.13.1) Grease Temp. Exiting ___ °F.		
Thermometer No. ___ Recal Date: ___		
(12.6.1) Grease Temp. Storage Container 220 °F.		BB 5-31-85
Thermometer No. PK55 Recal Date: 5-22-86		BB 5-31-85
(12.12.1) Grease Temp. Ambient 86 °F.		BB 5-31-85
Thermometer No. PK55 Recal Date: 5-22-86		BB 5-31-85
(12.13.1) Grease Temp. Exiting 108 °F.		BB 5-31-85
Thermometer No. PK55 Recal Date: 5-22-86		BB 5-31-85
(13.1) Grease Leaks YES (NO)		BB 5-31-85
Leaks Repaired YES (NO)		BB 5-31-85
(13.1.1) Refill Acceptable: YES		BB 5-31-85
(13.1.2) COMMENTS: NONE		
		BB 5-31-85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. 5-5526		BB 5-31-85

Q.C. REVIEW: [signature] LEVEL II DATE: 6/1/85

TITLE: W.E. INSPECTOR

PROJECT: FARLEY UNIT: 2 DATE: 5-30-85

TENDON NO.: 01 DE TENDON END/BUTTRESS NO.: D

		QC SIGNOFF
(8.4) Concrete Temp: 86 °F. Thermo. No.: ST-62 Recal Date: 5-22-86		DJWilla 5-30-85
(11.6.1) Grease Temp. Storage Container 180 °F.		DJWilla 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		DJWilla 5-30-85
(11.12.4) Grease Temp. Ambient 88 °F.		DJWilla 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		DJWilla 5-30-85
(11.13.1) Grease Temp. Exiting 120 °F.		DJWilla 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		DJWilla 5-30-85
(12.6.1) Grease Temp. Storage Container °F.		
Thermometer No. Recal Date:		
(12.12.1) Grease Temp. Ambient N °F.		N/A
Thermometer No. Recal Date: A		
(12.13.1) Grease Temp. Exiting °F.		
Thermometer No. Recal Date:		
(13.1) Grease Leaks YES (NO)		DJWilla 5-30-85
Leaks Repaired YES (NO)		DJWilla 5-30-85
(13.1.1) Refill Acceptable: YES		DJWilla 5-30-85
(13.1.2) COMMENTS: NONE		
		DJWilla 5-30-85
(13.1.3) FMP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. 5-5526		DJWilla 5-30-85

Q.C. REVIEW: [signature] LEVEL II DATE: 5/31/85

TITLE: QA E. INSPECTOR

PROJECT: FARLEY UNIT: 2 DATE: 6-3-85

TENDON NO.: 21DE TENDON END/BUTTRESS NO.: E

		QC SIGNOFF
(8.4) Concrete Temp: 95 °F. Thermo. No.: ST-60 Recal Date: 5-22-86		JAD 6/3/85
(11.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(11.12.4) Grease Temp. Ambient ____ °F.		
Thermometer No. ____ Recal Date: ____		N/A
(11.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.6.1) Grease Temp. Storage Container 193 °F.		JAD 6/3/85
Thermometer No. PK55 Recal Date: 5-22-86		JAD 6/3/85
(12.12.1) Grease Temp. Ambient 93 °F.		JAD 6/3/85
Thermometer No. PK53 Recal Date: 5-22-86		JAD 6/3/85
(12.13.1) Grease Temp. Exiting 130 °F.		JAD 6/3/85
Thermometer No. PK53 Recal Date: 5-22-86		JAD 6/3/85
(13.1) Grease Leaks YES (NO)		JAD 6/3/85
Leaks Repaired YES NO (N/A)		JAD 6/3/85
(13.1.1) Refill Acceptable: Yes		JAD 6/3/85
(13.1.2) COMMENTS: Report for 'E' Buttress only.		JAD 6/3/85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ Lot No. 5-5524		JAD 6/3/85

Q.C. REVIEW: VCW Joe Thomas LEVEL II DATE: 6/4/85

TITLE: QC INSPECTOR

PROJECT: FARLEY UNIT: 2 DATE: 5-30-85

TENDON NO.: 21 DE TENDON END/BUTTRESS NO.: D

		QC SIGNOFF
(8.4) Concrete Temp: 108 °F. Thermo. No.: ST-67 Recal Date: 5-22-86		D.L.Wells 5-30-85
(11.6.1) Grease Temp. Storage Container 190 °F.		D.L.Wells 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		D.L.Wells 5-30-85
(11.12.4) Grease Temp. Ambient 96 °F.		D.L.Wells 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		D.L.Wells 5-30-85
(11.13.1) Grease Temp. Exiting 120 °F.		D.L.Wells 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		D.L.Wells 5-30-85
(12.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.12.1) Grease Temp. Ambient ____ °F.		N/A
Thermometer No. N Recal Date: A		
(12.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(13.1) Grease Leaks YES (NO)		D.L.Wells 5-30-85
Leaks Repaired YES (NO)		D.L.Wells 5-30-85
(13.1.1) Refill Acceptable: YES		D.L.Wells 5-30-85
(13.1.2) COMMENTS: NONE		
		D.L.Wells 5-30-85
(13.1.3) FMP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. 5-5526		D.L.Wells 5-30-85

Q.C. REVIEW: [signature] LEVEL II DATE: 5/31/85

TITLE: W.E. INSPECTOR

PROJECT: Farley UNIT: 2 DATE: 6/4/85

TENDON NO.: 28 DE TENDON END/BUTTRESS NO.: E

		QC SIGNOFF
(8.4) Concrete Temp: 96 °F. Thermo. No.: ST62 Recal Date: 5/22/86		JAD 6/4/85
(11.6.1) Grease Temp. Storage Container 180 °F.		JAD 6/4/85
Thermometer No. PK-53 Recal Date: 5/22/86		JAD 6/4/85
(11.12.4) Grease Temp. Ambient 100 °F.		JAD 6/4/85
Thermometer No. PK-53 Recal Date: 5/22/86		JAD 6/4/85
(11.13.1) Grease Temp. Exiting 122 °F.		JAD 6/4/85
Thermometer No. PK-53 Recal Date: 5/22/86		JAD 6/4/85
(12.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.12.1) Grease Temp. Ambient N/A °F.		N/A
Thermometer No. ____ Recal Date: ____		
(12.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(13.1) Grease Leaks YES (NO)		JAD 6/4/85
Leaks Repaired YES NO (N/A)		JAD 6/4/85
(13.1.1) Refill Acceptable: Yes		JAD 6/4/85
(13.1.2) COMMENTS: Report to E. Buttress only.		
		JAD 6/4/85
(13.1.3) FWP Drum Control No.: N/A Viscosity Batch No. Lot No. 5-6259		JAD 6/4/85

Q.C. REVIEW: (UCW) [signature] LEVEL II DATE: 6/5/85

TITLE: QC Inspector

INRYCO INC. PROCEDURE SQ 12.7
GREASE HORIZONTAL TENDON-FINAL REFILL
DATA SHEET 12.7
MAY 8, 1985, Revision 0
PAGE 1 OF 1

PROJECT: FARLEY UNIT: 2 DATE: 6-4-85

TENDON NO.: 28DE TENDON END/BUTTRESS NO.: D

		QC SIGNOFF
(8.4) Concrete Temp: 96 °F. Thermo. No.: ST-60 Recal Date: 5-22-86		[illegible] 6-4-85
(11.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(11.12.4) Grease Temp. Ambient N/A °F.		
Thermometer No. ____ Recal Date: ____		N/A
(11.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.6.1) Grease Temp. Storage Container 152 °F.		[illegible] 6-4-85
Thermometer No. PK55 Recal Date: 5-22-86		[illegible] 6-4-85
(12.12.1) Grease Temp. Ambient 92 °F.		[illegible] 6-4-85
Thermometer No. PK55 Recal Date: 5-22-86		[illegible] 6-4-85
(12.13.1) Grease Temp. Exiting 124 °F.		[illegible] 6-4-85
Thermometer No. PK55 Recal Date: 5-22-86		[illegible] 6-4-85
(13.1) Grease Leaks YES (NO)		[illegible] 6-4-85
Leaks Repaired YES (NO)		[illegible] 6-4-85
(13.1.1) Refill Acceptable: YES		[illegible] 6-4-85
(13.1.2) COMMENTS: NONE		
		[illegible] 6-4-85
(13.1.3) FMP Drum Control No.: N/A Viscosity Batch No. LOT 5-6559		[illegible] 6-4-85

Q.C. REVIEW: [illegible] LEVEL II DATE: 6/5/85

TITLE: R.E. INSPECTOR

INRYCO INC. PROCEDURE SQ 12.7
GREASE HORIZONTAL TENDON-FINAL REFILL
DATA SHEET 12.7
MAY 8, 1985, Revision 0
PAGE 1 OF 1

PROJECT: Farley UNIT: 2 DATE: 6/4/85

TENDON NO.: 45 DE TENDON END/BUTTRESS NO.: 'E'

		QC SIGNOFF
(8.4) Concrete Temp: 102 °F. Thermo. No.: ST 62 Recal Date: 5/22/86		JAD 6/4/85
(11.6.1) Grease Temp. Storage Container 220 °F.		JAD 6/4/85
Thermometer No. PK-53 Recal Date: 5/22/86		JAD 6/4/85
(11.12.4) Grease Temp. Ambient 110 °F.		JAD 6/4/85
Thermometer No. PK-53 Recal Date: 5/22/86		JAD 6/4/85
(11.13.1) Grease Temp. Exiting 160 °F.		JAD 6/4/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/4/85
(12.6.1) Grease Temp. Storage Container °F.		/
Thermometer No. Recal Date:		/
(12.12.1) Grease Temp. Ambient N/A °F.		N/A
Thermometer No. Recal Date:		/
(12.13.1) Grease Temp. Exiting °F.		/
Thermometer No. Recal Date:		/
(13.1) Grease Leaks YES (NO)		JAD 6/4/85
Leaks Repaired YES NO (N/A)		JAD 6/4/85
(13.1.1) Refill Acceptable: Yes		JAD 6/4/85
(13.1.2) COMMENTS: Report for 'E' Buttress only		JAD 6/4/85
(13.1.3) FNP Drum Control No.: N/A Viscosity Batch No. 5-6329		JAD 6/4/85

Q.C. REVIEW: [illegible] LEVEL II DATE: 6/5/85

TITLE: Q.C. INSPECTOR

PROJECT: FARLEY UNIT: 2 DATE: 6-7-85

TENDON NO.: 45DE TENDON END/BUTTRESS NO.: D

		QC SIGNOFF
(8.4) Concrete Temp: 102 °F. Thermo. No.: ST-56 Recal Date: 3-15-86		BB 6-7-85
(11.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(11.12.4) Grease Temp. Ambient ____ °F.		
Thermometer No. ____ Recal Date: ____		N/A
(11.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.6.1) Grease Temp. Storage Container 190 °F.		BB 6-7-85
Thermometer No. PK55 Recal Date: 5-22-86		BB 6-7-85
(12.12.1) Grease Temp. Ambient 100 °F.		BB 6-7-85
Thermometer No. PK55 Recal Date: 5-22-86		BB 6-7-85
(12.13.1) Grease Temp. Exiting 150 °F.		BB 6-7-85
Thermometer No. PK55 Recal Date: 5-22-86		BB 6-7-85
(13.1) Grease Leaks YES (NO)		BB 6-7-85
Leaks Repaired YES (NO)		BB 6-7-85
(13.1.1) Refill Acceptable: YES		BB 6-7-85
(13.1.2) COMMENTS: NONE		
		BB 6-7-85
(13.1.3) FWP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. 5-6359		BB 6-7-85

Q.C. REVIEW: [signature] LEVEL II DATE: 6-20-85

TITLE: QC Inspector

INRYCO INC. PROCEDURE SQ 12.7
GREASE HORIZONTAL TENDON-FINAL REFILL
DATA SHEET 12.7
MAY 8, 1985, Revision 0
PAGE 1 OF 1

PROJECT: FARLEY UNIT: 2 DATE: 5-31-85

TENDON NO.: 3EF TENDON END/BUTTRESS NO.: E

		QC SIGNOFF
(8.4) Concrete Temp: 78 °F. Thermo. No.: ST-62 Recal Date: 5-22-86		DOUBLE 5-31-85
(11.6.1) Grease Temp. Storage Container N/A °F.		
Thermometer No. N/A Recal Date: N/A		
(11.12.4) Grease Temp. Ambient N/A °F.		N/A
Thermometer No. N/A Recal Date: N/A		
(11.13.1) Grease Temp. Exiting N/A °F.		
Thermometer No. N/A Recal Date: N/A		
(12.6.1) Grease Temp. Storage Container 210 °F.		DOUBLE 5-31-85
Thermometer No. PK-54 Recal Date: 5-22-86		DOUBLE 5-31-85
(12.12.1) Grease Temp. Ambient 84 °F.		DOUBLE 5-31-85
Thermometer No. PK-54 Recal Date: 5-22-86		DOUBLE 5-31-85
(12.13.1) Grease Temp. Exiting 120 °F.		DOUBLE 5-31-85
Thermometer No. PK-54 Recal Date: 5-22-86		DOUBLE 5-31-85
(13.1) Grease Leaks YES (NO)		DOUBLE 5-31-85
Leaks Repaired YES (NO)		DOUBLE 5-31-85
(13.1.1) Refill Acceptable: YES		DOUBLE 5-31-85
(13.1.2) COMMENTS: NONE		DOUBLE 5-31-85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. 5-5626		DOUBLE 5-31-85

Q.C. REVIEW: Joe Thomas LEVEL II DATE: 6/1/85

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GREASE HORIZONTAL TENDON-FINAL REFILL
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PROJECT: FARLEY UNIT: 2 DATE: 5-29-85

TENDON NO.: 3EF TENDON END/BUTTRESS NO.: F

		QC SIGNOFF
(8.4) Concrete Temp: 94 °F. Thermo. No.: ST-59 Recal Date: 3-15-86		DaVolla 5-29-85
(11.6.1) Grease Temp. Storage Container >220 °F.		DaVolla 5-29-85
Thermometer No. PK-52 Recal Date: 5-22-86		DaVolla 5-29-85
(11.12.4) Grease Temp. Ambient 94 °F.		DaVolla 5-29-85
Thermometer No. PK-54 Recal Date: 5-22-86		DaVolla 5-29-85
(11.13.1) Grease Temp. Exiting 120 °F.		DaVolla 5-29-85
Thermometer No. PK-54 Recal Date: 5-22-86		DaVolla 5-29-85
(12.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.12.1) Grease Temp. Ambient ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(13.1) Grease Leaks YES (NO)		DaVolla 5-29-85
Leaks Repaired YES (NO)		DaVolla 5-29-85
(13.1.1) Refill Acceptable: YES		DaVolla 5-29-85
(13.1.2) COMMENTS: NONE		
		DaVolla 5-29-85
(13.1.3) FWP Drum Control No.: N/A Viscosity Batch No. 5-5526		DaVolla 5-29-85

Q.C. REVIEW: Joe Tinkey LEVEL II DATE: 5/30/85

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PROJECT: FARLEY UNIT: 2 DATE: 5-31-85

TENDON NO.: 17EF TENDON END/BUTTRESS NO.: E

		QC SIGNOFF
(8.4) Concrete Temp: 102 °F. Thermo. No.: 5+62 Recal Date: 5-22-86		D.Quella 5-31-85
(11.6.1) Grease Temp. Storage Container N/A °F.		
Thermometer No. N/A Recal Date: N/A		
(11.12.4) Grease Temp. Ambient N/A °F.		N/A
Thermometer No. N/A Recal Date: N/A		
(11.13.1) Grease Temp. Exiting N/A °F.		
Thermometer No. N/A Recal Date: N/A		
(12.6.1) Grease Temp. Storage Container 170 °F.		D.Quella 5-31-85
Thermometer No. PK 54 Recal Date: 5-22-86		D.Quella 5-31-85
(12.12.1) Grease Temp. Ambient 90 °F.		D.Quella 5-31-85
Thermometer No. PK54 Recal Date: 5-22-86		D.Quella 5-31-85
(12.13.1) Grease Temp. Exiting 170 °F.		D.Quella 5-31-85
Thermometer No. PK54 Recal Date: 5-22-86		D.Quella 5-31-85
(13.1) Grease Leaks YES (NO)		D.Quella 5-31-85
Leaks Repaired YES (NO)		D.Quella 5-31-85
(13.1.1) Refill Acceptable: YES		D.Quella 5-31-85
(13.1.2) COMMENTS: NONE		D.Quella 5-31-85
(13.1.3) FWP Drum Control No.: N/A Viscosity Batch No. 5-5576		D.Quella 5-31-85

Q.C. REVIEW: Joe Thornton LEVEL II DATE: 6/1/85

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PROJECT: Farley UNIT: 2 DATE: 5/30/85

TENDON NO.: 17 EF TENDON END/BUTTRESS NO.: F

		QC SIGNOFF
(8.4) Concrete Temp: 95 °F. Thermo. No.: ST 56 Recal Date: 3/15/86		JAD 5/30/85
(11.6.1) Grease Temp. Storage Container 185 °F.		JAD 5/30/85
Thermometer No. PK 53 Recal Date: 5/22/85		JAD 5/30/85
(11.12.4) Grease Temp. Ambient 95 °F. *		JAD 5/30/85
Thermometer No. PK 53 Recal Date: 5/22/85		JAD 5/30/85
(11.13.1) Grease Temp. Exiting 150° °F.		JAD 5/30/85
Thermometer No. PK 53 Recal Date: 5/22/85		JAD 5/30/85
(12.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.12.1) Grease Temp. Ambient ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(13.1) Grease Leaks YES (NO)		JAD 5/30/85
Leaks Repaired YES NO N/A		JAD 5/30/85
(13.1.1) Refill Acceptable: Yes		JAD 5/30/85

(13.1.2) COMMENTS: Report for 'F' Buttress only.
* No grease available in can or vent for Ambient Temperature shown is air-temperature in can. JAD 5/30/85

(13.1.3) YNP Drum Control No.: N/A Viscosity Batch No. 5-550 JAD 5/30/85

Q.C. REVIEW: (CW) Joel Fraley LEVEL II DATE: 5/31/85

INKYCO INC. PROCEDURE SQ 12.7
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PROJECT: FARLEY UNIT: 2 DATE: 6-6-85

TENDON NO.: 31EF TENDON END/BUTTRESS NO.: E

		QC SIGNOFF
(8.4) Concrete Temp: 106 °F. Thermo. No.: ST-56 Recal Date: 3-15-86		BBB 6-6-85
(11.6.1) Grease Temp. Storage Container 220 °F.		BBB 6-6-85
Thermometer No. PK55	Recal Date: 5-22-86	BBB 6-6-85
(11.12.4) Grease Temp. Ambient 106 °F.		BBB 6-6-85
Thermometer No. PK55	Recal Date: 5-22-86	BBB 6-6-85
(11.13.1) Grease Temp. Exiting 134 °F.		BBB 6-6-85
Thermometer No. PK55	Recal Date: 5-22-86	BBB 6-6-85
(12.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____	Recal Date: ____	
(12.12.1) Grease Temp. Ambient ____ °F.		
Thermometer No. ____	Recal Date: ____	N/A
(12.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____	Recal Date: ____	
(13.1) Grease Leaks YES (NO)		BBB 6-6-85
Leaks Repaired YES (NO)		BBB 6-6-85
(13.1.1) Refill Acceptable: YES		BBB 6-6-85
(13.1.2) COMMENTS: NONE		
		BBB 6-6-85
(13.1.3) FNP Drum Control No.: N/A	Viscosity ~~Batch~~ LOT No. 5-6359	BBB 6-6-85

Q.C. REVIEW: [signature] LEVEL II DATE: 6-20-85

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PROJECT: Farley UNIT: 2 DATE: 6/6/85

TENDON NO.: 31 EF TENDON END/BUTTRESS NO.: 'F'

		QC SIGNOFF
(8.4) Concrete Temp: 110 °F. Thermo. No.: ST62 Recal Date: 5/22/86		JAD 6/6/85
(11.6.1) Grease Temp. Storage Container ____ °F.		/
Thermometer No. ____ Recal Date: ____		/
(11.12.4) Grease Temp. Ambient ____ °F.		N/A
Thermometer No. ____ Recal Date: ____		
(11.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.6.1) Grease Temp. Storage Container 215 °F.		JAD 6/6/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/6/85
(12.12.1) Grease Temp. Ambient 102 °F.		JAD 6/6/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/6/85
(12.13.1) Grease Temp. Exiting 142 °F.		JAD 6/6/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/6/85
(13.1) Grease Leaks YES (NO)		JAD 6/6/85
Leaks Repaired YES NO (N/A)		JAD 6/6/85
(13.1.1) Refill Acceptable: Yes		JAD 6/6/85
(13.1.2) COMMENTS: Report for F Buttress only		
		JAD 6/6/85
(13.1.3) FWP Drum Control No.: N/A Viscosity Batch No. 5-6313		JAD 6/6/85

Lot No

Q.C. REVIEW: [illegible] LEVEL II DATE: 6-20-85

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PROJECT: FARLEY UNIT: 2 DATE: 5-30-85

TENDON NO.: 13 FD TENDON END/BUTTRESS NO.: F

		QC SIGNOFF
(8.4) Concrete Temp: 92 °F. Thermo. No.: ST-56 Recal Date: 3-15-86		JAD 5/30/85
(11.6.1) Grease Temp. Storage Container 185 °F.		JAD 5/30/85
Thermometer No. PK53 Recal Date: 5-22-86		JAD 5/30/85
(11.12.4) Grease Temp. Ambient 94* °F.		JAD 5/30/85
Thermometer No. PK53 Recal Date: 5-22-86		JAD 5/30/85
(11.13.1) Grease Temp. Exiting 150 °F.		JAD 5/30/85
Thermometer No. PK53 Recal Date: 5-22-86		JAD 5/30/85
(12.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.12.1) Grease Temp. Ambient ____ °F.		
Thermometer No. N/A Recal Date: ____		N/A
(12.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(13.1) Grease Leaks YES (NO)		JAD 5/30/85
Leaks Repaired YES (NO)		JAD 5/30/85
(13.1.1) Refill Acceptable: YES		JAD 5/30/85
(13.1.2) COMMENTS: *No Visible Grease, Air Temperature Only Report for F Buttress only		JAD 5/30/85
(13.1.3) FNP Drum Control No.: N/A Viscosity Batch No. LOT 5-5526		JAD 5/30/85

Q.C. REVIEW: VCW Joe Thomas LEVEL II DATE: 5/31/85

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PROJECT: FARLEY UNIT: 2 DATE: 530-85

TENDON NO.: 13FD TENDON END/BUTTRESS NO.: D

		QC SIGNOFF
(8.4) Concrete Temp: 98 °F. Thermo. No.: ST-56 Recal Date: 3-15-86		DaWalla 5-30-85
(11.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(11.12.4) Grease Temp. Ambient ____ °F.		N/A
Thermometer No. N/A Recal Date: ____		
(11.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.6.1) Grease Temp. Storage Container 160 °F.		DaWalla 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		DaWalla 5-30-85
(12.12.1) Grease Temp. Ambient 92 °F.		DaWalla 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		DaWalla 5-30-85
(12.13.1) Grease Temp. Exiting 120 °F.		DaWalla 5-30-85
Thermometer No. PK-54 Recal Date: 5-22-86		DaWalla 5-30-85
(13.1) Grease Leaks YES (NO)		DaWalla 5-30-85
Leaks Repaired YES (NO)		DaWalla 5-30-85
(13.1.1) Refill Acceptable: YES		DaWalla 5-30-85
(13.1.2) COMMENTS: NONE		
		DaWalla 5-30-85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ LOT No. 5-5526		DaWalla 5-30-85

Q.C. REVIEW: Joe Kirkley LEVEL II DATE: 5/31/85

LINRYCO INC. PROCEDURE SQ 12.7
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PROJECT: FARLEY UNIT: 2 DATE: 6-8-85

TENDON NO.: 26FD TENDON END/BUTTRESS NO.: D

		QC SIGNOFF
(8.4) Concrete Temp: 110 °F. Thermo. No.: ST-52 Recal Date: 3-15-86		BSB 6-8-85
(11.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(11.12.4) Grease Temp. Ambient ____ °F.		
Thermometer No. ____ Recal Date: ____		N/A
(11.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.6.1) Grease Temp. Storage Container 220 °F.		BSB 6-8-85
Thermometer No. PK55 Recal Date: 5-22-86		BSB 6-8-85
(12.12.1) Grease Temp. Ambient 98 °F.		BSB 6-8-85
Thermometer No. PK55 Recal Date: 5-22-86		BSB 6-8-85
(12.13.1) Grease Temp. Exiting 146 °F.		BSB 6-8-85
Thermometer No. PK55 Recal Date: 5-22-86		BSB 6-8-85
(13.1) Grease Leaks YES (NO)		BSB 6-8-85
Leaks Repaired YES (NO)		BSB 6-8-85
(13.1.1) Refill Acceptable: YES		BSB 6-8-85
(13.1.2) COMMENTS: NONE		
		BSB 6-8-85
(13.1.3) FMP Drum Control No.: NA Viscosity ~~Batch~~ LOT No. 5-4357		BSB 6-8-85

[illegible] DOUTRE: [illegible] DATE: 6-20-85

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PROJECT: Farley UNIT: 2 DATE: 6/5/85

TENDON NO.: 26 FD TENDON END/BUTTRESS NO.: F

		QC SIGNOFF
(8.4) Concrete Temp: 104 °F. Thermo. No.: ST 62 Recal Date: 5/22/86		JAD 6/5/85
(11.6.1) Grease Temp. Storage Container 182 °F.		JAD 6/5/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/5/85
(11.12.4) Grease Temp. Ambient 98 °F.		JAD 6/5/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/5/85
(11.13.1) Grease Temp. Exiting 140 °F.		JAD 6/5/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/5/86
(12.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.12.1) Grease Temp. Ambient N/A °F.		N/A
Thermometer No. ____ Recal Date: ____		
(12.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(13.1) Grease Leaks YES (NO)		JAD 6/5/86
Leaks Repaired YES NO (N/A)		JAD 6/5/86
(13.1.1) Refill Acceptable: Yes		JAD 6/5/86
(13.1.2) COMMENTS: Repair for F Buttress only		
		JAD 6/5/86
(13.1.3) FNP Drum Control No.: NA Viscosity Batch No. 5-2357		JAD 6/5/86

Q.C. REVIEW: UCWendell LEVEL II DATE: 6-20-85

INTERCO INC. PROCEDURE SQ 12.7
GREASE HORIZONTAL TENDON-FINAL REFILL
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PROJECT: FARLEY UNIT: 2 DATE: 6-7-85

TENDON NO.: 42FD TENDON END/BUTTRESS NO.: D

		QC SIGNOFF
(8.4) Concrete Temp: 100 °F. Thermo. No.: ST-56 Recal Date: 3-15-86		BBB 6-7-85
(11.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(11.12.4) Grease Temp. Ambient ____ °F.		N/A
Thermometer No. ____ Recal Date: ____		
(11.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.6.1) Grease Temp. Storage Container 190 °F.		BBB 6-7-85
Thermometer No. PK55 Recal Date: 5-22-86		BBB 6-7-85
(12.12.1) Grease Temp. Ambient 101 °F.		BBB 6-7-85
Thermometer No. PK55 Recal Date: 5-22-86		BBB 6-7-85
(12.13.1) Grease Temp. Exiting 136 °F.		BBB 6-7-85
Thermometer No. PK55 Recal Date: 5-22-86		BBB 6-7-85
(13.1) Grease Leaks YES (NO)		BBB 6-7-85
Leaks Repaired YES (NO)		BBB 6-7-85
(13.1.1) Refill Acceptable: YES		BBB 6-7-85
(13.1.2) COMMENTS: NONE		
		BBB 6-7-85
(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ Lot No. 5 6359		BBB 6-7-85

Q.C. REVIEW: UCW OCWardell LEVEL II DATE: 6-20-85

PROJECT: Farley UNIT: 2 DATE: 6/6/85

TENDON NO.: 42 FD TENDON END/BUTTRESS NO.: 'F'

		QC SIGNOFF
(8.4) Concrete Temp: 88 °F. Thermo. No.: ST-62 Recal Date: 5/22/86		JAD 6/6/85
(11.6.1) Grease Temp. Storage Container 160 °F.		JAD 6/6/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/6/85
(11.12.4) Grease Temp. Ambient 94 °F.		JAD 6/6/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/6/85
(11.13.1) Grease Temp. Exiting 132 °F.		JAD 6/6/85
Thermometer No. PK 53 Recal Date: 5/22/86		JAD 6/6/85
(12.6.1) Grease Temp. Storage Container ____ °F.		
Thermometer No. ____ Recal Date: ____		
(12.12.1) Grease Temp. Ambient ____ °F.		N/A
Thermometer No. ____ Recal Date: ____		
(12.13.1) Grease Temp. Exiting ____ °F.		
Thermometer No. ____ Recal Date: ____		
(13.1) Grease Leaks YES (NO)		JAD 6/6/85
Leaks Repaired YES NO (N/A)		JAD 6/6/85
(13.1.1) Refill Acceptable: Yes		JAD 6/6/85
(13.1.2) COMMENTS: Report for 'F' Buttress only		JAD 6/6/85
(13.1.3) FMP Drum Control No.: N/A Viscosity Batch No. (Lot No) 5-6357		JAD 6/6/85

Q.C. REVIEW: OCWardell LEVEL II DATE: 6-20-85

Inryco
an Inland Steel company

FARLEY NUCLEAR PLANT

INRYCO QUALITY CONTROL PROCEDURE

ANCHORHEAD REPLACEMENT PROGRAM

GREASE REPLACEMENT TO FILL THE TENDON
VOID OF DOME TENDONS.

⚠ APPROVED BY: D. W. Westbrook TITLE: Inryco Quality Assurance Manager DATE: 6/12/85

⚠ REVIEWED BY: Craig Milbank TITLE: Sr. Design Engineer DATE: 6/12/85

ALABAMA POWER COMPANY - FNP REVIEW

⚠ REVIEWED BY: Robert D. Benfield TITLE: SP Supt DATE: 6-18-85

0252N

1. PURPOSE

This procedure will establish the requirements for the Replacement of Grease to fill the Tendon Voids (Ducts) of Dome Tendons for purposes of establishing the integrity of the corrosion protection compound (Viscosity Oil Co. Visconorust 2090P4) as part of the Anchorhead Replacement Program for the Post-Tensioning System Tendons at Farley Nuclear Generating Station.

2. SCOPE

This procedure shall only apply to Dome Tendons. This is intended to provide a refilling of the Tendon Void, but not necessarily the complete removal of all the grease that might be in that Void at the time of filling.

2.1 As the Tendon Voids are nearly completely full at this time, it is highly unlikely that this quantity of grease could be displaced during the refilling. This procedure will provide reasonable assurance that the Tendon Void will be filled to capacity while fully assuring that the Grease Cans and Trumpet Tubes will be completely full and the Tendon End Anchorage Assembly completely coated with grease.

3. RESPONSIBILITY

As stated in Inryco Procedure QA 4.0.

4. QUALIFICATIONS

As stated in Inryco Procedure QA 4.1.

5. EQUIPMENT

5.1 CONSTRUCTION

5.1.1 Visconorust 2090P4 in 55 gallon drums from FNP controlled inventory and/or as stored in a large bulk storage grease container.

5.1.2 Drum heaters, electrical connections and power source.

5.1.3 Miscellaneous hand tools, wrenches, sockets, lifting devices, rags, solvent (Viscor #16), teflon thread tape, bushing plugs, etc.

5.1.4 Grease Pumping System, Hoses, Y-Device, etc.

5.2 QUALITY CONTROL

5.2.1 Data Sheets, thermometer, tapeline or other measuring device.

6. PRECAUTIONS

Review the Safety Comments provided in Inryco Procedure SC 1 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; Stressing Operations: Overstress Force.

6.3 Section 3.2.2; Personnel Safety.

6.4 Section 3.6; Construction Safety: Personnel Safety.

6.5 During Grease Replacement, the grease is usually pumped under pressure with an exit temperature of 120°F. If being pumped from the heated storage tank, the temperature will be in excess of 150°F. It is, therefore, essential to avoid direct contact with the hot grease and to make sure all connections are secure.

6.6 Where drum heaters are used, operating temperatures are usually not as high, but exit temperature is still not less than 120°F. and injury could occur through carelessness.

6.7

CAUTION
DURING GREASING, BE AWARE THAT THE GREASE IS HOT AND BEING PUMPED UNDER PRESSURE.

7. QUALITY CONTROL

All Quality Control Documentation (QCD) points noted in this procedure are Hold Points. The work shall not progress past or through a QCD without a release from the Inspector. The required information or evaluative data shall be ⚠ documented on Data Sheet 12.8 of this procedure for each end of a tendon that has been greased.

8. PREREQUISITES

8.1 All Inspections will be complete.

8.2 The tendon will be in a stressed condition.

8.3 The Grease Can has already been installed.

8.4 QCD - Document the exterior concrete temperature near the tendon.

9. GENERAL

This refilling is intended to provide a fill of the Tendon Void of a Dome Tendon, but does not necessarily mean that all the grease presently in that Tendon Void will be removed or displaced by this refilling. There also remains a possibility that there may be some entrapped air in the grease within the Sheathing portion of the Tendon Void.

9.1 The grease may be in a large storage container or in 55 gallon drums. The large storage container shall have an automatic thermostat control for temperature, while drum heaters shall be used to heat the grease in drums.

9.2 It shall be necessary to maintain specific grease temperatures and to monitor the exit temperature of the grease. It is important to have the grease in a completely liquid state so that congealing does not occur before the correct quantity is replaced. Provide venting of air while pumping the grease into the grease can.

9.3 The original installation temperature of the grease was not less than 120 F. This represents the maximum expansion of the grease under maximum plant operating conditions. As the grease cools, it shrinks back into the tendon void or duct leaving a coating of grease on all steel within the void and grease can. This shrink-back also causes the formation of an air pocket extending from the grease can, a short distance into the trumpet tube. Shrink-back will not occur at the Gallery or Bottom End of a Vertical Tendon. Shrink-back might not occur in Dome Tendons. The coefficient of expansion for this grease will be about 1% for every 20°F. temperature rise from 68°F.

10. SET-UP FOR REFILLING THE TENDON DUCT

Several types of hook-ups have been developed for the various types and locations of Tendon Ducts to be filled and will be explained in the following procedures. Refer to the flow diagram sketches where noted, for a visual view of each system and the recirculating patterns used, to prevent hose blockages.

10.1 Before starting the tendon filling operations, the storage facility, drums, heaters, pump, hoses and equipment shall be set up.

10.2 A Grease Control Station shall be set up near the tendons to be filled and a communications network established so that the personnel at the furthest end of the tendon to be filled. will be able to communicate with the crew leader or the control station attendant. The general physical make-up of the Grease Control Station will be seen in Sketch 8.0. This configuration may vary from time to time, based on the needs at hand and access to the Tendon Voids.

10.3 At the end of each day of filling operations, the pump shall be shut off and the feed-in supply, return and jumper hoses shall be drained. The gate valve on the suction hose shall be closed and that hose drained. It will be acceptable to allow the grease to continue to circulate in the hose lines, providing that responsibility has been assigned for monitoring this recirculation, so that the system can be shut down in the event of system or equipment failure.

10.4 Refer to each specific system procedure for the proper selection. Then follow the Tendon Duct Refilling requirements for the actual operation.

10.5 The terms casing-filler, grease, corrosion protection compound, tendon void filler are all meant to be another name for the product which is used to fill the Tendon Void. That product is Visconorust 2090P4 as manufactured by Viscosity Oil Company.

11. <u>SINGLE FILL SYSTEM</u>

This method of Tendon Void filled has the grease pumped through a Y-Device attached to the Grease Can of a Dome Tendon. The grease is pumped into the Grease Can at one end of the tendon and out through the filler bushing of the Grease Can opposite end of the tendon or out through the Auxiliary filling pipe at the pumping end of the tendon. This system does not require recirculation through the Void, nor is it recommended. Refer to Sketch 12.8.1 for a pictorial presentation of this system. The Grease Can Filler Bushing Pipe Plug has been removed from the Grease Cans at each end of the tendon.

11.1 Attach the Grease Can Filler Bushing pipe plug to the operating shaft wrench of each Y-Device to be used. Be sure the plug is pulled back far enough into the body, so as to allow an unobstructed flow of casing filler. A sketch of a typical Y-Device will be seen in Sketch 8-1.

11.2 Connect the Y-Device to the grease can filler bushing at one end of the tendon and attach the waste line to the opposite end of the tendon. A waste container should be available at the opposite end of the tendon. It will be acceptable to utilize a Y-Device for the Grease Can at the opposite end of the tendon.

⚠ 11.2.1 If there is a Vent Valve attached to the Grease Can, be sure that this Valve is closed, so that the venting can take place through the Grease Can Filler Bushing at the opposite end of the tendon and/or the Auxiliary Grease Filling Piper. Refer to Sketch 12.8.

⚠ Delete

11.3 Be sure all the grease hoses are clear of blockages before connecting them to the Y-Device.

11.4 Before hook-up operations, the 4 port-control valve is set to recirculate the grease flow from the pump to the storage facility, as noted in Sketch 8-2, System A.

11.5 Before and after filling operations the feed-line from the 4 port-control valve will be coupled to the return-line completing the recirculating closed loop, and the grease allowed to circulate through the hoses back to the storage facility, as noted in Sketch 8-2, System B.

11.6 The grease in the bulk storage container should be in a temperature range of 150°F. to 210°F. Greasing operations should not be performed when the grease temperature is less than 150°F. when being pumped from bulk storage or directly from 55 gallon drums.

11.6.1 QCD - The temperature of the grease in the bulk storage container shall be documented once a day during greasing operations utilizing that container along with the thermometer identification and recalibration data. The temperature of the grease being pumped from a 55 gallon drum shall be documented for each tendon filled in this manner.

11.7 The 4 port-control valve will be set for the small loop recirculation pattern as noted in Sketch 8-2, System A.

11.8 The pump is operating to circulate the casing filler. The grease temperature during recirculation should not be lower than 140°F. at the thermometer of the Grease Control Station shown in Sketch 8-0.

11.9 All connections to the tendon are made. Refer to Sketch 12.8.1.

11.10 The 3 port-outflow valve or waste line is set so that the initial flow of casing filler will be into the waste container. It may not be necessary to incorporate this waste line and the outflow end of the valve shall be plugged.

11.11 Open the 4 port-control valve allowing the flow of casing filler into the Tendon Void.

△ 11.12 As the grease is being pumped in, the pumping pressure should cause the grease to exit from the filling port of the Grease Can Filler Bushing of the opposite end of the tendon and/or the Auxiliary Grease Filling Pipe at the pumping end of the tendon.

△ 11.12.1 Monitor the outflow at the opposite end of the tendon. It should not be necessary to allow more than about twenty gallons of grease or more to exit from this end of the tendon.

△ 11.12.2 QCD - Document the temperature of the grease exiting from the opposite end of the tendon. This reading will establish the Ambient Temperature of the Grease. Document the identification of the thermometer and the recalibration date.

△ Delete

△ 11.13 Continue pumping in hot grease until the temperature of the grease exiting from the opposite end of the tendon is at least 10 degrees higher than the Ambient Grease Temperature documented in Section 11.12.2 above. Install the Grease Filler Bushing Pipe Plug while continuing to pump grease.

△ 11.13.1 QCD - Document the final exiting temperature of the grease, the thermometer identification and recalibration date. Document the pumping pressure prior to installing the Pipe Plug in the Auxiliary Grease Filling Pipe.

11.14 If the grease quantity exiting the opposite end of the tendon has not reached about 20 gallons, continue pumping grease until this approximate quantity has been reached. Once about 20 gallons has exited the Filler Bushing, the Filler Bushing Pipe Plug shall be installed in the Bushing. Observe the pumping pressure of the grease just prior to installing the Pipe Plug, while continuing to pump grease.

11.14.1 QCD - Document the pumping pressure prior to installing the Pipe Plug to the Grease Can Filler Bushing.

11.14.2 Continue to pump grease until the pumping pressure is about 50 psi higher than the pressure recorded in Section 11.14.1 above or the Pump Safety Limit engages.

11.14.3 QCD - Document the pressure noted at the time the pump was disengaged or the grease line recirculated.

11.14.4 In the event that no grease exits the Grease Can at the opposite end of the tendon, the Pipe Plug shall be installed in the Grease Can once the pumping pressure is about 50 psi higher than the pressure documented in Section 11.13.1 above (installation of Pipe Plug to Auxiliary Grease Filling Pipe) or the Pump Safety Limit engages. This pressure shall be documented in the area designated (11.14.3) of DS 12.8.

11.15 Once the exiting grease has reached the correct temperature, shift the 3 port-outflow valve so the flow is directed through the 4 port-control valve and back to the storage facility.

11.16 Before stopping the pumping of grease into the grease can, the grease can filler bushing pipe plug shall be inserted into the grease can filler bushing at the opposite end of the tendon to aid in completely filling the Void. It will be acceptable to apply teflon tape to the pipe plugs to aid in sealing the filler bushing.

11.17 Install the grease can filler bushing pipe plug into the Grease Can where the pumping of grease is taking place and proceed with the valve shifting stated in Section 11.15 above.

11.18 Remove the waste line, Y-Devices and quick couplers from the Grease Can at the pumping end of the tendon and move to the next tendon to be greased. The opposite end of the tendon will not require greasing unless the grease has not exited at the end of the tendon.

11.19 While moving the hoses after uncoupling, take care not to spill any grease from the hose.

11.20 Any grease spilled on concrete or other surfaces shall be removed and solvent-cleaned.

11.21 <u>A FINAL WORD OF CAUTION</u>: The casing filler is being pumped under pressure and at temperatures in excess of 120°F., poor connections or the use of the wrong procedures could result in injuries.

12. GREASING THE OPPOSITE END OF THE TENDON - SINGLE FILL

In the event that little or no grease has exited the opposite end of the tendon it will be necessary to pump grease into that (opposite end of the tendon). This should be performed sometime after the grease in the pumped end of the tendon has had a chance to cool or solidify somewhat. Once cooled, the opposite end of the tendon will be filled in the same manner as the pumped end of the tendon as cited in Sections 11 through 11.2.1. The documentation will take place on a new Data Sheet 12.8 for this end of the tendon.

Delete

13. OTHER CONTROLS

13.1 Verify that no grease is leaking at both ends of the tendon. If there is some leakage, the deficiency shall be corrected and cleanup performed.

13.1.1 QCD - Document the acceptability of the refilling.

13.1.2 QCD - Document any comments of unusual occurrences or references that could assist in evaluating the refill or for future surveillance.

13.1.3 QCD - Document the FNP control number for that drum or drums of grease. If that is not visible, document the Viscosity Oil Co. batch numbers.

14. DOCUMENTATION

The items requiring documentation shall be documented on Data Sheet 12.7 shown in this procedure in reduced form.

14.1 The Data Sheet references the applicable section number of the procedure for each QCD point.

14.2 DATA SHEET 12.8

PROJECT: _____ UNIT: ____ DATE: _____

TENDON NO.: _____ TENDON END/BUTTRESS NO.: _____

QC SIGNOFF

(8.4) Concrete Temp: ____°F. Thermo. No.: _____ Recal Date: _____ _____

(11.6.1) Grease Temp. Storage Container _____°F.
Thermometer No. _____ Recal Date: _____ _____

(11.12.4) Grease Temp. Ambient _____°F.
Thermometer No. _____ Recal Date: _____ _____

(11.13.1) Grease Temp. Exiting _____°F.
Thermometer No. _____ Recal Date: _____
Pump Pressure Before Pipe Plug Installed to Filler Pipe ____ psi _____

(11.14.1) Pump Pressure Before Pipe Plug Installed in Grease Can ____ psi _____

(11.14.3) Pump Pressure When Pumping Stopped _____psi _____

△ Deleted

(13.1) Grease Leaks YES NO _____
Leaks Repaired YES NO _____

(13.1.1) Refill Acceptable: _____ _____

(13.1.2) COMMENTS: _____
_____
_____ _____

(13.1.3) FNP Drum Control No.: _____ Viscosity Batch No. _____ _____

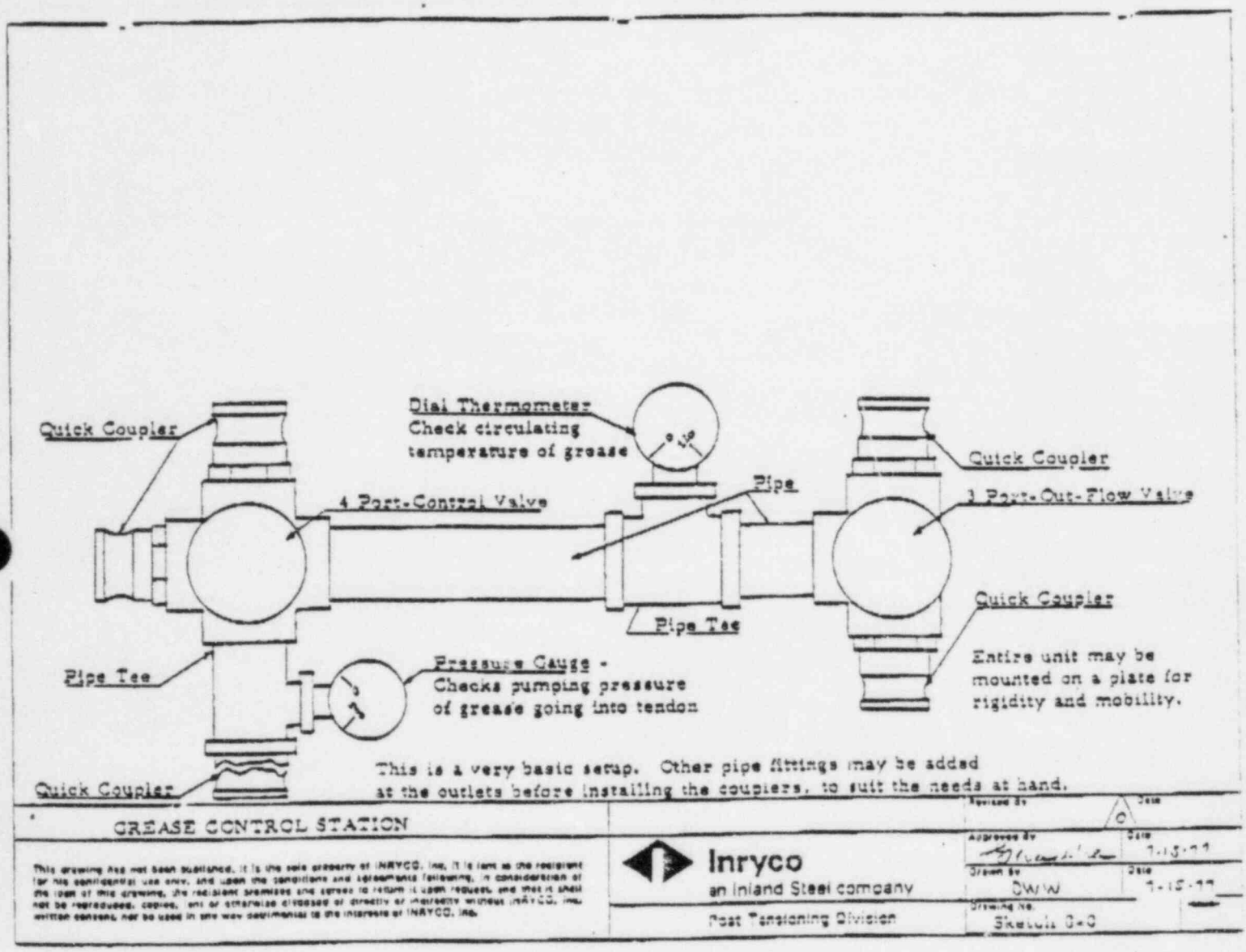
Q.C. REVIEW: _____ LEVEL ____ DATE: _____

TITLE: _____

0252N

△ 6-11-85

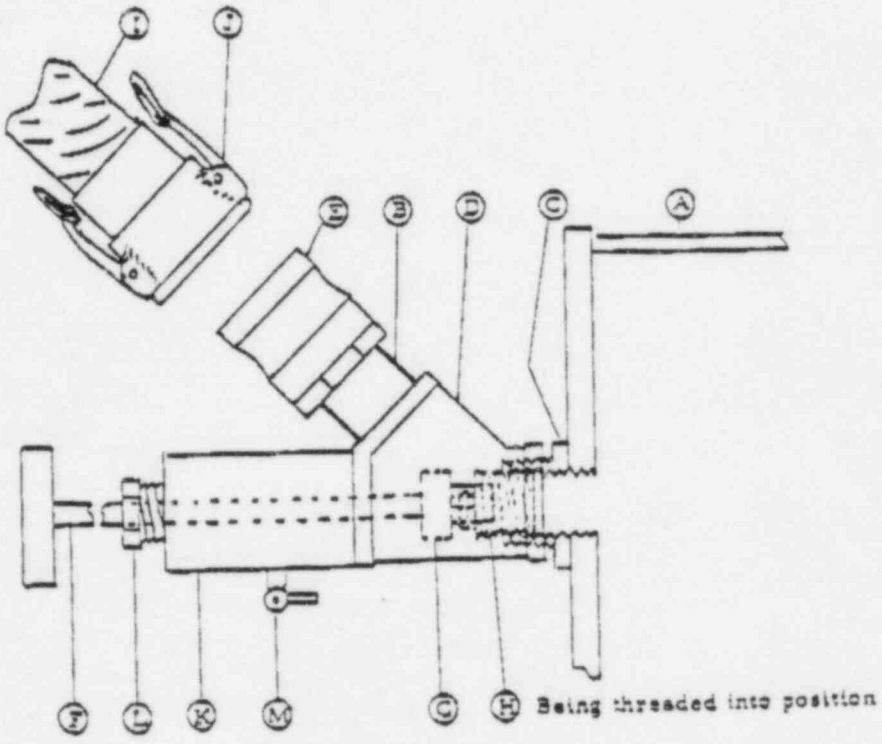
15.1 Sketch 8-0



15.2 Sketch 8-1

TYPICAL HOOK-UP FOR FILLING TENDON VOIDS

A - Grease Can Body
B - Pipe
C - Grease Can Filler Bushing
D - Y-Device Body
E - Male Quick Coupler
F - Operating Shaft & Handle
G - Square Male Pipe Plug Wrench
H - Pipe Plug
I - Casing Filler Hose
J - Female Quick Coupler
K - Packing Box
L - Packing Box Gland
M - Relief Valve - Optional

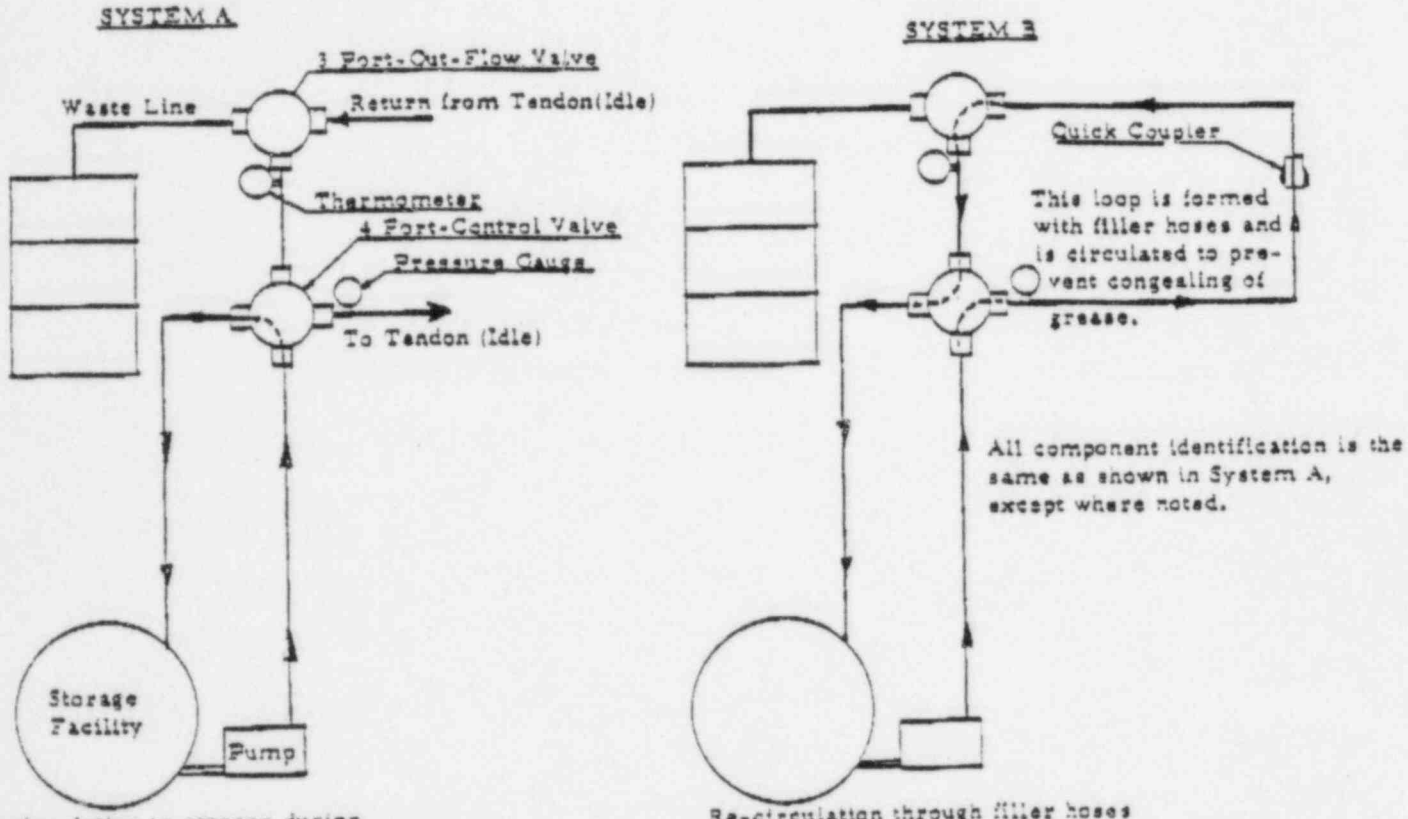


Refer Procedure FS.0 Section 1.4 for operation.

Special Tendon Void Filling Tool	Y-DEVICE	Revised by	Date 1
	Inryco an Inland Steel company	Approved by Shadha	Date 7-2-85
		Drawn by	Date 7-2-85
	Post Tensioning Division	Drawing no. Sketch 8-1	

1 6-11-85 Page # Only

15.3 Sketch 8-2



RECIRCULATION PATTERNS	FLOW DIAGRAM	Revised By	Date
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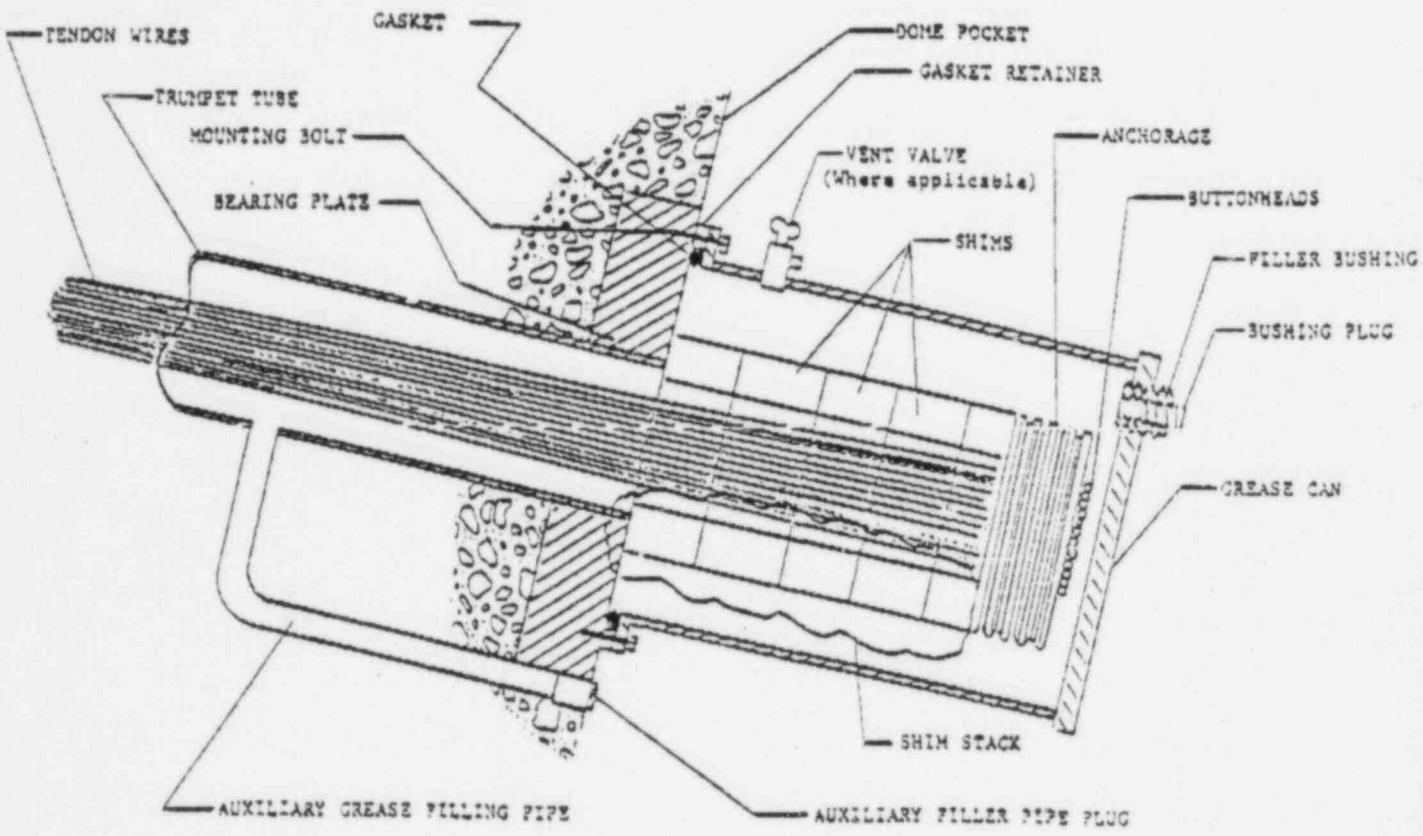
		Drawn By	Date 7-2-79
	Post Tensioning Division	Drawing No. Sketch 8-2	Issue

15.4 Sketch 12.8



GREASE REPLACEMENT - DOME TENDON	PROCEDURE SQ 12.8	Revised By	Date △0
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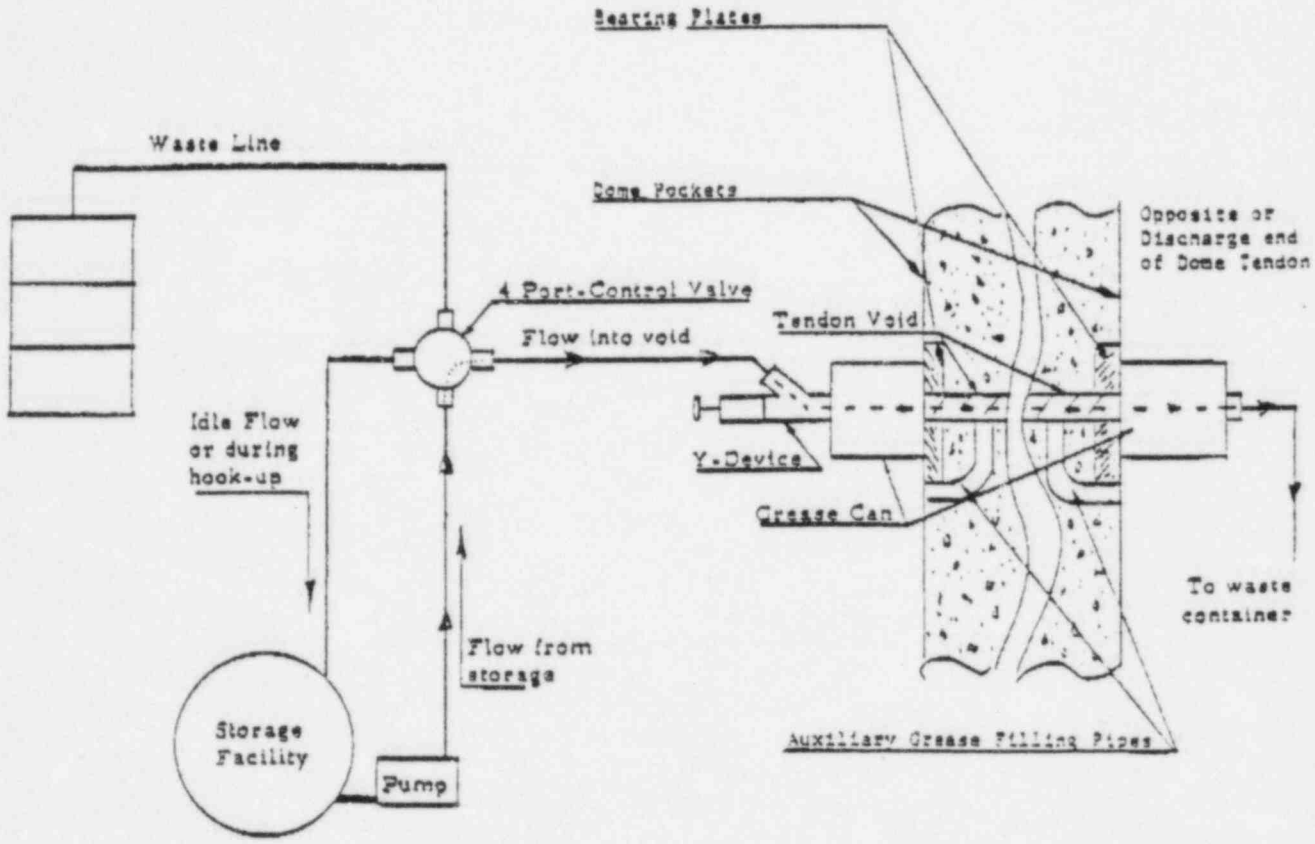
		Drawn By DWW	Date 5-23-85
	Post Tensioning Division	Drawing No. SKETCH 12.8	

△1 6-11-85 Page #0 Only

15.5 Sketch 12.8.1



GREASE REPLACEMENT - DOME TENDON	PROCEDURE SQ 12.8	Revised By	Date
		Approved By	Date
	Inryco an Inland Steel company	Drawn By	Date
	Post Tensioning Division	Drawing No.	

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INRYCO INC. PROCEDURE SQ 12.8
GREASE DOME TENDON-FINAL REFILL
DATA SHEET 12.8
MAY 23, 1985, Revision 0
⚠ JUNE 11, 1985, Revision 1

PROJECT: _____ UNIT: ____ DATE: _____

TENDON NO.: _____ TENDON END/BUTTRESS NO.: _____

	QC SIGNOFF
(8.4) Concrete Temp: ____°F. Thermo. No.: _____ Recal Date: _____	_____
(11.6.1) Grease Temp. Storage Container _____°F. Thermometer No. _____ Recal Date: _____	_____
(11.12.4) Grease Temp. Ambient _____°F. Thermometer No. _____ Recal Date: _____	_____
(11.13.1) Grease Temp. Exiting _____°F. Thermometer No. _____ Recal Date: _____ Pump Pressure Before Pipe Plug Installed to Filler Pipe____ psi	_____
(11.14.1) Pump Pressure Before Pipe Plug Installed in Grease Can ____ psi	_____
(11.14.3) Pump Pressure When Pumping Stopped _____psi	_____
(13.1) Grease Leaks YES NO	_____
Leaks Repaired YES NO	_____
(13.1.1) Refill Acceptable: _____	_____
(13.1.2) COMMENTS: _____	
_____	
_____	_____
(13.1.3) FNP Drum Control No.: _____ Viscosity Batch No. _____	_____

Q.C. REVIEW: _____ LEVEL ____ DATE: _____

TITLE: _____

0252N

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INRYCO INC. PROCEDURE SQ 12.8
GREASE DOME TENDON-FINAL REFILL
DATA SHEET 12.8
MAY 23, 1985, Revision 0
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PROJECT: Farley UNIT: 2 DATE: 6/13/85

TENDON NO.: D109 TENDON END/BUTTRESS NO.: 204° 36' 29"
D189

QC SIGNOFF

(8.4) Concrete Temp: 78 °F. Thermo. No.: 5T61 Recal Date: 5/22/86 JAD 6/13/85

(11.6.1) Grease Temp. Storage Container 184 °F.
Thermometer No. PK55 Recal Date: 5/22/86 JAD 6/13/85

(11.12.4) Grease Temp. Ambient 90 °F.
Thermometer No. 'B' Recal Date: 12/8/85 JAD 6/13/85

(11.13.1) Grease Temp. Exiting 140 °F.
Thermometer No. 'B' Recal Date: 12/8/85
Pump Pressure Before Pipe Plug Installed to Filler Pipe N/A psi JAD 6/13/85

(11.14.1) Pump Pressure Before Pipe Plug Installed in Grease Can 45 psi BSD 6-13-85

(11.14.3) Pump Pressure When Pumping Stopped 95 psi BSD 6-13-85

(13.1) Grease Leaks YES (NO) (N/A) BSD/JAD 6/13/85
Leaks Repaired YES NO BSD/JAD 6/13/85

(13.1.1) Refill Acceptable: Yes BSD/JAD 6/13/85

(13.1.2) COMMENTS: N/A
JAD 6/13/85

(13.1.3) FNP Drum Control No.: N/A Viscosity Batch No. 5-6359 JAD 6/13/85

UCW Q.C. REVIEW: [signature] LEVEL II DATE: 6-20-85

TITLE: QC Inspector

0252N

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INRYCO INC. PROCEDURE NO 12.8
GREASE DOME TENDON-FINAL REFILL
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PROJECT: Farley UNIT: 2 DATE: 6/12/85

TENDON NO.: D 119 TENDON END/BUTTRESS NO.: Fill end Azmuth 176° 40' - 35"

D1C19
VCW 6-13-85

QC SIGNOFF

(8.4) Concrete Temp: 88 °F. Thermo. No.: ST62 Recal Date: 5/22/86 JAD 6/12/85

(11.6.1) Grease Temp. Storage Container 210 °F. Thermometer No. PK 55 Recal Date: 5/22/85 JAD 6/12/85

(11.12.4) Grease Temp. Ambient 98 °F. Thermometer No. 'B' Recal Date: 12/8/85 JAD 6/12/85

(11.13.1) Grease Temp. Exiting 152 °F. Thermometer No. 'B' Recal Date: 12/8/85
Pump Pressure Before Pipe Plug Installed to Filler Pipe N/A psi JAD 6/12/85

(11.14.1) Pump Pressure Before Pipe Plug Installed in Grease Can 70 psi BBB 6-12-85

(11.14.3) Pump Pressure When Pumping Stopped 120 psi BBB 6-12-85

(13.1) Grease Leaks YES (NO) BBB 6/12/85 JAD 6/12/85
Leaks Repaired YES NO (N/A) BBB 6/12/85 JAD 6/12/85

(13.1.1) Refill Acceptable: Yes BBB 6/12/85 JAD 6/12/85

(13.1.2) COMMENTS: N/A

BBB 6-12-85

(13.1.3) FNP Drum Control No.: N/A Viscosity ~~Batch~~ Lot No. 5-6357 JAD 6/12/85

VCW Q.C. REVIEW: [signature] LEVEL II DATE: 6-20-85

TITLE: QC Inspector

0252N

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INRYCO INC. PROCEDURE NO 12.8
GREASE DOME TENDON-FINAL REFILL
DATA SHEET 12.8
MAY 23, 1985, Revision 0
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PROJECT: Farley UNIT: 2 DATE: 6/13/85

TENDON NO.: D 117 TENDON END/BUTTRESS NO.: 182° 13' 27"
D/C 17

		QC SIGNOFF
(8.4) Concrete Temp: 78 °F. Thermo. No.: ST-62 Recal Date: 5/22/86		JAD 6/13/85
(11.6.1) Grease Temp. Storage Container 184 °F. Thermometer No. PK 55 Recal Date: 5/22/86		JAD 6/13/85
(11.12.4) Grease Temp. Ambient 88 °F. Thermometer No. B' Recal Date: 12/8/85		JAD 6/13/85
(11.13.1) Grease Temp. Exiting 130 °F. Thermometer No. B' Recal Date: 12/8/85 Pump Pressure Before Pipe Plug Installed to Filler Pipe N/A psi		JAD 6/13/85
(11.14.1) Pump Pressure Before Pipe Plug Installed in Grease Can 50 psi		BSB 6-13-85
(11.14.3) Pump Pressure When Pumping Stopped 100 psi		BSB 6-13-85
(13.1) Grease Leaks YES (NO)		BSB / JAD 6/13/85
Leaks Repaired YES NO (N/A)		BSB / JAD 6/13/85
(13.1.1) Refill Acceptable: Yes		BSB / JAD 6/13/85
(13.1.2) COMMENTS: N/A		JAD 6/13/85
(13.1.3) FNP Drum Control No.: N/A Viscosity Batch No. Lot No. 5-63-59		JAD 6/13/85

LCW Q.C. REVIEW: [signature] LEVEL II DATE: 6-20-85

TITLE: QC Inspector

0252N

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INRYCO INC. PROCEDURE SQ 12.8
GREASE DOME TENDON-FINAL REFILL
DATA SHEET 12.8
MAY 23, 1985, Revision 0
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PROJECT: Farley UNIT: 2 DATE: 6/15/85

TENDON NO.: D 227 TENDON END/BUTTRESS NO.: 96° 14' 43"

	QC SIGNOFF
(8.4) Concrete Temp: 74 °F. Thermo. No.: ST62 Recal Date: 5/22/86	JAO 6/15/85
(11.6.1) Grease Temp. Storage Container 190 °F. Thermometer No. PK 55 Recal Date: 5/22/86	JAO 6/15/85
(11.12.4) Grease Temp. Ambient 90 °F. Thermometer No. 'B' Recal Date: 12/8/85	JAO 6/15/85
(11.13.1) Grease Temp. Exiting 112 °F. Thermometer No. 'B' Recal Date: 12/8/85 Pump Pressure Before Pipe Plug Installed to Filler Pipe N/A psi	JAO 6/15/85
(11.14.1) Pump Pressure Before Pipe Plug Installed in Grease Can 150 psi	BSB 6-15-85
(11.14.3) Pump Pressure When Pumping Stopped 200 psi	BSB 6-15-85
(13.1) Grease Leaks YES (NO) Leaks Repaired YES NO (N/A)	BSB / JAO 6/15/85 BSB / JAO 6/15/85
(13.1.1) Refill Acceptable: Yes	BSB / JAO 6/15/85
(13.1.2) COMMENTS:	
(13.1.3) FWP Drum Control No.: N/A Viscosity Batch No. ~~5-6359~~ 5-5526 & 5-6359	

Q.C. REVIEW: OCWardell LEVEL II DATE: 6-20-85

TITLE: QC Inspector

0252N

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INRYCO INC. PROCEDURE SQ 12.8
GREASE DOME TENDON-FINAL REFILL
DATA SHEET 12.8
MAY 23, 1985, Revision 0
JUNE 11, 1985, Revision 1
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PROJECT: Farley UNIT: 2 DATE: 6/13/85

TENDON NO.: D 307 DZT 1 TENDON END/BUTTRESS NO.: 99° 39 55 F.,11 End

		QC SIGNOFF
(8.4) Concrete Temp: 81 °F. Thermo. No.: ST 62 Recal Date: 5/22/86		JAD 6/13/85
(11.6.1) Grease Temp. Storage Container 184 °F. Thermometer No. PK 55 Recal Date: 5/22/86		JAD 6/13/85
(11.12.4) Grease Temp. Ambient 90 °F. Thermometer No. B Recal Date: 12/8/85		JAD 6/13/85
(11.13.1) Grease Temp. Exiting 142 °F. Thermometer No. 'B' Recal Date: 12/8/85 Pump Pressure Before Pipe Plug Installed to Filler Pipe N/A psi		JAD 6/13/85
(11.14.1) Pump Pressure Before Pipe Plug Installed in Grease Can 60 psi		RBB 6-13-85
(11.14.3) Pump Pressure When Pumping Stopped 115 psi		RBB 6-13-85
(13.1) Grease Leaks YES (NO) Leaks Repaired YES NO (N/A)		RBB 6-13-85 / JAD 6/13/ RBB 6-13-85 / JAD 6/13/
(13.1.1) Refill Acceptable: YES		RBB 6-13-85 / JAD 6/13/85
(13.1.2) COMMENTS: N/A		RBB 6-13-85
13.1.3) FNP Drum Control No.: N/A Viscosity Lot No Batch No. 5-6359		JAD 6/13/85

UCW Q.C. REVIEW: UCWainley LEVEL II DATE: 6-20-85

TITLE: QC Inspector

0252M

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INRYCO INC. PROCEDURE SQ 12.8
GREASE DOME TENDON-FINAL REFILL
DATA SHEET 12.8
MAY 23, 1985, Revision 0
JUNE 11, 1985, Revision 1
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PROJECT: Farley UNIT: 2 DATE: 6/14/85

TENDON NO.: D 3 19 TENDON END/BUTTRESS NO.: 133° 40' 22"
D 3 C 19

		QC SIGNOFF
(8.4)	Concrete Temp: 73 °F. Thermo. No.: ST62 Recal Date: 5/22/86	JAD 6/14/85
(11.6.1)	Grease Temp. Storage Container 178 °F. Thermometer No. PK 55 Recal Date: 5/22/86	JAD 6/14/85
(11.12.4)	Grease Temp. Ambient 92 °F. Thermometer No. B Recal Date: 12/8/85	JAD 6/14/85
(11.13.1)	Grease Temp. Exiting 124 °F. Thermometer No. B' Recal Date: 12/8/85 Pump Pressure Before Pipe Plug Installed to Filler Pipe NA psi	JAD 6/14/85
(11.14.1)	Pump Pressure Before Pipe Plug Installed in Grease Can 75 psi	BB 6-14-85
(11.14.3)	Pump Pressure When Pumping Stopped 125 psi	BB 6-14-85
(13.1)	Grease Leaks YES (NO) Leaks Repaired YES NO (N/A)	BB / JAD 6/14/85 BB / JAD 6/14
(13.1.1)	Refill Acceptable: Yes	BB / JAD 6/14
(13.1.2)	COMMENTS: N/A	BB 6-14-85
(13.1.3)	FMP Drum Control No.: N/A Viscosity Batch No. 5-6359	JAD 6/14/85

Q.C. REVIEW: JCW [signature] LEVEL II DATE: 6-20-85

TITLE: Q C Inspector

0252M

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1886
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842473 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description V4, Gallery, Field End, Anchor Face
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.5%

Neutralization Number:

Strong Base Number 45.8

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization Number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Keffer

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1936
ATLANTA, GA. 30301

Chemical Report

763

ATLANTA, GA. 7/25/85

Number 842476 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description V 28 Gallery, Field End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 1.2%

Neutralization Number:

Strong Base Number 56.4

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Ruffin

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1966
ATLANTA, GA. 30301

Chemical Report

763

ATLANTA, GA. 7/25/85

Number 842474 Sample of Received 6/18/85

For

Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description V 79, Gallery, Field End, Grease Can
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.5%

Neutralization Number:

Strong Base Number 60.8

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,

LAW & COMPANY

BY Robert E. Tuffin

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1956
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842475 Sample of Received 6/18/85

For

Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description V 100, Gall, Field End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.2%

Neutralization Number:

Strong Base Number 48.5

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,

LAW & COMPANY

BY Robert E. Neff

Inv. to Birmingham, AL
; 10500av

114

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1550
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842477 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 1 DE, Shop
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.3%

Neutralization Number:

Strong Base Number 44.1

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Kieffer

Inv. to Birmingham, AL
5 10500av

116

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842480 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 1 DE, Field End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.5%

Neutralization Number:

Strong Base Number 44.6

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Geiffer

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1655
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842484 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 21 DE, Shop
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 45.8

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Keffer

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1998
ATLANTA, GA. 30301

Chemical Report

763

ATLANTA, GA. 7/25/85

Number 842485 Sample of

Received 6/18/85

For

Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 21 DE, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.1%

Neutralization Number:

Strong Base Number 48.5

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Wright

Inv. to Birmingham, AL
, 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842479 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 28 DE, Shop End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 46.9

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY [signature]

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842483 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 28 DE, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 56.4

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert C. Neffer

Inv. to Birmingham, AL
10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1858
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842482 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 45 DE, Shop End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.3%

Neutralization Number:

Strong Base Number 54.7

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Mizell

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842481 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 45 DE, Field End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.4%

Neutralization Number:

Strong Base Number 48.5

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Griffith

Inv. to Birmingham, AL
5 10500av

116

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1956
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842491 Sample of Received 6/18/85

For

Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 3 EF, Shop
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 1.3%

Neutralization Number:

Strong Base Number 46.9

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,

LAW & COMPANY

By Robert E. Leffler

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1880
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842493 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 3 EF, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 49.7

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Lufter

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1886
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842492 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 17 EF, Shop
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.5

Neutralization Number:

Strong Base Number 48.0

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Griffin

Inv. to Birmingham, AL
; 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1966
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842496 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 17 ℄F, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.3%

Neutralization Number:

Strong Base Number 54.7

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Taylor

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842495 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 31 EF, Shop
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.3%

Neutralization Number:

Strong Base Number 51.3

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Lafferty

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1868
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842494 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 31 EF, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.3%

Neutralization Number:

Strong Base Number 48.5

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Wiggs

Inv. to Birmingham, AL
10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842490 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 13 FD, Shop
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 43.5

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Lightsey

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842486 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 13 FD, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.4%

Neutralization Number:

Strong Base Number 44.6

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Ritzoff

Inv. to Birmingham, AL
3 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842489 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 26 FD, Shop
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.3%

Neutralization Number:

Strong Base Number 42.4

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Shaffer

Inv. to Birmingham, AL
10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842487 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 26 DF, Field End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.4%

Neutralization Number:

Strong Base Number 61.4

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully s tted,
LAW & COMPANY

BY Robert E. Tuffe

Inv. to Birmingham, AL
5 10500av

116

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1088
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842488 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 42 FD, Shop
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.4%

Neutralization Number:

Strong Base Number 58.6

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Lieff

Inv. to Birmingham, AL
10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842478 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 42 DF, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%
Neutralization Number:	
Strong Base Number 67.0	

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Tuggle

Inv. to Birmingham, AL
5 10500av

116

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1558
ATLANTA, GA. 30301

Chemical Report

763 43 ATLANTA, GA. 7/25/85

Number 842471 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D 109, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 45.1

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Lyle

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY

CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1550
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842468 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D 109, Shop End,
Tendon Grease, P.O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.1%

Neutralization Number:

Strong Base Number 62.5

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Lefler

Inv. to Birmingham, AL
10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842466 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D 119, Field End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.5%

Neutralization Number:

Strong Base Number 22.3

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Lee

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1960
ATLANTA, GA. 30301

Chemical Report

763

ATLANTA, GA. 7/25/85

Number 842464 Sample of

Received 6/18/85

For

Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D 119, Shop End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 60.8

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Nuffer

Inv. to Birmingham, AL
; 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1056
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842463 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description Tendon Grease, P. O. 40811
D 117, Field End

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 59.7

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Lafferty

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1954
ATLANTA, GA. 30301

Chemical Report

763

ATLANTA, GA. 7/25/85

Number 842467 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D 117, Shop End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 59.2

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Wyffe

Inv. to Birmingham, AL
J 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1956
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 8 42 469 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D-227, Field End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.1%

Neutralization Number:

Strong Base Number 63.6

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Tuffs

Inv. to Birmingham, AL
10500av

116

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1558
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842461 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D-227, Shop End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.1%

Neutralization Number:

Strong Base Number 55.2

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY: Robert E. Wolff

Inv. to Birmingham, AL
, 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1966
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842470 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D 307, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm) *1

Water Soluble Nitrate (NO_3) (ppm) *1

Water Soluble Sulfides (S) (ppm) *1

Water (Toluene Distillation) 0.7

Neutralization Number:

Strong Base Number 65.3

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Neff

Inv. to Birmingham, AL
5 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763

ATLANTA, GA. 7/25/85

Number 842472 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description 3 D-207, Shop End
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.1%

Neutralization Number:

Strong Base Number 69.8

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Wiffe

Inv. to Birmingham, AL
; 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1988
ATLANTA, GA. 30301

Chemical Report

763 63 ATLANTA, GA. 7/25/85

Number 842465 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D-319, Field
Tendon Grease, P. O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.1%

Neutralization Number:

Strong Base Number 59.2

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Neff

Inv. to Birmingham, AL
S 10500av

LAW & COMPANY
CONSULTING AND ANALYTICAL CHEMISTS
P. O. BOX 1888
ATLANTA, GA. 30301

Chemical Report

763 ATLANTA, GA. 7/25/85

Number 842462 Sample of Received 6/18/85

For
Alabama Power Company
P. O. Drawer #470
Ashford, AL 36312

Marks

Description D319, Shop End
Tendon Grease, P.O. 40811

Water Soluble Chloride (Cl) (ppm)	*1
Water Soluble Nitrate (NO_3) (ppm)	*1
Water Soluble Sulfides (S) (ppm)	*1
Water (Toluene Distillation)	0.2%

Neutralization Number:

Strong Base Number 58.0

* None found if present less than

Methods:

Chloride, ASTM D-512, Mercurimetric titration on water extract. Nitrates, ASTM D-992, Brucine on water extract. Sulfide, APHA 427 15th Ed, Methylene Blue on water extract. Water, ASTM D-95, Neutralization number ASTM D-974 modified.

The above analysis were performed in conformance with Alabama Power Co., Purchase Order #40811.

*****

Respectfully submitted,
LAW & COMPANY

BY Robert E. Griffin

'nv. to Birmingham, AL
ɔ 10500av

116

VISCOSITY OIL CO.
3200 S. WESTERN AVENUE
CHICAGO, IL 60608 U.S.A.

TELEPHONE
(312) 847-0224
TWX 910-221-0245

PETROLIA, PA

Job Order No. Yours-PO# QP0016 Ours-NYR-03420

Lot No. 5-5526

QUALITY CONTROL SPECIFICATION SHEET
VISCONORUST 2090P-4 CASING FILLER
NUCLEAR GRADE

PHYSICAL PROPERTIES		TEST 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	142	135-145(57-63)
Flash Point, °F(°C)	ASTM D-92	460	420 (215) min.
Viscosity SUS @ 210°F (98.9°C)	ASTM D-88	153	150-300
ASTM Consistency (cone penetration @ 77°F (25°C)	ASTM D-937	192	190-220
Total Base No. Modified	ASTM D-974	48.7	35 min.
Water Content (% by Wt.)	ASTM D-95	0.6	0.4

CHEMICAL PROPERTIES			
Water Soluble Chlorides	ASTM D-512	1	2 ppm max.
Water Soluble Nitrates	ASTM D-992	2	4 ppm max.
Water Soluble Sulfides	APHA No. 427 (15th Ed.) Methylene Blue	1	2 ppm max.

This certifies compliance with the Specifications or requirements covered by Customer's Purchase Order.

BY Thomas D. Hindman
CONTROL CHEMIST

DATE March 4, 1985

10785

VISCOSITY OIL CO.
3200 S. WESTERN AVENUE
CHICAGO, IL 60608 U.S.A.

TELEPHONE:
(312) 847-0224
TWX 910-221-0245

PETROLIA, PA

Job Order No. QP-0016

Lot No. 5-5928

QUALITY CONTROL SPECIFICATION SHEET
VISCONORUST 2090P-4 CASING FILLER
NUCLEAR GRADE

PHYSICAL PROPERTIES		TEST 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	0.9	0.88-0.94
Congealing Point, °F(°C)	ASTM D-938	140	135-145(57-63)
Flash Point, °F(°C)	ASTM D-92	425	420 (215) min.
Viscosity SUS @ 210°F (98.9°C)	ASTM D-88	164	150-300
ASTM Consistency (cone penetration @ 77°F (25°C)	ASTM D-937	194	190-220
Total Base No. Modified	ASTM D-974	52	35 min.
Water Content (% by Wt.)	ASTM D-95	0.1	0.4 max.

CHEMICAL PROPERTIES			
Water Soluble Chlorides	ASTM D-512	1	2 ppm max.
Water Soluble Nitrates	ASTM D-992	2	4 ppm max.
Water Soluble Sulfides	APHA No. 427 (15th Ed.) Methylene Blue	1	2 ppm max.

This certifies compliance with the Specifications or requirements covered by Customer's Purchase Order.

BY Thomas D. Hirsman
CONTROL CHEMIST

DATE April 11, 1985

10785

VISCOSITY OIL CO.
3200 S. WESTERN AVENUE
CHICAGO, IL 60608 U.S.A.

TELEPHONE
(312) 847-0224
TWX 910-221-0245

PETROLIA, PA

Job Order No. 35053

Lot No. 5-6202

QUALITY CONTROL SPECIFICATION SHEET
VISCONORUST 2090P-4 CASING FILLER
NUCLEAR GRADE

PHYSICAL PROPERTIES		TEST 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	0.9	0.88-0.94
Congealing Point, °F(°C)	ASTM D-938	145	135-145(57-63)
Flash Point, °F(°C)	ASTM D-92	475	420 (215) min.
Viscosity SUS @ 210°F (98.9°C)	ASTM D-88	169	150-300
ASTM Consistency (cone penetration @ 77°F (25°C)	ASTM D-937	215	190-220
Total Base No. Modified	ASTM D-974	51	35 min.
Water Content (% by Wt.)	ASTM D-95	0.2	0.4

CHEMICAL PROPERTIES			
Water Soluble Chlorides	ASTM D-512	1	2 ppm max.
Water Soluble Nitrates	ASTM D-992	2	4 ppm max.
Water Soluble Sulfides	APHA No. 427 (15th Ed.) Methylene Blue	1	2 ppm max.

This certifies compliance with the Specifications or requirements covered by Customer's Purchase Order.

BY [signature]
CONTROL CHEMIST

DATE May 13, 1985

10785

7162 '85/05/31 13:03

VISCOSITY OIL CO.
3200 S. WESTERN AVENUE
CHICAGO, IL 60608 U.S.A.

TELEPHONE
(312) 847-02
TWX 910-221-

PETROLIA, PA

Job Order No. QP-0016

Lot No. B-6359

QUALITY CONTROL SPECIFICATION SHEET
VISCOMORUST 2030P-4 CASING FILLER
NUCLEAR GRADE

PHYSICAL PROPERTIES		TEST 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	0.92	0.88-0.94
Congealing Point, °F (°C)	ASTM D-938	144	135-145 (57-6
Flash Point, °F (°C)	ASTM D-92	430	420 (215) mi
Viscosity SUS @ 210°F (98.9°C)	ASTM D-88	180	150-300
ASTM Consistency (cone penetration @ 77°F (25°C)	ASTM D-937	199	190-220
Total Base No. Modified	ASTM D-974	49.8	35 min.
Water Content (% by Wt.)	ASTM D-95	0.2	0.4

CHEMICAL PROPERTIES			
Water Soluble Chlorides	ASTM D-512	1	2 ppm max.
Water Soluble Nitrates	ASTM D-992	2	4 ppm max.
Water Soluble Sulfides	APHA No. 427 (15th Ed.) Methylene Blue	1	2 ppm max.

This certifies compliance with the Specifications or requirements covered by Customer's Purchase Order.

BY Thomas D. Hilsman
CONTROL CHEMIST

DATE May 30, 1985

70735