PALISADES NUCLEAR PLANT

Review and Approval Summary

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Fifteenth Year Physical Tendon Surveillance

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Sub-Title:

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ABSTRACT

This report presents the findings of the fifteenth year physical surveillance of the Palisades Nuclear Plant. Based on the results of this surveillance, the conclusion is reached that the post-tensioning system has experienced no abnormal degredation.

REVISION CONTROL LOG

Rev.	Revision Date	By	Approved By	Pages Affected
0	1-21-88	DB	KSH	Volume I: i - vii, 1 - 29, A1 - A26, B1 - B3
				C1 - C24, D1 - D178
				Volume II: E1 - E201, F1 - F15, G1 G71

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

SUMMARY

The purpose of this report is to present the results of the fifth In-Service Inspection of the Palisades Nuclear Containment Building. Briefly, they are as follows:

1. All tendon liftoff forces were found to be acceptable.

2. Six (6) vertical tendons, in addition to the thirteen (13) originally designated surveillance tendons, were also inspected for suspected grease leaks.

3. None of the anchorage components had any visible cracks or corrosion except two field anchorheads, V230 and V202, which had small areas of corrosion level 3 present.

4. All buttonheads were found to be of acceptable size and dimensions. Two tendons, 74BF and V62, were found to have missing wires not previously recorded. These anomalies were determined to be nondetrimental to the post-tensioning system. Cracks in the concrete surrounding the bearing plate were all within the allowable tolerance of $\leq$0.010".

5. None of the wire samples had observable cracks or corrosion. All wire samples tested were found to be acceptable in diameter, yield strength, tensile strength, and elongation. Two additional samples were fabricated and tested, one from each of the two broken wires on tendon 74BF.

6. The sheathing filler samples tested had acceptable levels of water-soluble ions (chlorides, nitrates and sulfides) and water content.

7. Surveillance tendons, V124 and D1-38 were found to have either observable or measurable quantities of water contained in their grease cans. V124 (field end) had drops observed, D1-38 (shop end) had eight ounces, and non surveillance tendon V202 also had drops observed. Water was not found in any other I.S.I. surveillance tendons or any of the other non-surveillance tendons during the removal of the grease can nor inside of the removed can.

SUMMARY (continued)

8. Those tendons that were detensioned for wire removal had continuity tests performed on all remaining wires. Subsequently, the tendons were retensioned and their elongations and liftoffs were found to be acceptable. All tendons were resealed and regreased to levels which either met the acceptance criteria outright or by evaluation were deemed to be acceptable.

9. The hydraulic jacks used for liftoffs, detensioning and retensioning of the tendons were found to be in a properly calibrated status throughout the surveillance, verified by a before and after surveillance calibration.

10. All deficiencies documented in nonconformances reports were properly reviewed and approved for disposition.

Based upon the results of the Fifteenth Year Physical Surveillance of the Palisades Nuclear Plant Containment Building reported herein, the conclusion is reached that no abnormal degredation is evident in the post-tensioning system.

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE
PALISADES NUCLEAR PLANT

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FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

INTRODUCTION

The containment building tendon surveillance program is a systematic means of assessing the quality and structural performance of the post-tensioning system. The fifteenth-year surveillance is the fifth in a series, being performed approximately fifteen years after completion of the structural integrity test.

This report covers the Fifteenth Year Physical Surveillance for the containment building at the Palisades Nuclear Plant. A group of four vertical, four dome, and five horizontal tendons were selected for inspection in compliance with Consumers Power technical specification. Those thirteen selected tendons are:

Vertical Tendons	V14, V124, V230, V250
Dome Tendons	D1-9, D1-38, D2-3, D3-18
Horizontal Tendons	59AC, 77AC, 65BF, 74BF, 42DF

Among them, D1-38 and 65BF were selected from the previous surveillance tendons (first and third year surveillance).

The tendon surveillance consists of an inspection for the physical condition of a randomly selected group of surveillance tendons. This provides confidence in the condition and functional capability of the system, and an opportunity to provide timely corrective measures in the event that adverse conditions are detected. Tendon surveillance testing consists of sheathing filler analysis, anchorage inspection, concrete inspection surrounding the bearing plate, tendon force measurement, tendon wire continuity verification (as required), inspection of tendon wire; removal of test wire and tensile testing of wire, tendon retensioning, and tendon resealing upon completion of all inspections.

The In-Service Inspection was performed during the months of September through November, 1987. The surveillance was conducted in accordance with Consumer Power Technical Specification and Precision Surveillance Corporation's In-Service Inspection Manual. A copy of PSC's procedures, uncontrolled status, are included in Section 7, Appendix D of this report.

In addition to the surveillance tendons, six additional vertical tendons were inspected for suspected grease leaks. The anchorage assemblies were also visually inspected. These tendons appear at

INTRODUCTION (continued)

the bottom of all applicable tables, and any noteworthy observations are in the body of the appropriate discussions.

The six additional vertical tendons are: V36, V62, V86, V176, V202 and V306.

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

I. SURVEILLANCE PROCEDURES

Section 7, Appendix D, contains the detailed procedures for conducting the tendon surveillance. Basically, the surveillance consisted of the following:

1. Visual and laboratory examination of sheathing filler samples from each of the surveillance tendons.

2. Inspection of the anchor assembly of each of the surveillance tendons for deleterious conditions such as corrosion, cracks, missing and broken wires or offsize buttonheads. Inspection of the concrete surrounding the bearing plate for cracks.

3. Measurement of the liftoff force for each of the surveillance tendons.

4. Removal of a minimum of one wire from one surveillance tendon (which had to be detensioned) of each group (horizontal, vertical and dome) for examination and testing.

5. Performing a continuity test on all wires in the detensioned tendons.

6. Retensioninng of the three detensioned tendons along with a measurement of the tendon elongation during retensioning.

7. Visual inspection for corrosion, pitting or any significant physical change of wires removed from tendons.

8. Testing of wires removed from tendons for yield strength, ultimate strength, and percentage of elongation.

9. Replacement of lost sheathing filler into the tendon duct and in the grease can.

10. Evaluation of test and inspection results to access the general condition of the post tensioning system.

II. TENDON LIFTOFFS AND DETENSIONING

A liftoff is performed on each surveillance tendon to monitor the effective force exerted by the tendon onto the structure. PSC Procedure SQ 9.0 (Section 7, Appendix D) details the steps to be taken to perform a liftoff. It should be noted that performing a liftoff has only a localized effect on a tendon; therefore, it is acceptable to use the same jacks for both ends of a tendon by executing the liftoff on separate occasions.

All liftoffs forces were found to be acceptable and exceeded the minimum required prestress force as listed in PSC Procedure SQ 9.1 and Consumers Power Technical Specification. The three tendons preselected for detensioning, (V124, D3-18, and 74BF) had continuity tests performed which revealed no additional broken wires. Other noteworthy items are as follows.

1. The as-found liftoff force for tendon D3-18 was 661 kips, approximately 7.5% higher than the predicted force.

2. The as-found liftoff force for tendon D1-38 was 667 kips, approximately 8.5% higher than the predicted force.

3. The as-found liftoff force for tendon V250 was 682 kips, approximately 7.2% larger than the predicted force.

4. The as-found liftoff force for tendon V230 was 676 kips, approximately 6.2% higher than the predicted force.

5. The as-found liftoff force for tendon V14 was 681 kips, approximately 7.1% higher than the predicted force.

All data was recorded on data sheets 9.0 and is summarized in Table I. Figure 1 depicts the location of the vertical and dome tendons and Figure 2 is a developed elevation of the containment building locating the surveillance horizontal tendons. Figures 3 through 5 plot the value of each as-found tendon liftoff as it compares with the force/time curve for the vertical, dome and horizontal groups respectively.

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

TABLE I: SUMMARY OF DATA SHEETS 9.0 ACTUAL AVERAGE LIFTOFF VALUES

TENDON	END	EFF. WIRES	JACK #	ACT. PRESS URE	LIFT-OFF FORCE	AVG. FORCE	MIN. DES.	90% LOW LMT.	LOW LMT.	UPPR LMT.	ACCEPT-ABLE
V14	S	90	9185	4560	681	681	615	573	605	636	yes
V124	S	90	9180	4416	657	657	615	573	605	636	yes
V230	S	90	9184	4553	676	676	615	573	605	636	yes
V250	S	90	9184	4590	682	682	615	573	605	636	yes
D1-9	S	90	9180	4190	624	631	584	554	585	615	yes
	F	90	9185	4280	639						
D1-38	S	88	9185	4353	650	667	584	554	585	615	yes
	F	88	9185	4580	684						
D2-3	S	90	9180	4140	616	640	584	554	585	615	yes
	F	90	9180	4453	663						
D3-18	S	90	9180	4353	648	661	584	554	585	615	yes
	F	90	9185	4520	675						
59AC	S	90	9180	4260	634	638	615	573	605	636	yes
	F	90	9185	4300	642						
77AC	S	90	9180	4430	660	663	615	573	605	636	yes
	F	90	9185	4460	666						
[redacted]	S	90	9180	4453	663	646	615	573	605	636	yes
	F	90	9185	4213	629						
65BF	S	87	9185	4440	663	667	615	573	605	636	yes
	F	87	9180	4506	671						
74BF	S	88	9185	4420	660	633	615	573	605	636	yes
	F	88	9180	4080	607						

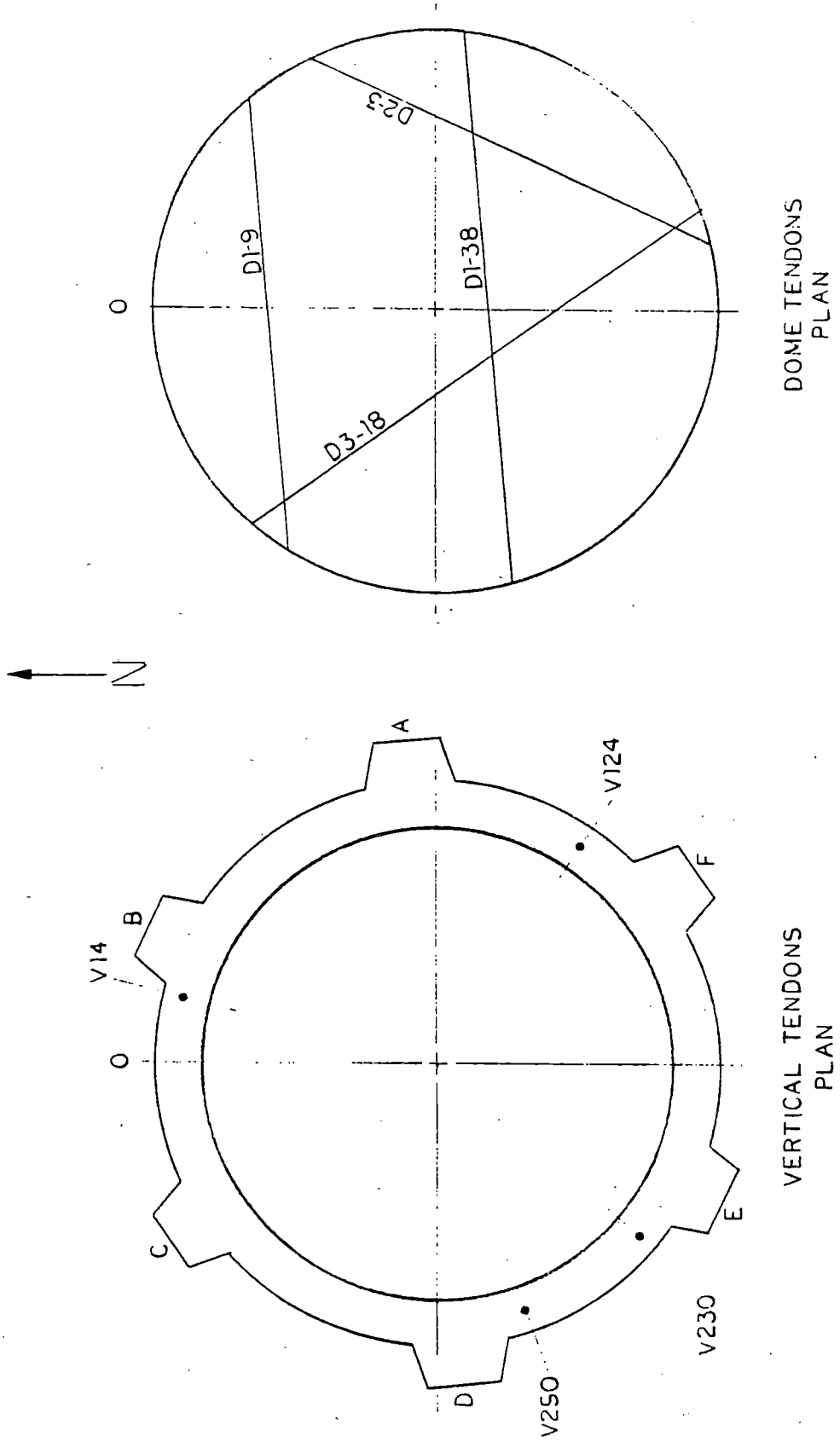
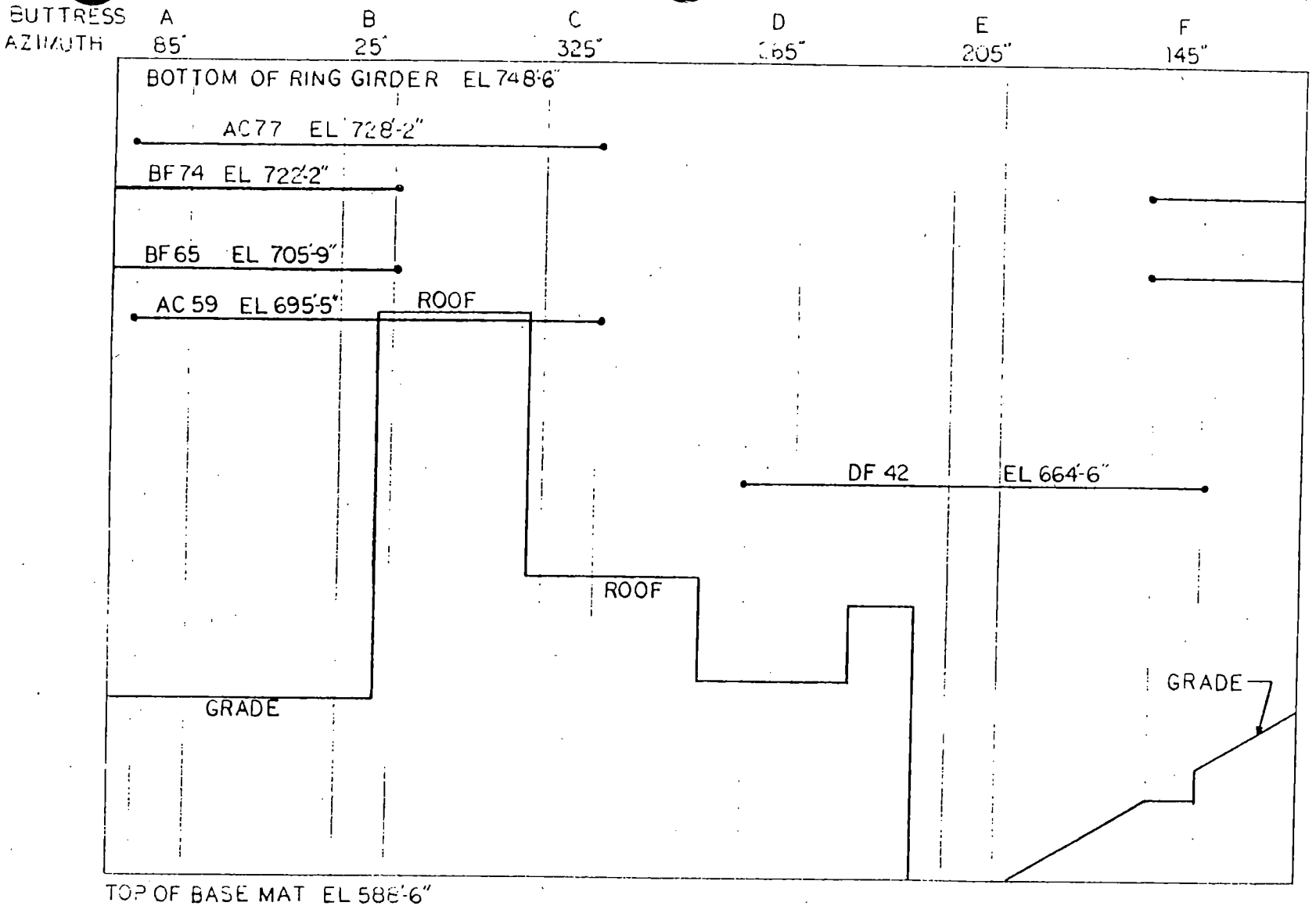


FIGURE 1 LOCATION OF VERTICAL AND DOME TENDONS



DEVELOPED ELEVATION

FIGURE 2 LOCATION OF HORIZONTAL TENDONS

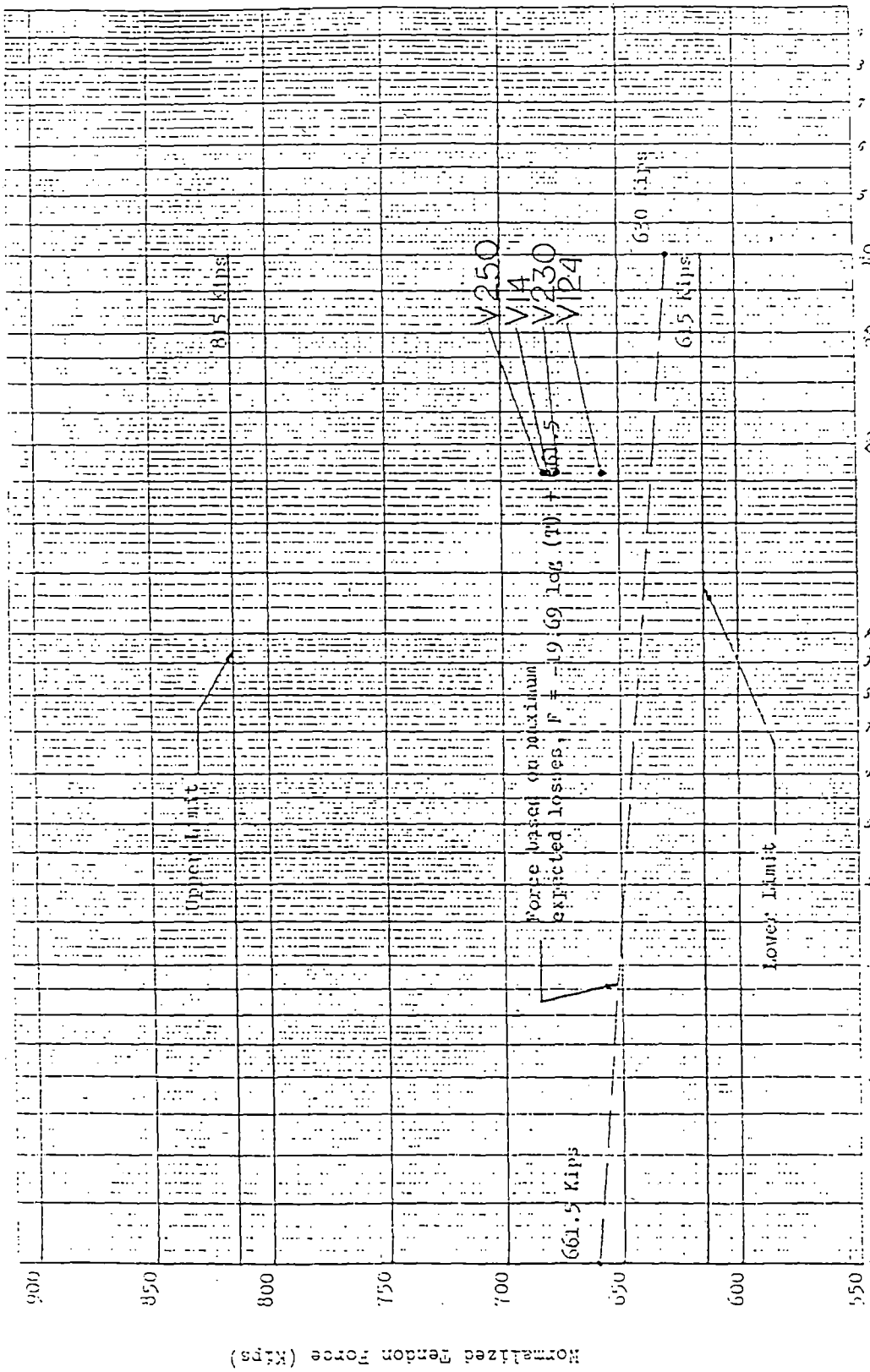


FIGURE 3 TENDON FORCE VS. TIME - VERTICAL TENDONS

FIGURE 4 TENDON FORCE VS. TIME - DOME TENDONS

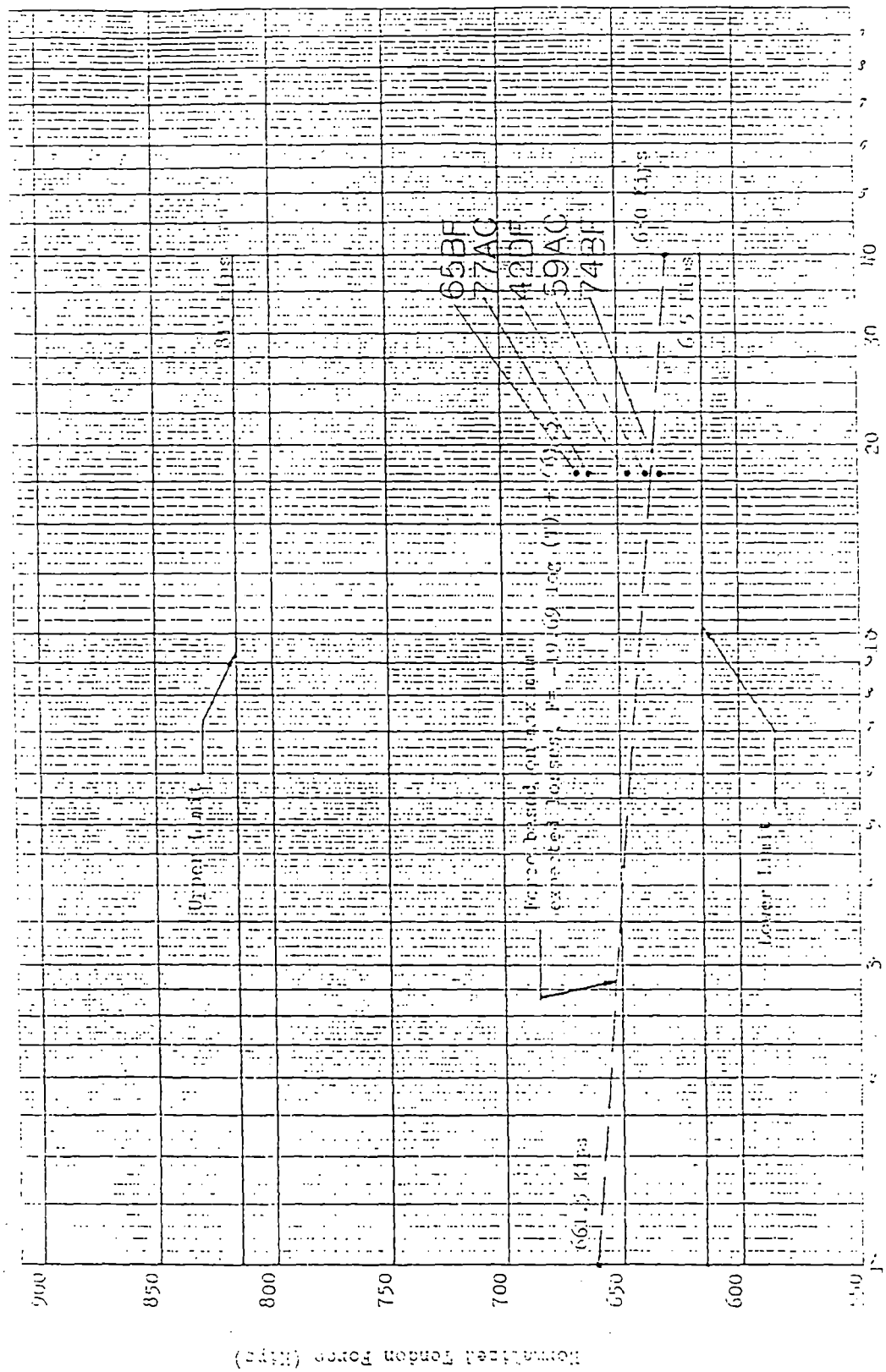


FIGURE 5 TENDON FORCE VS. TIME - HOOP TENDONS

III. ANCHORAGE COMPONENTS

In the following discussion, all Procedures referred to are included in Section 7, Appendix D, while all Data Sheets are included in Section 8 Appendix E.

Inspection of the anchorage components began with the removal of the grease can (PSC Procedure SQ 6.0). All components except tendons V14 [shop end], 59AC [shop end] and 42DF [shop and field end] had complete grease coating coverage. It is apparent from corrosion inspections and wire testing that no significant degradation of the system has occurred. The percentage of grease coating was recorded on Data Sheet 6.0 with the results tabulated in Table II.

During removal of the grease can and physical inspections of the anchorage assemblies, the tendons were inspected for water (PSC Procedure SQ 6.1). Water was detected in the surveillance tendons at the field end of tendon V124 and at the shop end of tendon D1-38. Tendon V124 had only drops discovered dripping from filler plug and no samples were taken. Tendon D1-38 had approximately eight ounces of water collected during loosening of the stud bolts in the grease can. Water flowed from the stud holes and gasket area when the can was removed. In addition, water drops were found mixed in with the grease inside the can and resting on top of the grease immediately surrounding the head. Drops of water were detected in the non-surveillance tendon V202 at the field end. In no other tendon was water detected during the removal of a grease can or inside of it. Table III is a summary of the results of the inspections for water recorded on Data Sheet 6.1

The anchorage components (anchorhead, bushing, shims, buttonheads and bearing plate) were inspected for corrosion level and cracks (PSC Procedure SQ 8.0). The results were recorded on Data Sheet 8.0 and summarized in Table IV. Corrosion of anchorages was found to be of either level No.1 - "Bright metal, no visible oxidation", or Level No. 2 - "Reddish Brown, No Pitting" for every tendon except the field end of tendons V230 and V202. NC/CA's F7N314-001 and F7N314-002 were written to notify the owner of patches of level no. 3 - redish-brown with slight pitting found on the the field end of anchorheads V230 and V202 respectively. In both cases, the areas of corrosion were located

III. ANCHORAGE COMPONENTS (continued)

on the periphery of the anchorhead front face. These areas experience only levels of low stress and the clean up and regreasing methods used are sufficient enough to prevent further corrosion. The NC/CA's were both dispositioned to be used "as-is" and no further action is required.

The buttonheads were inspected for their physical condition and a count was made of protruding and missing buttonheads (PSC Procedure SQ 8.0). The results of these inspections are also recorded on Data Sheet 8.0, and summarized in Table V. Tendon 74BF was found to have two missing buttonheads on its field end which were not previously recorded. NC/CA F-7N314-005 was written for this condition. The decision was made to remove the broken wires to inspect and perform tensile tests since this was a scheduled detension tendon. One wire had an undersized buttonhead which probably pulled through the anchorhead and the other wire was broken right behind the buttonhead; in all likelyhood both wires failed during the original installation. See Section IV for a discussion of the inspections and test results. The non-surveillance tendon V62 was found to have a missing buttonhead on its field end which was not previously recorded. A search of the grease can produced the buttonhead which had broken off the wire just behind the buttonhead. NC/CA F-7N314-003 was written for this condition, and was dispositioned to be "as-is" with no further action required, since there remains sufficient number of effective wires.

The concrete was inspected for cracks per PSC Procedure SQ 8.3 with the results being recorded on Data Sheet 8.3 and summarized in Table VI. No crack was found to have a maximum width in excess of 0.010". Consumers Power Technical Specification, paragraph 4.5.5a states in part: A VT-1 visual examination shall be performed on the end anchorage concrete surface at the surveillance tendon anchor points for signs of cracking, popouts, spalling, or corrosion. As stated earlier, PSC performed the concrete inspection per PSC Procedure SQ-8.3, however, the PSC inspector is certified Level III to ANSI N45.2.6-1978 for post-tensioning inspection. Investigation into this concern showed that the technical specification was written to a proposed ASME Section IWL-2525, which references a VT-1 examination section for concrete which has not been developed. Subsequently, the requirements for a VT-1 inspection could not be

III. ANCHORAGE COMPONENTS (continued)

met. The inspection that was performed is consistent with current industry standards and meets previous Palisades inspection requirements stated in the Technical Specifications and the FSAR. This observation is not considered adverse to quality due to the extent of the inspection performed, and the ANSI certification of the inspector.

TABLE II: SUMMARY OF DATA SHEET 6.0
GREASE PROTECTION AND AMOUNT REMOVED

TENDON	END	---GREASE COATING PERCENTAGE----					GREASE REMOVED(GALS.)
		GRS. CAN	BTHDS.	ANCHOR	SHIMS	BEARING PLATE	
V14	S	50	100	100	100	100	3/4
	F	100	100	100	100	100	48-1/8
	F	100	100	100	100	100	42-1/2*
V124	S	100	100	100	100	100	1
	F	100	100	100	100	100	55
V230	S	100	100	100	100	100	1
	F	100	100	100	100	100	45-3/4
V250	S	100	100	100	100	100	3/4
	F	100	100	100	100	100	42-3/4
D1-9	S	100	100	100	100	100	2-1/2
	F	100	100	100	100	100	2
D1-38	S	100	100	100	100	100	3-1/4
	F	100	100	100	100	100	1-1/2
D2-3	S	100	100	100	100	100	1-3/4
	F	100	100	100	100	100	2-1/2
D3-18	S	100	100	100	100	100	2-1/4
	F	100	100	100	100	100	2-3/4
59AC	S	75	100	75	75	75	1-3/4
	F	100	100	100	100	100	1-3/4
77AC	S	100	100	100	100	100	1
	F	100	100	100	100	100	1-1/2
42DF	S	95	100	90	100	100	1-1/4
	F	90	100	100	100	100	1-1/4
65BF	S	100	100	100	100	100	1-3/4
	F	100	100	100	100	100	1-3/4
74BF	S	100	100	100	100	100	1-3/4
	F	100	100	100	100	100	1-3/4
V36	F	100	100	100	100	100	38
V62	F	100	100	100	100	100	31-1/2
V86	F	100	100	100	100	100	52-3/4
V176	F	100	100	100	100	100	38
V202	F	100	100	100	100	100	38-1/4
V306	F	100	100	100	100	100	28

* Grease Leak

TABLE III SUMMARY OF DATA SHEET 6.1
INSPECTION AND COLLECTION OF WATER

TENDON	END	QUANTITY OF WATER DETECTED
V14	S	*
	F	*
V124	S	*
	F	Drops
V230	S	*
	F	*
V250	S	*
	F	*
D1-9	S	*
	F	*
D1-38	S	8 oz.
	F	*
D2-3	S	*
	F	*
D3-18	S	*
	F	*
59AC	S	*
	F	*
77AC	S	*
	F	*
42DF	S	*
	F	*
65BF	S	*
	F	*
74BF	S	*
	F	*
V36	F	*
V62	F	*
V86	F	*
V176	F	*
V202	F	Drops
V306	F	*

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

TABLE IV: SUMMARY OF DATA SHEET 8.0
CORROSION LEVEL AND CRACK INSPECTION OF ANCHORAGE COMPONENTS

TENDON	END	ANCHOR HEAD	BUSH.	COR. COND. BTHD	---CORROSION LEVEL, CRACK(S)-- ANCHOR	BUSHING	SHIMS	BEARING PLATE
V14	S	BP161	BZ823	A	1,none	1,none	2,none	2,none
	F	BV370	---	A	1,none	---	1,none	2,none
V124	S	CR216	BZ766	B	1,none	2,none	2,none	2,none
	F	BV323	---	A	1,none	---	2,none	2,none
V230	S	BP879	BZ605	A	1,none	1,none	1,none	1,none
	F	BV5	---	B	3,none*	---	1,none	2,none
V250	S	BP597	BZ434	B	1,none	2,none	1,none	1,none
	F	CP96	---	B	1,none	---	1,none	1,none
D1-9	S	BP158	BZ812	A	1,none	1,none	1,none	2,none
	F	BV465	---	A	1,none	---	1,none	2,none
D1-38	S	BP160	BZ48	A	1,none	2,none	1,none	2,none
	F	BV56	---	A	2,none	---	1,none	2,none
D2-3	S	BP480	BZ658	A	1,none	1,none	1,none	2,none
	F	BV216	---	A	1,none	---	1,none	2,none
D3-18	S	BP508	BZ359	B	1,none	1,none	2,none	2,none
	F	BV190	---	A	2,none	---	2,none	2,none
59AC	S	BP18	BZ588	B	2,none	2,none	2,none	2,none
	F	BV161	---	A	2,none	---	1,none	2,none
77AC	S	BP376	BZ525	A	1,none	1,none	1,none	2,none
	F	BV239	---	B	2,none	---	1,none	2,none
42DF	S	BP723	BZ868	B	2,none	2,none	2,none	2,none
	F	BV330	---	A	1,none	---	1,none	2,none
65BF	S	BP650	BZ248	B	1,none	1,none	1,none	2,none
	F	BV268	---	A	2,none	---	2,none	2,none
74BF	S	BP645	BZ412	B	1,none	2,none	1,none	2,none
	F	BV71	---	A	1,none	---	2,none	2,none
V36	F	BV237	---	B	2,none	---	1,none	2,none
V62	F	BV812	---	B	2,none	---	2,none	2,none
V86	F	BV485	---	A	1,none	---	2,none	2,none
V176	F	BV621	---	A	2,none	---	1,none	2,none
V202	F	BV15	---	A	3,none*	---	1,none	2,none
V306	F	CP8	---	B	2,none	---	1,none	2,none

* Reported via NCR

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

TABLE V: SUMMARY OF DATA SHEET 8.0 BUTTONHEAD COUNT

TENDON	END	ORIGINAL		AS-FOUND		REMAINING		WIRES REM	TOTAL INEFF.	EFF. WIRES
		PROT.	MISS.	PROT.	MISS.	PROT.	MISS.			
V14	S	0	0	0	0	0	0	0	0	90
	F	0	0	0	0	0	0	0	0	90
V124	S	0	0	0	0	0	0	1	1	89
	F	0	0	0	0	0	0	1	1	89
V230	S	0	0	0	0	0	0	0	0	90
	F	0	0	0	0	0	0	0	0	90
V250	S	0	0	0	0	0	0	0	0	90
	F	0	0	0	0	0	0	0	0	90
D1-9	S	0	0	0	0	0	0	0	0	90
	F	0	0	0	0	0	0	0	0	90
D1-38	S	0	2	0	2	0	2	0	2	88
	F	0	2	0	2	0	2	0	2	88
D2-3	S	0	0	0	0	0	0	0	0	90
	F	0	0	0	0	0	0	0	0	90
D3-18	S	0	0	0	0	0	0	1	1	89
	F	0	0	0	0	0	0	1	1	89
[redacted]	S	0	0	0	0	0	0	0	0	90
	F	0	0	0	0	0	0	0	0	90
77AC	S	0	0	0	0	0	0	0	0	90
	F	0	0	0	0	0	0	0	0	90
42DF	S	0	0	0	0	0	0	0	0	90
	F	0	0	0	0	0	0	0	0	90
65BF	S	0	3	0	3	0	3	0	3	87
	F	0	3	0	3	0	3	0	3	87
74BF	S	0	0	0	0	0	0	1	1	87
	F	0	0	0	2	0	2	1	3	87
V36	F	0	0	0	0	0	0	0	0	90
V62	F	0	0	0	1	0	1	0	1	89
V86	F	0	1	0	1	0	1	0	1	89
V176	F	0	1	0	1	0	1	0	1	89
V202	F	0	0	0	0	0	0	0	0	90
V306	F	0	0	0	0	0	0	0	0	90

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

TABLE VI: SUMMARY OF DATA SHEET 8.3 CONCRETE CRACK INSPECTION

TENDON	END	BEARING I.D.	--CONCRETE CRACKS--(in.)- AMOUNT	MAX. LENGTH	MAX. WIDTH
V14	S	BK	0	0	0
	F	?	0	0	0
V124	S	AM	0	0	0
	F	?	0	0	0
V230	S	BK	0	0	0
	F	?	0	0	0
V250	S	BK	0	0	0
	F	?	0	0	0
D1-09	S	BN	2	31	<.010
	F	?	2	21	<.010
D1-38	S	BN	1	6	<.010
	F	BM	1	1-3/4	<.005
D2-3	S	ER	0	0	0
	F	?	3	15	<.010"
D3-18	S	BN	0	0	0
	F	H	0	0	0
59AC	S	AM	0	0	0
	F	AY	2	6	<.005
77AC	S	AM	0	0	0
	F	BH	0	0	0
42DF	S	AM	0	0	0
	F	AF	0	0	0
65BF	S	AW	0	0	0
	F	BH	0	0	0
74BF	S	?	0	0	0
	F	BF	0	0	0
V36	F	?	0	0	0
V62	F	?	0	0	0
V86	F	?	0	0	0
V176	F	?	0	0	0
V202	F	?	0	0	0
V306	F	?	0	0	0

?: Bearing Plate I.D. Could Not be Located.

IV. WIRE INSPECTION AND TESTING

One wire was removed from each detensioned tendon, horizontal (74BF), vertical (V124), and dome (D3-18) for corrosion investigation and physical testing. PSC Procedure SQ10.3 (Section 7, Appendix D) outlined the details involving wire inspection with the results recorded on Data Sheets 10.2 and 10.3. Summarized results of these Data Sheets are tabulated on Table VII. All wire diameters were within 0.250" $\pm$ 0.002" and the Ultimate Strength exceeded 240 ksi (force of 11,875 pounds) for all specimens. Elongation of wire at failure exceeded four percent for all samples tested, and all tendons had a Corrosion Condition of either A (Excellent) with no visible corrosion (D3-18 and 74BF), or B, (good) with partial loss of color (V124). In addition, the two broken wires found on tendon 74BF were also removed and inspected. Both were found to have corrosion condition A. Sample test wires were obtained from each and had satisfactory results.

TABLE VII: SUMMARY OF DATA SHEETS 10.2 AND 10.3
WIRE: INSPECTION FOR CORROSION AND TESTING

TENDON	SAMPLE I.D.	LOCATION OF REMOVAL	DIA.	WIRE CORR. COND.	% ELONG	YIELD STRENGTH	TENSILE STRENGTH	ACCEPT-ABLE
V124	#1	11' to 20'	.251	B	5.0	10,850	12,400	Yes
	#2	71' to 80'	.251	B	4.4	10,900	12,400	Yes
	#3	161' to 170'	.251	B	5.0	10,900	12,490	Yes
D3-18	#1	10' to 19'	.251	A	4.6	10,750	12,125	Yes
	#2	60' to 69'	.251	A	5.0	10,800	12,200	Yes
	#3	110' to 119'	.251	A	5.0	10,700	12,250	Yes
74BF	#1	10' to 19'	.251	A	4.6	11,200	12,650	Yes
	#2	70' to 79'	.251	A	4.8	11,250	12,700	Yes
	#3	120' to 129'	.251	A	4.2	11,250	12,200	Yes
	#4*	120' to 129'	.251	A	5.0	11,350	12,650	Yes
	#5*	120' to 129'	.251	A	4.5	11,350	12,500	Yes

* Sample Taken From Broken Wire

V. TENDON RETENSIONING AND RESEALING

Three tendons (V124, D3-18, and 74BF) that had been previously detensioned for wire removal and continuity tests were subsequently retensioned per PSC Procedure SQ 11.0 (Section 7, Appendix D). The results of the retensioning process were recorded on Data Sheets SQ 11.0 (Section 8, Appendix E), and the results are summarized in Table VIII.

Total elongations are compared with the Original Elongations recorded at installation and the percentage in variation is listed. All total elongations were acceptable and met the established criteria of PSC Procedure SQ 11.0, Section 9.9.6. Also summarized in the table is the initial liftoff and final lock-off force values along with the final buttonhead count. All tendons were locked-off at forces greater than those initially found, and the percentage of variation did not exceed six percent.

Due to the unavailability of the originally installed shim material AISI 1141, an equivilent alternate of AISI 1045 was used. Shims are added generally to adjust the force level in an exercised tendon. All of the detensioned tendons had AISI 1045 shims added and these shims are identified on Data Sheets 11.0 by being circled up.

Upon completion of all inspections, a coating of grease was applied to all surfaces of the anchorage components. After all components were sufficiently coated, a new gasket was used to reinstall the grease can. Tendon V14 had more than twenty-one days elapse between grease removal and replacement. NC/CA F-7N314-004 was written to document this violation of PSC Procedure SQ12.1. The tendon was subsequently regreased to adequate levels and the NC/CA was dispositioned to be used "as-is". FCR-002 was written to extend the twenty-one day requirement between grease removal and grease replacement to an unrestricted amount of time provided the above steps have been followed and provided the work is done prior to the end of this surveillance.

All of the surveillance tendons had more grease added than removed; however, two of the grease leak repair tendons (V62 and V86) had less grease added than the estimated amount lost. NC/CA's 7N314-006 and 007 were written to notify the owner. The NC/CA's were dispositioned "use as-is" since the total loss was only an estimate and the grease was replaced from the top which would displace any air voids in the tendon duct. Table IX summarizes the grease loss, grease replaced and the net difference in gallons. At the end of the job, a walk-through of the tendon gallery was made to verify none of the grease cans were leaking grease.

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE
PALISADES NUCLEAR PLANT

TABLE VIII: - SUMMARY OF DATA SHEET 11.0
TENDON RETENSIONING & BUTTONHEAD COUNT

TENDON	END	EFFECTIVE WIRES	JACK	-----ELONGATIONS----- ORIGINAL	RESTRESSING	TOTAL	% VAR.	----------LIFTOFF---------- PRES: (PSI)	FORCE (K)	AVG. (K)	INITIAL FORCE	INITIAL AVG.FORCE	PERCENTAGE VARIANCE	ACCEPTABLE	SEATED WIRES
V124	S	89	9180	11.375	11.70	11.70	+2.86	4540	676	676	657	N/A	+2.89	YES	89
D3-18	S	89	9180	8.00	4.40	8.40	+5.00	4567	680	697	648	661	+5.45	YES	89
	F	89	9185		4.00			4780	714		675				
74BF	S	87	9185	8.25	4.15	8.65	+4.85	4540	678	646	660	634	+1.89	YES	87
	F	87	9180		4.50			4117	613		607				

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FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

TABLE IX. SUMMARY OF DATA SHEETS 12.1
GREASE LOSS VERSUS GREASE REPLACEMENT

TENDON	END	GREASE		DIFFERENCE (GALLONS)
		TOT. LOSS	REPLACED	
V14	N/A	91.375	99.70	+8.325
V124	N/A	56.00	69.00	+13.00
V230	N/A	46.75	60.30	+13.55
V250	N/A	43.50	45.40	+1.90
D1-9	S	2.50	2.70	+0.20
	F	2.00	3.25	+1.25
D1-38	S	3.25	3.50	+0.25
	F	1.50	2.00	+0.50
D2-3	S	1.75	2.40	+0.65
	F	2.50	2.90	+0.40
D3-18	S	2.25	2.90	+0.65
	F	2.75	3.25	+0.50
59AC	S	1.75	4.00	+2.25
	F	1.75	3.25	+1.50
77AC	S	1.00	2.00	+1.00
	F	1.50	2.45	+0.95
42DF	S	1.25	2.40	+1.15
	F	1.25	2.25	+1.00
65BF	S	1.75	2.90	+1.15
	F	1.75	3.25	+1.50
74BF	S	1.75	2.00	+0.25
	F	1.75	1.95	+0.20
V36	F	38.00	45.30	+7.30
V62	F	31.50	27.90	-3.60[A]
V86	F	52.75	48.00	-4.75[B]
V176	F	38.00	41.00	+3.00
V202	F	38.25	48.00	+9.75
V306	F	28.00	50.65	+22.65

A. Refer to NCR #F-7N314-006
B. Refer to NCR #F-7N314-007

VI. SHEATHING FILLER

A sample of sheathing filler (grease) was removed from each end of each surveillance tendon. Chemical tests were performed on each sample. Precision Surveillance Procedures SQ 7.0 and SQ 7.2 (Section 8, Appendix E) describe what tests must be run on the grease samples and how to evaluate their results. The results from the testing laboratory are presented in Section 5 Appendix B.

Maximum acceptance limits of 10 percent by weight for water content and 10 parts per million for water-soluble chlorides, nitrates and sulfides are as listed in PSC Procedure SQ7.0. All samples met the acceptance criteria as stated above.

Also required was the report of the neutralization number of each grease sample. The neutralization test is generally performed by grease manufacturers on new batches of the product. It is a method of determining the overbase additives in the grease. Degradation of the sheathing filler will yield a change in the acidity of the filler material as well as an increase in ion content. As stated in PSC Procedure SQ7.0, the minimum neutralization number is 0. The majority of the grease tested had a neutrilization number less than zero. Based upon the adequate grease coverage of all components, the low levels of water soluble ions, no significant corrosion, higher than predicted liftoffs and the results of the wire testing, the results were considered to be acceptable. The results of this test are also summarized in Table X.

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

TABLE X: LABORATORY ANALYSIS OF SHEATHING FILLER

TENDON	END	--ION CONCENTRATION (PPM)--- CHLORIDES	NITRATES	SULFIDES	% Water CONTENT	NEUTRALIZATION #
V14	S	0.30	0.16	0.123	0.4	-3.4
	F	0.25	<0.10	0.457	0.2	-1.7
V124	S	0.80	<0.10	<0.116	0.4	1.7
	F	0.20	<0.10	<0.115	0.8	-3.4
V230	S	0.40	<0.10	<0.115	1.0	-2.8
	F	0.25	0.10	<0.115	0.6	-2.8
V250	S	0.20	<0.10	0.364	4.2	-3.9
	F	0.20	<0.10	<0.115	0.8	-3.4
D1-09	S	0.05	<0.10	<0.115	<0.2	-2.8
	F	0.20	0.13	<0.116	<0.2	-3.4
D1-38	S	0.15	<0.10	<0.115	6.4	-3.4
	F	0.20	0.14	<0.116	<0.2	-2.8
D2-3	S	0.10	<0.10	<0.115	2.6	7.8
	F	0.15	<0.10	<0.115	1.2	-5.0
D3-18	S	0.10	0.15	<0.115	0.8	6.7
	F	<0.10	<0.10	<0.115	<0.2	3.9
59AC	S	0.20	<0.10	<0.116	<0.2	-3.4
	F	<0.10	<0.10	<0.115	<0.2	-5.6
77AC	S	0.20	<0.10	<0.116	<0.2	-3.4
	F	<0.10	<0.10	<0.115	<0.2	-5.6
42DF	S	0.20	<0.10	<0.116	0.4	-3.9
	F	0.40	<0.10	<0.116	0.4	-1.7
65BF	S	<0.20	<0.10	<0.115	<0.2	-3.9
	F	<0.20	<0.10	<0.115	<0.2	38.6
74BF	S	0.20	<0.10	<0.115	0.2	-3.9
	F	<0.20	<0.10	<0.115	0.2	-3.9
V36	F	<0.05	<0.10	<0.115	<0.2	37.5
V62	F	0.15	<0.10	<0.115	0.2	40.3
V86	F	<0.05	<0.10	<0.115	0.8	0.6
V176	F	0.25	<0.10	<0.115	0.6	42.6
V202	F	0.05	<0.10	<0.115	0.2	37.5
V306	F	0.15	<0.10	<0.115	0.2	38.1

VII. HYDRAULIC JACK CALIBRATIONS

Precision Surveillance Corporation has developed a program for calibrating hydraulic jacks utilizing regression analysis, PSC Procedure QA 12.8.G-W (Section 6, Appendix C). This is a process whereby a straight line is mathematically best fit to a set of data points (in this case, force versus gauge pressure). This results in calculating a ram area (slope) and a constant (y-intercept) for each calibration. Complete calibrations of all the hydraulic jacks are contained in Section 6, Appendix C and are summarized in Table XI.

A Before and After comparison of the stressing jack's ram areas revealed that none of these jack's calibrations varied by no more than 0.48 percent indicating that they were in a properly calibrated status throughout the surveillance.

Note that the force exerted by a jack can be calculated as follows:

Force	=	Area	x	Pressure	+	Constant
(K)		(IN^2)		(KSI)		(K)

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE
PALISADES NUCLEAR PLANT

TABLE XI: HYDRAULIC RAM CALIBRATIONS

	--------PRE-SURVEILLANCE-------			-------POST-CALIBRATION-------			% VAR
JACK	DATE	AREA(sq.in.)	CONST.(k)	DATE	AREA(sq.in.)	CONST.(k)	@5700
9180	8/18/87	149.613	-3.260	12/8/87	150.005	-3.129	0.28
9184	8/18/87	149.747	-5.762	12/8/87	150.032	-3.292	0.48
9185	8/18/87	149.604	-1.478	12/8/87	150.563	-3.623	0.39

VIII. COMPARISON WITH ORIGINAL INSTALLATION DATA

A comparison of liftoff forces from this surveillance to the original installation lock-off forces is made in an effort to detect any evidence of system degradation. This is done for informational purposes only and there is no criteria for acceptance. The liftoff forces are compared in order to detect any abnormal force loss which would possibly indicate an underestimation of the creep, shrinkage and/or elastic shortening effects in the Containment Building. In addition, the number of effective wires at installation and at the time of surveillance are compared to establish if any additional wires have failed since installation. Any additional broken wires would indicate a need for further investigation, and an excessive amount could possibly indicate deterioration of the wire, poor wire quality, water, or other corrosive problems.

The comparison was made and revealed that the average tendon had experienced a 15.8 percent force reduction. The average losses for each group are 14.65% for vertical tendons, 15.46% for dome tendons, and 16.5% for horizontal tendons. These losses are as expected for a fifteenth year surveillance and do not indicate an abnormal degredation. This information has been summarized in Table XII.

TABLE XII: COMPARISON WITH ORIGINAL INSTALLATION

TENDON	END	EFFECTIVE BTHDS		LIFTOFF FORCE (K)			%
		ORIGINAL	@ 15YR.Sur.	ORIGINAL	@15YR.Sur.	LOSS	DIFF.
V14	S	90	90	780	681	99	12.7
V124	S	90	90	795	657	138	17.4
V230	S	90	90	795	676	119	15.0
V250	S	90	90	788	682	106	13.5
D1-9	S	90	90	750	624	126	16.8
	F	90	90	743	639	104	14.0
D1-38*	S	90	88	770	650	120	15.6
	F	90	88	795	684	111	14.0
D2-3	S	90	90	750	616	134	17.9
	F	90	90	795	663	132	16.6
D3-18	S	90	90	765	648	117	15.3
	F	90	90	780	675	105	13.5
59AC9	S	90	90	780	634	146	18.7
	F	90	90	765	642	123	16.1
77AC	S	90	90	788	660	128	16.2
	F	90	90	795	666	129	16.2
42DF	S	90	90	795	663	132	16.6
	F	90	90	750	629	121	16.1
65BF*	S	90	87	780	663	117	15.0
	F	90	87	795	671	124	15.6
74BF	S	90	88	780	660	120	15.4
	F	90	88	750	607	143	19.1

* Previously Inspected During First and Third Year Surveillances

CONCLUSION

Based upon the results of the Fifteenth Year Tendon Surveillance Inspections reported herein, the conclusion is reached that the post-tensioning system in the containment building at the Palisades Nuclear Plant has experienced no abnormal degredation and is performing its intended function as designed.

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

LIST OF REFERENCES

1. Consumers Power Provisional Operating License No. DPR-20 for the Palisades Plant, Section 4.5.4, Amendment No. 109.

2. Regulatory Guide 1.35, "In-Service Inspection of Ungrouted Tendons in Prestressed Concrete Containments", U.S. Nuclear Regulatory Commission, April 1979, Proposed Revision 3.

3. ASME Code, Section XI, Proposed Subsection IWL.

4. Records of Initial Tendon Installation pertaining to tendon pulling, button heading, tensioning and greasing.

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

APPENDIX A

Laboratory Results of Wire Tests

A1

Consumers Power Company
VMP Project: 848741-070-531
DCC: 950/51*04*19

PALISADES TENDON SURVEILLANCE
Tensile Tests

Requested by: RWard, Palisades Plt Project - ISI
Report date: November 30, 1987
Report by: GJCheck, Laboratory Services

Distribution: RWard, Palisades Document Control, P-11-030
VMP File (2)

INTRODUCTION

This test was requested as part of the 15 year tendon surveillance, in which the integrity of the Palisades containment building post-tensioning system is demonstrated by subjecting selected wire and tendons to tensile test. The following report will document the results of this test.

SUMMARY

All samples met specification requirements for yield strength, tensile strength and percent elongation at fracture.

MATERIAL DESCRIPTION

Tendon Rod ID No	Sample Tag No	Length	Location
V124	1	9'	11' - 20' From Shop End
V124	2	9'	71' - 80' From Shop End
V124	3	9'	161' - 170' From Shop End
D3-18	1	9'	10' - 19' From Shop End
D3-18	2	9'	60' - 69' From Shop End
D3-18	3	9'	110' - 119' From Shop End
74BF	1	9'	10' - 19' From Field End
74BF	2	9'	70' - 79' From Field End
74BF	3	9'	120' - 129' From Field End
74BF	4	9'	120' - 129' From Shop End
74BF	5	9'	120' - 129' From Shop End

Note: Samples tagged 4 & 5 were from separate wires found broken in service at the button head.

A2

VMP Project: 848741-070-531
DCC: 950/51*04*19

TEST PROCEDURE

Testing was performed following L&FTS Department V&MP Section Work Procedure M&VMP T-7, Rev 0 including Temporary Change Number G3.

TEST EQUIPMENT

Tinius-Olsen Super "L" Tensile Machine	Co No 3745-0001 S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	Co No 3745-00065 S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	Co No 3745-00067 S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	Co No 3745-00502 S/N CP0631/92540	- Due 11/10/87

TEST DATA

See attached data sheets.

ACCEPTANCE CRITERIA

See attached data sheets for minimum requirements.

MATERIAL DISPOSITION

All specimens shall be retained for a period of 60 days prior to disposal, unless otherwise instructed.

Approved D A DesNoyer Date 12-4-87

D A DesNoyer
Vibration and Mechanical Projects Supervisor

PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No 1

Tendon I.D. V124

Date Tested 10/23/87 By G/Cole

Sample Length (in) 24

Distance from sample center to SHOP END (ft) 19

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	10,850	G/C	12,400	G/C	5.0	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved W Charles Norgar Date 12-2-87

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VMP Project: 848741-070-531

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PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TESTING

Sample No 2

Tendon I.D. V124

Date Tested 10/23/87 By G/Cook

Sample Length (in) 18

Distance from sample center to SHOP END (ft) 79

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	10,900	G/C	12,400	G/C	4.4	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved W Charles Roger Date 12-2-87

DEC 4 '87 8:59 LAB

VMP Project: 848741-070-531

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PALISADES NUCLEAR PLANT
15 YEAR TENDON [redacted]ILLANCE
WIRE TENSILE [redacted] DATA

Sample No 3

Tendon I.D. V124

Date Tested 10/23/87 By G/Clark

Sample Length (in) 24

Distance from sample center to SHOP END (ft) 169

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	10,900	G/C	12,490	G/C	5.0	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved W Ames Moyer Date 12-2-87

DEC 4 '87 8:58 LAB

VMP Project: 848741-070-531

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PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No 1

Tendon I.D. D3-18

Date Tested 10/30/87 By G/Clark

Sample Length (in) 24

Distance from sample center to SHOP END (ft) 18

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	10,750	G/C	12,125	G/C	4.6	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved W Ames Noyes Date 12-2-87

DEC 4 '87 9:00 LHB
VMP Project: 848741-070-531
PHASE .07

A6

PALISADES NUCLEAR PLANT
15 YEAR TENDON S[illegible]ILLANCE
WIRE TENSILE T[illegible]DATA

Sample No 2

Tendon I.D. 03-18

Date Tested 10/30/87 By G/Clark

Sample Length (in) 24

Distance from sample center to SHOP END (ft) 68

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	10,800	G/C	12,200	G/C	5.0	G/C

Equipment:
Tinius-Olsen Super "L" CO No 3745-00001 - S/N 70066 - Due 01/09/88
Mitutoyo Micrometer CO No 3745-00065 - S/N 9006673 - Due 07/17/88
Mitutoyo Micrometer CO No 3745-0067 - S/N CP0596 - Due 07/17/88
B C Ames Extensiometer CO No 3745-00502 - S/N CP0631/92540 - Due 11/10/87

Approved W C Allen Moyer Date 12-2-87

DEC 4 '87 9:00 LAB
VMP Project: 848741-070-531
PAGE.08
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PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No 3

Tendon I.D. 03-18

Date Tested 10/30/87 By G/Cheeke

Sample Length (in) 24

Distance from sample center to SHOP END (ft) 118

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	10,700	G/C	12,250	G/C	5.0	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved W Alles Royer Date 12-2-87

DEC 4 '87 9:00 LAB
VMP Project: 848741-070-531
PAGE.09

A8

PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No 1

Tendon I.D. 74BF

Date Tested 11/3/87 By G/Chuck

Sample Length (in) 24

Distance from sample center to FIELD END (ft) 11

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	11,200	G/C	12,650	G/C	4.6	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved W Wallace Nagger Date 12-2-87

DEC 4 '87 9:01 L&B

PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No 2

Tendon I.D. 74RF

Date Tested 11/3/87 By G/Chuck

Sample Length (in) 24

Distance from sample center to FIELD END (ft) 71

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	11,250	G/C	12,700	G/C	4.8	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved W. Wiles Noyes Date 12-2-87

DEC 4 '87 8:01 LAB

VMP Project: 848741-070-531

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PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No 3

Tendon I.D. 74BF

Date Tested 11/3/87 By G/Cheek

Sample Length (in) 24

Distance from sample center to FIELD END (ft) 121

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	11,250	G/C	12,200	G/C	4.2	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001	S/N 70066	Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065	S/N 9006673	Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067	S/N CP0596	Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502	S/N CP0631/92540	Due 11/10/87

Approved R L Ames Royer Date 12-2-87

DEC 4 '87 8:01 L&B

VNP Project: 848741-070-531

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PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No 4

Tendon I.D. 74BF

Date Tested 11/3/87 By G/Check

Sample Length (in) 24

Distance from sample center to SHOP END (ft) 121

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	11,350	G/C	12,650	G/C	5.0	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved H. Ames Noyer Date 12-2-87

DEC 4 '87 9:02 LAB

VMP Project: 848741-070-531

PHASE 1.3

A12

PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No 5

Tendon I.D. 748F

Date Tested 11/3/87 By G/Cook

Sample Length (in) 24

Distance from sample center to SHOP END (ft) 121

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture %	Init
ASTM A421, Min Required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	0.251	G/C	11,350	G/C	12,500	G/C	4.5	G/C

Equipment:

Tinius-Olsen Super "L"	CO No 3745-00001 - S/N 70066	- Due 01/09/88
Mitutoyo Micrometer	CO No 3745-00065 - S/N 9006673	- Due 07/17/88
Mitutoyo Micrometer	CO No 3745-0067 - S/N CP0596	- Due 07/17/88
B C Ames Extensiometer	CO No 3745-00502 - S/N CP0631/92540	- Due 11/10/87

Approved W Wallace Rogers Date 12-2-87

DEC 4 '87 9:02 L&B

VMP Project: 848741-070-531

RECEIPT INSPECTION CHECKLIST

A14

1. Received From Palisades Via Pony Date 10/22/87

2. PO, PR, RMR or Test Request No 848741070531

3. Codes, Standards or Specification To Be Used for Receipt Inspection LHFTS-11

4. Shipping Condition: Acceptable X Unacceptable _____

5. Certification/Calibration Records Enclosed: Yes _____ No _____ None Req'd X

6. Procurement or Test Request Document Requirements Verified: Yes X No _____

7. Identification of Items or Services

Name or Description	~~Supplier~~ Tendon Rod ID No.	~~Model No~~ Sample Tag No.	~~Serial & Co No~~ Length / Location	Quantity
Tendon Rod Sample	V124	1	9' / 11'-20' FROM SHOP END	1
Tendon Rod Sample	V124	2	9' / 71' to 80' FROM SHOP END	1
Tendon Rod Sample	V124	3	9' / 161' To 170' FROM SHOP END	1

10/22/87

8. Special Handling and/or Storage Requirements N/A

9. Receipt Inspection Status

a. Acceptable X

b. Unacceptable _____ State Reason _____

Deficiency Notification No _____ Hold Tag No _____

c. Temporary Hold _____ State Reason _____

Hold Tag No _____

10. Calibrated M&TE Used: Type N/A CP No _____ Cal Due Date _____

11. Receipt Inspected by G J Beck Date 10/22/87

12. Approved by W W Des Noyer Date 12/2/87

Place "NA" in all blanks not applicable.

VMP Project: 848741-070-531

A15

RECEIPT INSPECTION CHECKLIST

1. Received From Palisades Via Pony Date 10/30/87
2. PO, PR, RMR or Test Request No 848741070531
3. Codes, Standards or Specification To Be Used for Receipt Inspection LTFTS-11
4. Shipping Condition: Acceptable X Unacceptable
5. Certification/Calibration Records Enclosed: Yes No None Req'd X
6. Procurement or Test Request Document Requirements Verified: Yes X No
7. Identification of Items or Services

Name or Description	~~Supplier~~ Tendon Rod ID No.	~~Model No~~ Sample Tag No.	~~Serial & Co No~~ Length / Location	Quantity
Tendon Rod Sample	03-18	1	9' / 10'-19' FROM SHOP END	1
Tendon Rod Sample	03-18	2	9' / 60' TO 69' FROM SHOP END	1
Tendon Rod Sample	03-18	3	9' / 110' TO 119' FROM SHOP END	

JR 10/30/87

8. Special Handling and/or Storage Requirements N/A
9. Receipt Inspection Status
   a. Acceptable X
   b. Unacceptable State Reason
      Deficiency Notification No Hold Tag No
   c. Temporary Hold State Reason
      Hold Tag No
10. Calibrated M&TE Used: Type N/A CP No Cal Due Date
11. Receipt Inspected by G/Cook Date 10/30/87
12. Approved by N Ables Moyer Date 12-2-87

Place "NA" in all blanks not applicable.

VMP Project: 848741-070-531

RECEIPT INSPECTION CHECKLIST

1. Received From Palisades Via Pony Date 11/3/87
2. PO, PR, RMR or Test Request No 848741070531
3. Codes, Standards or Specification To Be Used for Receipt Inspection LEFTS-11
4. Shipping Condition: Acceptable X Unacceptable
5. Certification/Calibration Records Enclosed: Yes ____ No ____ None Req'd X
6. Procurement or Test Request Document Requirements Verified: Yes X No
7. Identification of Items or Services

Name or Description	~~Supplier~~ Tendon Rod ID No.	~~Model No~~ Sample Tag No.	~~Serial & Co No~~ Length / Location	Quantity
Tendon Rod Sample	74BF	1	9' / 10' TO 19' FROM Field End	1
Tendon Rod Sample	74BF	2	9' / 70' TO 79' FROM FIELD END	1
Tendon Rod Sample	74BF	3	9' / 120' TO 129' FROM FIELD END	1
Tendon Rod Sample	74BF	4	9' / 120' TO 129' FROM SHOP END	1
Tendon Rod Sample	74BF	5	9' / 120' TO 129' FROM SHOP END	1

B/C 11-3-87

8. Special Handling and/or Storage Requirements N/A
9. Receipt Inspection Status
   a. Acceptable X
   b. Unacceptable ____ State Reason ____
      Deficiency Notification No ____ Hold Tag No ____
   c. Temporary Hold ____ State Reason ____
      Hold Tag No ____
10. Calibrated M&TE Used: Type N/A CP No ____ Cal Due Date ____
11. Receipt Inspected by G J Clark Date 11/3/87
12. Approved by W Miles Rogers Date 12-2-87

Place "NA" in all blanks not applicable.

CONSUMERS POWER COMPANY

LABORATORY AND FIELD
TECHNICAL SERVICES DEPARTMENT

Vibration and Mechanical Projects
Section Work Procedure

PROC VMP T-7
PAGE 1 OF 5
REVISION 0

TITLE: PALISADES TENDONS SURVEILLANCE TENSILE TESTING

APPLICABILITY

This procedure applies to tensile testing of 1/4 inch diameter 90 high strength steel wire specimens removed from the Palisades Containment Building post-tensioning system during scheduled tendon surveillance. The purpose of the testing is to assess the quality and structural performance of the post-tensioning system.

WORKING COPY
AUTHORIZED USE EXPIRES 5-7-88

Technical review G J Check Date 9-21-87

Technical approval R C Schaut Date 9-21-87

Administrative approval David Moyer Date 9-22-87

TITLE: PALISADES TENDONS SURVEILLANCE TENSILE TESTING

1.0 REFERENCES

1.1 LFTS-06, Work Procedure Requirements

1.2 LFTS-11, Receipt Inspection

1.3 LFTS-12, Test Control

1.4 LFTS-13, Control of Measuring and Test Equipment

1.5 LFTS-16, Nonconformance and Corrective Action

1.6 LFTS-18, Quality Assurance Records

1.7 LFTS-20, Training and Qualifications Requirements for Certification

1.8 ASTM A421-80, Standard Specification for Uncoated Stress-Relieved Wire for Prestressed Concrete

1.9 ASTM A370-86, Standard Methods and Definitions for Mechanical Testing of Steel Products

1.10 Palisades Technical Specifications, Section 4.5

1.11 Palisades Procedure FT-2, "Containment Building Post-Tensioning System"

1.12 Regulatory Guide 1.35, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containments"

2.0 PREREQUISITES

2.1 An approved test request

2.2 Receipt inspection of test material

2.3 Test personnel certified at Level II or higher

2.4 Certified measuring and test equipment (required accuracy $\pm$ 1% except as noted):

2.4.1 Tinius-Olsen machine, CP Co Number 3745-00001

2.4.2 Linear extensiometer, 8 inch minimum gage length, dial indicator direct readout or X-Y recorder

2.4.3 Gage blocks, 6-12 inch, CP Co Number 3745-00069, or equivalent

2.4.4 Calipers

TITLE: PALISADES TENDONS SURVEILLANCE TENSILE TESTING

3.0 PRECAUTIONS

3.1 Normal safety practices as specified by the CP Co Accident Prevention Manual shall be observed.

4.0 LIMITATIONS

4.1 None

5.0 PROCEDURE

5.1 Prepare one (1) 24 inch test sample from each 108 inch specimen provided. Unless otherwise directed, the sample shall be cut from the area deemed most suspect by cursory inspection.

5.2 Identify each sample completely on the reporting form (Attachment B). Cross-reference to the test piece by marking the sample number on both ends.

5.3 Determine the cross-sectional area of each test sample by measuring its diameter at the center to the nearest 0.001 inch. Two diametrically opposite measurements shall be made and averaged.

5.4 Secure the test sample to the upper and lower crossheads of the Tinius-Olsen machine using serrated wedge-type jaws.

5.5 Zero adjust the Tinius-Olsen machine on the 30,000 pound range.

5.6 Position the maximum load indicator.

5.7 Load the test sample to 29,000 psi using the cross-sectional area determined in Section 5.3.

5.8 Attach the extensiometer to the center of the test sample and set up the auxiliary power and recording equipment, if applicable. See Attachment A for sketch of test setup.

5.9 Continue loading the test sample at an unloaded crosshead speed of 1/16 inch/min until achieving 1.0% extension. Record this load as the yield strength.

5.10 Remove the extensiometer and continue loading at an unloaded crosshead speed of 1/2 inch/min until fracture occurs. Record the tensile strength as indicated by the maximum load indicator. Refit the fractured ends, measure total elongation and record in percent.

TITLE: PALISADES TENDONS SURVEILLANCE TENSILE TESTING

5.11 If fracture occurs without achieving the minimum required tensile strength, retest using an adjacent section of the 108 inch specimen.

5.12 If the elongation at fracture is less than the minimum required 4.0% and if the fracture occurs outside of the middle half of the gage length, a retest is justified.

6.0 ACCEPTANCE CRITERIA

6.1 The tensile strength of each specimen tested shall be equal to or greater than 11,780 pounds.

7.0 RECORDS

7.1 Test results shall be reported on an interim basis after completing each wire test. Attachment B is acceptable for this reporting.

7.2 A summary report shall be written, reviewed and approved by the Vibration and Mechanical Projects (V&MP) Supervisor. All information listed below shall be made an integral part of the summary report.

7.2.1 A copy of the Test Request document.

7.2.2 A copy of all Receipt Inspection documents.

7.2.3 A copy of the Test Procedure document.

7.2.4 Certified M&TE identification complete with Company numbers or serial numbers and calibration due dates.

7.2.5 A copy of all data sheets (Attachment B).

7.2.6 A copy of any Deficiency Notification forms issued.

7.3 The original copy of the summary report shall be retained in the V&MP File.

7.4 One copy of the summary report shall be sent to the requesting party.

7.5 One copy of the summary report shall be sent to the General Office Document Control Center.

7.6 Separate copies of the summary report shall be sent to each party on the distribution list.

TITLE: PALISADES TENDONS SURVEILLANCE TENSILE TESTING

8.0 DISPOSITION

8.1 The requesting party shall be notified of any specimen which fails to meet the Acceptance Criteria of Section 6.0. To document this nonconformance, a Deficiency Notification shall be prepared and issued to the requesting party.

8.2 All specimens shall be retained for a period of 60 days prior to disposal, unless otherwise instructed.

CONSUMERS POWER COMPANY

LABORATORY AND FIELD TECHNICAL SERVICES DEPARTMENT

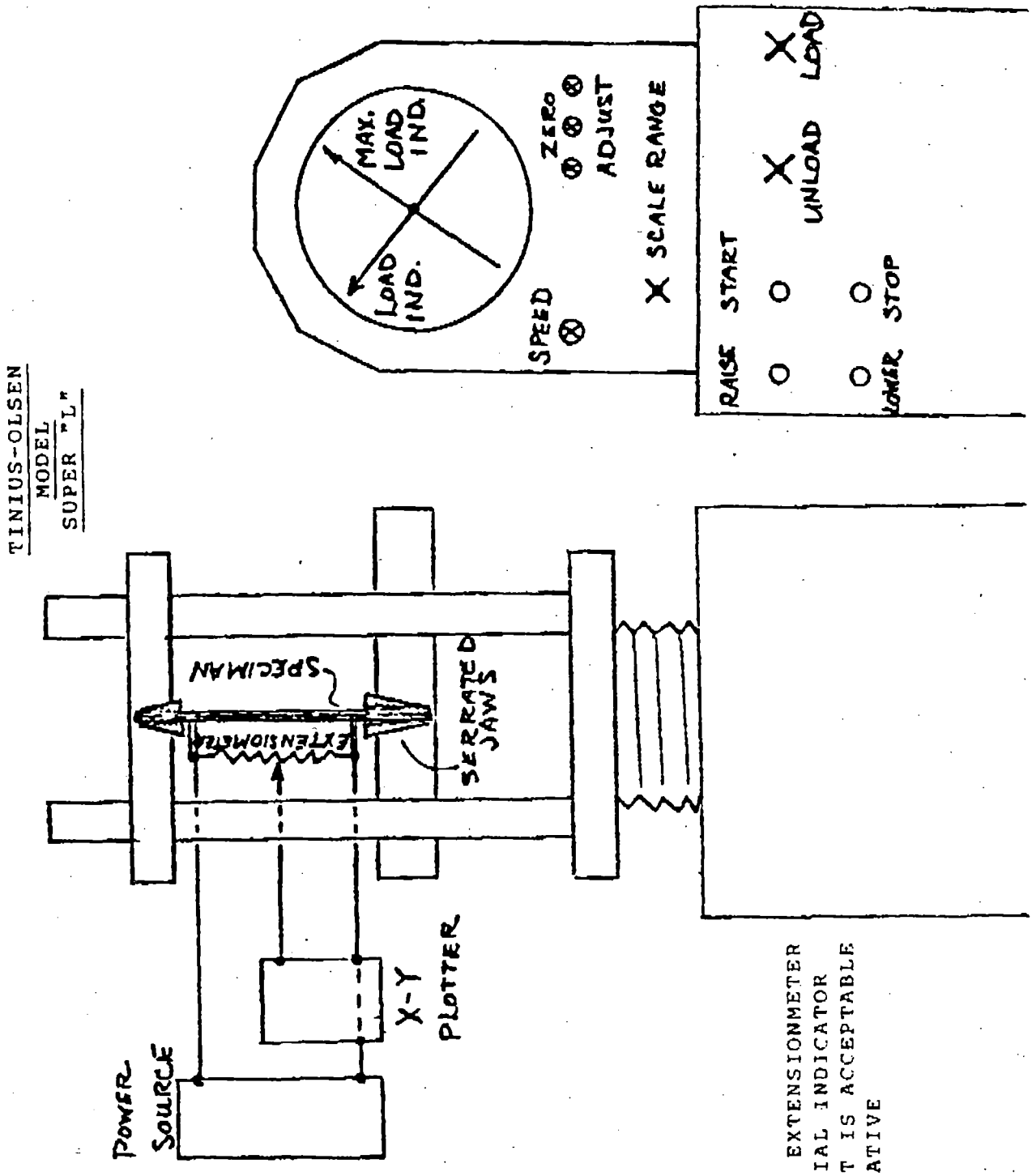
Vibration and Mechanical Projects Section Work Procedure

PROC VMP T-7
ATTACHMENT A
PAGE 1 OF 1
REVISION 0

TITLE: PALISADES TENDONS SURVEILLANCE TENSILE TESTING

PALISADES SURVEILLANCE TENDONS

TENSILE TE ETUP



OTE: EXTENSIONMETER
ITH DIAL INDICATOR
EADOUT IS ACCEPTABLE
LTERNATIVE

DEC 4 '87 9:06 LAB PAGE.04

PALISADES NUCLEAR PLANT
15 YEAR TENDON SURVEILLANCE
WIRE TENSILE TEST DATA

Sample No _____

Tendon I.D. _____

Date Tested _____ By _____

Sample Length (in) _____

Distance from sample center to buttonhead (ft) _____

	Diam. (in)	Init	Yield Strength (lbs)	Init	Tensile Strength (lbs)	Init	Elongation @ Fracture (%)	Init
ASTM A421, Min required	0.248	NA	10,013	NA	11,780	NA	4.0	NA
Actual Tested	_____	____	_____	____	_____	____	_____	____

Equipment: Tinius-Olsen Super "L", CO No 3745,00001, S/N 70066, Due 1/9/88

Approved _____ Date _____

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Consumers Power Company

LABORATORY AND FIELD
TECHNICAL SERVICES DEPARTMENT

TEMPORARY CHANGE REQUEST

Temp Change No G3
(Assigned by the individual controlling the procedure)
Page 1 of 1

Procedure (Identify Procedure Title, Number, Revision and Section)

Palisades Tendons Surveillance Tensile Testing, VMP T-7, Rev 0, Section 5.1

Established Requirement (Use Supplemental Sheets as Required)

Use 24" long test specimens

Proposed Temporary Change (Use Supplemental Sheets as Required)

In accordance with ASTM A-370 for 10 inch gauge length specimens, the total length of each sample shall be between 14-24 inches.

Reason For Change

Difficulty in determining percent elongation of 24 inch specimens due to fracture outside gauged length.

Change Requested By: S/ Cheek Date 10/22/87

Effective Date 10/22/87 (The "Effective Date" is the "Approved by Date" unless otherwise indicated here.)

Expiration Date 9/22/89

Reviewed By _____ Date _____

Reviewed By _____ Date _____

Reviewed By W Ables Rogers Date 10-22-87

Approved By RG Schaaf Date 10-22-87

Approved By W Ables Rogers Date 10-22-87

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CONSUMERS POWER COMPANY

SYSTEM PROTECTION AND
LABORATORY SERVICES DEPARTMENT
CHEMICAL DIVISION
ENGINEERING EVALUATION & TESTING DIVISION
METALLURGICAL DIVISION
WORK REQUEST FORM

NOTE: FILL OUT FORM COMPLETELY PER INSTRUCTIONS ON THE REVERSE SIDE.

1. Requesting Party Information
   Name ROBERT WARD Dept Pal Plt Projects - I S I
   Phone 0167 Location Palisades
2. Project W.O., FERC or Area and Function Number 5158-3002.4
3. Request Date 11/17/86 Required Completion Date 12/31/87
4. Report Distribution (Name, Room Number/Location) ROBERT WARD
5. NUCLEAR PLANT REQUIREMENTS
   NUCLEAR RELATED: Yes X No ___ NUCLEAR SAFETY RELATED: Yes X No ___
   UFI NUMBER: 950.51.04.19
6. Material Description and Origin Palisades Containment Building
   Mfr N/A ID No N/A CPCo Stock No N/A
7. Requested Test, Analysis, Study, etc Provide sheathing filler analysis, provide Tensile strength on wire (tendons) supplied.
8. Reason for Test Palisades Tech Spec Section 4.5 / Reg Guide 1.35
9. Acceptance Criteria As identified in Tech Spec and Reg Guide 1.35
10. Applicable Test Procedures Use Procedure FT-2 Containment Building Post-Tensioning System
11. Reference Documents N/A
12. Material Disposition ~~Dispose~~ Dispose of material after 60 days.

LAB SERVICES USE ONLY

Project Number 8487410705.31 Receipt Date ____ Due Date ____
Project Description CONTAINMENT TENDONS, INSPECTION
Assigned to D.A.D. Est Hours 080.
Recharge Number 5158-3002.4 Requesting Dept I.D. Number ____
Sec Supvr Approval ____ Div/Dept Supvr Approval [signature]

N/A - Strip - 150 HRS / 19 areas. ARCmens

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CONSUMERS POWER COMPANY

LABORATORY AND FIELD
TECHNICAL SERVICES DEPARTMENT
CHEMICAL DIVISION
ENGINEERING EVALUATIONS & METALLURGY DIVISION
VIBRATION & MECHANICAL PROJECTS DIVISION
WORK REQUEST

NOTE: FILL OUT FORM COMPLETELY PER INSTRUCTIONS ON THE REVERSE SIDE.

1. Requesting Party Information
   Name Robert Waved Location Palisades Plt Phone 0167
   Dept I&E Req.Dept. ID Number
2. Project W.O., FERC or Area and Function Number 5158-3002.4
3. Request Date 11/17/87 Required Completion Date
4. Report Distribution (Name, Room Number/Location) R Waved
5. QA Program Requirements
   Is our QA Program required to be applied to the work requested? Yes X No
   Remarks
6. UFI Number(s) 950.51.04.9
7. Material Description and Origin
   Palisades Containment Tendon Rods (5 yr surveillance
8. Mfr N/A ID No N/A CPCo Stock No N/A
9. Requested Test, Analysis, Study, etc
10. Reason for Test Palisades Tech Spec Section 4.5 / Reg Guide 1.35
11. Acceptance Criteria As Identified in Tech Spec and Reg Guide 1.35
12. Applicable Test Procedures P&C Procedure ET-2 Containment Building Post-Tensioning System
13. Reference Documents N/A
14. Material Disposition Dispose material After 60 days

LAB SERVICES USE ONLY

Project Number 1.3.8.7.0.9.0.7.0.0.2.5 Receipt Date 10.23.87 Due Date 10.23.87

Project Description 2 TENDON RODS, TENSILE . . . . RW

Project Leader G.J.C Assigned To GJC, RBP . . . . Est Hours . . . . . .

Recharge Number 5.1.5.8-3.0.0.2..4. . . Requesting Dept ID Number 5.1.5.8

Sec Supvr Approval RJSchaut Div/Dept Supvr Approval WJKlevenhagen

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

APPPENDIX B

Laboratory Analysis of Sheathing Filler

B1

To RWard, Palisades Plant

From DJSnedeker, T-264, Jackson

Date December 14, 1987

CONSUMERS POWER COMPANY

Subject CHEMICAL TEST RESULTS OF PALISADES PLANT TENDON SHEATING FILLER (REVISION 1)

Internal Correspondence

CC

File Index: 528717-500-545
DCC: 950/26*01

In October 1987, thirty-two samples of sheathing filler grease were collected from Palisades Nuclear Plant during in-service inspections of post tensioning system tendons. The grease samples were sent to the Chemical Division of L&FTS and analyzed for the following: water soluble chlorides, nitrates and sulfides; water content and neutralization number. Table 1 list the test results.

File Index: 528717-500-545
DCC: 950/26*01

TABLE I
Chemical Test Results of Palisades Plant Tendon Sheathing Filler

Bench Sample Number	Grease Sample ID	Unit Number	Sample Number	Code Number	Collection Date	Neutralization Number (Total Base) mgKOH/g	Chlorides mg/L	Water Content, Dry Weight %	Nitrates mg/L	Sulfide mg/L
1	Field/Gallery	1	1	V-250	09/24/87	-3.4	0.20	0.8	<0.10	<0.115
2	Field End, Near A Butt	1	1	D2-3	09/30/87	-5.0	0.15	1.2	<0.10	<0.115
3	Shop, Near A Butt	1	1	D1-38	09/29/87	-3.4	0.15	6.4	<0.10	<0.115
4	Field/Gallery	1	1	V-14	09/28/87	-1.7	0.25	0.2	<0.10	0.457
5	Shop End, Top	1	1	V-14	09/22/87	-3.4	0.30	0.4	0.16	0.123
6	Field/Gallery	1	1	V-230	09/24/87	-2.8	0.25	0.6	0.10	<0.115
7	Shop End, Near A Butt	1	1	D1-9	09/25/87	-2.8	0.05	<0.2	<0.10	<0.115
8	Field/Gallery	1	1	V-124	10/02/87	-3.4	0.20	0.8	<0.10	<0.115
9	Shop/Top	1	1	V-230	10/01/87	-2.8	0.40	1.0	<0.10	<0.115
10	Field/Gallery	1	1	V-62	10/02/87	40.3	0.15	0.2	<0.10	<0.115
11	Field/Gallery	1	1	V-86	10/02/87	0.6	<0.05	0.8	<0.10	<0.115
12	Field/Gallery	1	1	V-176	10/02/87	42.6	0.25	0.6	<0.10	<0.115
13	Field/Gallery	1	1	V-306	10/02/87	38.1	0.15	0.2	<0.10	<0.115
14	Field/Gallery	1	1	V-202	10/02/87	37.5	0.05	0.2	<0.10	<0.115
15	Field/Gallery	1	1	V-36	10/02/87	37.5	<0.05	<0.2	<0.10	<0.115
16	Shop/Top	1	1	V-250	10/05/87	-3.9	0.20	4.2	<0.10	0.364
17	Shop End, Near B Butt	1	1	V-124	10/15/87	1.7	0.80	0.4	<0.10	<0.116
18	Field-D Butt	1	1	42-DF	10/13/87	-1.7	0.40	0.4	<0.10	<0.116
19	Field End, Near C Butt	1	1	D1-9	10/09/87	-3.4	0.20	<0.2	0.13	<0.116
20	Field End, Near D Butt	1	1	D1-38	10/09/87	-2.8	0.20	<0.2	0.14	<0.116
21	Shop End, F Butt	1	1	42-DF	10/14/87	-3.9	0.20	0.4	<0.10	<0.116
22	Shop A Butt	1	1	59-AC	10/12/87	-3.4	0.20	<0.2	<0.10	<0.116
23	Shop End A Butt	1	1	77-AC	10/08/87	-3.4	0.20	<0.2	<0.10	<0.116
24	Field C Butt	1	1	77-AC	10/22/87	-5.6	<0.10	<0.2	<0.10	<0.115
25	Shop, Near F Butt	1	1	D2-3	10/17/87	7.8	0.10	2.6	<0.10	<0.115
26	Field, Near C Butt	1	1	D3-18	10/23/87	3.9	<0.10	<0.2	<0.10	<0.115
27	Shop, Near F Butt	1	1	D3-18	10/20/87	6.7	0.10	0.8	0.15	<0.115
28	Field End C Butt	1	1	59-AC	10/20/87	-5.6	<0.10	<0.2	<0.10	<0.115
29	Field B Butt	1	1	65-BF	10/27/87	38.6	<0.20	<0.2	<0.10	<0.115

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File Index: 528717-500-545
DCC: 950/26*01

TABLE I (Contd)
Chemical Test Results of Palisades Plant Tendon Sheathing Filler

Bench Sample Number	Grease Sample ID	Unit Number	Sample Number	Code Number	Collection Date	Neutralization Number (Total Base) mgKOH/g	Chlorides mg/L	Water Content, Dry Weight %	Nitrates mg/L	Sulfide mg/L
30	F Butt Shop	1	1	65-BF	10/28/87	-3.9	<0.20	<0.2	<0.10	<0.115
31	B Buttress	1	1	74-BF	10/28/87	-3.9	<0.20	0.2	<0.10	<0.115
32	F Butt Shop	1	1	74-BF	10/28/87	-3.9	0.20	0.2	<0.10	<0.115

ACCEPTANCE CRITERIA

Water Soluble Chlorides - 10 ppm max
Water Soluble Nitrates - 10 ppm max
Water Soluble Sulfides - 10 ppm max
Water Content - 10% dry weight max
Total Base Number - 0 mgKOH/g max

ANALYTICAL METHODS

CHEM-37, Revision 1

Analyzed by: D J Snedeker
B R White

Reviewed by J. P. Kelly Date 12/14/87

Approved by J. P. Kelly Date 12/14/87

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FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

APPENDIX C

Hydraulic Ram Calibrations

1. STRESSING RAM/JACK - HYDRAULIC

The following procedures will be used as the means of calibrating or determining the are of hydraulic stressing rams.

1. Clean the ram of excessive dirt, oil, or other residue that may unduly affect the calibration accuracy.

2. The load cell or testing machine will be set up so that the loads will be applied in a uniform manner.

3. The ram will be attached to the load cell or testing machine and centered so that the loads will be applied concentrically and uniformly.

4. The ram will be loaded to the target increments shown on Form QA 12.8.G. This will be usually in about 1,000 psi increments for 1,000 ton rams and about 500 psi increments for 1,400 ton rams, but will also vary according to the size of the ram and accuracy requirements.

   1. Gauge pressures shall not be reduced to meet a target increment once a target increment has been exceeded. Readings will be acceptable when they are within 100 psi of the target increment.

   2. A minimum of three runs will be made for each of the required target increments. These runs will occur at about 1/4, 1/2, and 3/4 of the total ram extension for each ram.

   3. The maximum ram pressure has been pre-determined for each size ram to be calibrated and normally will not be exceeded, to avoid damaging the ram.

   4. Readings of the load cell readout and the pressure gauge will be taken at the same time.

5. During ram calibration a calibrated hydraulic pressure gauge having the smallest reading equal to or less than 20 psi or a Heise Electronic Digital pressure indicator will be used. The hydraulic pressure reading to the nearest 20 psi or the actual digital readout will be recorded on the calibration form.

   1. The load cell or testing machine readout will also be entered onto the calibration record to the nearest 0.1 reading.

6. All other information areas of the calibration form will be completely filled in by the calibration technician or the witnessing agent. The form will be signed and dated. The calibration record will then be handed over to the Engineering Section for final computation.

2. COMPUTATION OF RAM AREA

Regression analysis will be used to compute the ram area once initial, raw data information has been documented on the Jack Calibration Record Form. The personnel performing the computation and verification checks will sign and date the Calibration Form and the computer printout.

1. Computation will be performed by the computer. All data entered into the computer will also be printed out. This data, as well as the computer results, will be verified by someone other than the person operating the computer.

2. In the event that the computer is temporarily unavailable, computations may be performed manually observing the same methods being used by the computer. These manual computations will be verified and/or corrected by a computer computation as soon as practical. The manual computations will only be performed by the PSC Engineering Department Personnel.

3. Omitted readings, dropouts, are automatically considered by the computer. An explanation will be found in Appendix 1, Section 8.

3. STRESSING CARD PREPARATION

The regression equation will be used in the preparation of stressing cards for each jack. As a means of providing a uniform calculation area where more than one jack is used in simultaneous stressing operations, the following procedures will be used.

1. The mean ram area of all the jacks being sent to the job site will be calculated.

    1. If any ram in a group varies from the mean ram area by more than ± 2 percent, those rams with variations in excess of the specified tolerance will be recalibrated or separate individual Stressing Cards will be used for that ram.

2. The mean ram area will be encoded into the PSC computer for use in preparation of the Stressing Cards for determining ram area. This will eliminate the need for manual calculation on the Stressing Cards.

    1. Rams that fall into the category noted in Section 3.1.1 above, and are not to be recalibrated, will have separate Stressing Cards prepared based on that individual ram area.

    2. In conditions of urgency, the Stressing Cards may be hand written.

3. It is therefore possible to have more than one set of Stressing Cards for use in the stressing operations. Each set of cards will have the appropriate information documented, following the requirements of the fabrication and quality control procedures.

4. CALIBRATION DOCUMENT DISTRIBUTION

After completion of the verification check of the ram area calculations, the following distribution of the calibration record will be made.

1. The original calibration record will be sent to Quality Control for retention in the calibration file.

   A. Quality Control will prepare a shipping documentation package and submit copies of this package for inclusion in the:

      1. Quality Assurance Contract File.

   B. Copies of the calibration record will be distributed as applicable to:

      1. Contract Management or Coordinators/Project Managers.

      2. Equipment Maintenance, jack number file.

      3. Equipment Maintenance, jack calibration file.

      4. Detailing/Engineering Departments, for preparation of field records.

   C. At least one copy will accompany the jack for shipment to the field. This copy will be retained in the appropriate quality or documentation file on site.

5. OTHER CONTROLS

1. Calibration stickers or any other calibration information may or may not be applied to the rams. The nature of the jacks plus the constant handling make it very difficult, if not impossible, to retain any markings or temporarily attached devices.

2. Calibration frequency and recall control will be found in the appropriate field Field Installation Manual or Procedure. Small rams will be noted in the fabrication Quality Control Manual.

3. Requirements for other conditions mandating recalibration will be specified in the Quality Assurance Manual, Fabrication Quality Control Manual, Field Installation Manual, or special quality procedure.

6. DOCUMENTATION

The calibration of a ram will be documented on the Ram/Jack Calibration Record Form 12.8.G or a similar document. The computation will be in the form of computer printout sheets.

7. APPENDIX

Attached to this procedure are the following documents that will detail the computation of ram force as a function of gauge pressure using Linear Regression, computation of errors, examples and computer program used for calibration:

Appendix 1 - Jack Calibration Using Linear Regression

Appendix 2 - Examples 1 & 2: 2 pages, dated 3-3-81

Appendix 3 - Program Listing: 3 pages, dated 3-3-81

Appendix 4 - Definition of Variables: 2 pages, dated 3-3-81

Appendix 5 - Program Operation & Flow Chart: 5 pages, dated 3-3-81

NOT INCLUDED WITH ANY MANUAL SUBMITTALS

8. DEFINITIONS

1. A ram is defined as the piston part of a force pump. It is the area of the piston which is to be measured as the means of calibration.

2. A jack is defined as the entire force pump with the various attachments that permit it to pull or lift. For Post-Tensioning operations the applied force pulls one end of a tendon.

9. WITNESSING

1. Where the project documents require the witnessing of ram calibration, raw data, PSC will notify the Owner or his agent to perform the witnessing.

   1. If it is acceptable to the Owner, PSC will have an independent inspection/laboratory source, who is acceptable to the Owner, perform the witnessing function.

   2. If it is acceptable to the Owner, PSC will have a PSC Level II QC Inspector perform the witnessing function.

2. Where the project documents do not specify a witnessing requirement, PSC may or may not provide witnessing, at PSC's option.

10. WITNESSING ACTIVITY

The witnessing activity consists of a visual observation of those operations that are associated with the calibration of the ram.

1. The witness shall be a certified Level II Inspector per the requirements of ANSI N45.2.6-1978 from an independent inspection or laboratory source. The Owner shall retain the option of having a certified Level II Inspector from his Organization performing the witnessing function.

2. The witnessing function shall consist of:

   1. Verifying that the information posted on the calibration form is representative of the device being calibrated.

   2. Verifying the readings taken of the load cell readout and pressure gauge at each increment.

   3. Signing the Calibration Record Form in the Witness Area attesting to the accuracy and acceptance of the raw data being entered.

   4. Rejecting any activity not in conformance with the accumulation of the raw calibration data or not in compliance with Section 1 of PSC Calibration Procedure QA 12.8.G.

3. The witness does not verify the actual computation of the ram area as this is a computer controlled function based on the "JKCALNR9 Jack Calibration Program".

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RAM/JACK CALIBRATION RECORD FORM 12.8.G - B

PSC Formerly Inryco Surveillance

PROJECT _____ CONTRACT/PART NO. _____

Jack Description _____ Size _____ Tons Register No. _____

Theoretical Ram Area _____ Max. Pressure _____ PSI

Calibrating Device _____ Register No. _____ Constant _____

Calibrating Gauge _____ Register No. _____ Date _____

Raw Data By _____ WITNESS _____

Mean Ram Area _____ sq.in. K= _____ Kips Agency _____ Date _____

Computed By _____ QC Check _____

Title _____ Date _____ Title _____ Date _____

Target PSI	Gauge Reading PSI	Load Cell Readout	COMMENTS
			RUN _____ POSITION _____
			RUN _____ POSITION _____
			RUN _____ POSITION _____

1. THEORY OF LINEAR REGRESSION

The theory of Linear Regression, which uses the principle of Least Squares to obtain the line of best fit, will be used to determine the relationship between ram force and gauge pressure. The equation of such a line is $y = a + bx$ = prediction ram forces,

where $$b = \frac{\Sigma(xy) - \frac{(\Sigma x)(\Sigma y)}{n}}{\Sigma x^2 - \frac{(\Sigma x)^2}{n}}$$ = slope of the line of best fit (regression line)

$a = \bar{y} - b\bar{x}$ = y - intercept of the line

△1 $\bar{x} = (\Sigma x)/n$ = mean of all x-readings (gauge pressures)

$\bar{y} = (\Sigma y)/n$ = mean of all y-readings (measured ram forces)

n = number of pairs of x, y readings. All readings for all three ram positions will be considered together.

2. COMPUTATION OF RESIDUALS (ERRORS)

For each pair of readings, the residual quantity unexplained by regression, Y res. = $\hat{y} - y$, will be determined. The percentage residual will also be △1 determined as $E_1 = (Y \text{ res}/\hat{y}) \times 100$.

3. OTHER ERRORS

All other errors due to calibration such as interpolation, accuracy and/or repeatability of the Standards certified by the National Bureau of Standards, repeatability of gauges used in calibration or in the field, etc. shall be listed. As a minimum, the following items will be considered.

1. AT JACK CALIBRATION

1. Error in Standard (varies between repeatability of 3 psi to maximum guaranteed value of 10 psi).....use S=(K+.003)ksi or actual value.

2. Interpolation error of calibration gauge against which the jack is compared with the standard.....use (Gc/4)ksi or actual value.

3. Accuracy and repeatability of calibration gauge = 0, since the calibration gauge is adjusted to match the Standard each time.

3. 2. AT GAUGE CALIBRATION

1. Interpolation error in Master.....use (Gm/4)ksi or actual value.
2. Interpolation error in Field Gauge....use (Gf/4)ksi or actual value.
3. Accuracy of Master.....use M=(S/2 + Am)ksi or actual val.
4. Accuracy of Field Gauge.....use F=(M + Af + Am)ksi or act.val.

3. AT FIELD USE OF GAUGE

1. Interpolation error.....use (Gf/4)ksi or actual value.
2. Accuracy.....use E=(M + Af + Am)ksi or act.val.

4. DEFINITIONS

K = Actual calibration value of Standard.

S = Error in Standard (traceable to NBS)

G = Smallest Gauge scale face reading. (Graduations.)

A = Manufactured guaranteed accuracy.

M = Calibrated accuracy of Master Gauge.

F = Calibrated accuracy of Field Gauge.

E = Calibration error in field.

c = Calibration Gauge.

m = Master Gauge.

f = Field Gauge

5. ERROR CALCULATION - EXAMPLE

Let K = .007 ksi; Gc = .010 ksi; Gm = .050 ksi; Gf = .050 ksi;
M = (.010/2 + .025) or .030 ksi; E or F = (.030 + .050 + .025) or .105 ksi
S = (K + .003) or .010 ksi; Am = .025 ksi; Af = .050 ksi.

1. From the above list of values the most probable sum of the "other" errors will be calculated as the square root of the sum of squares. For the stated values $\pm\sqrt{\Sigma\ (\text{errors})^2} = \pm .1534$ ksi

2. The most probable error will be calculated as a percentage of the maximum gauge reading, for example:

   Maximum gauge reading = 10 ksi (10,000 psi)

   The most probable error as a percentage of the maximum gauge reading = $E_2 = \frac{.1534 \times 100}{10} = 1.534\%$

6. COMBINED ERRORS

The residuals from the regression (jack calibration errors) will be combined with the "other" errors to result in the most probable total error.

Most probable total error, $E = \sqrt{E_1^2 + E_2^2}$

7. RECALIBRATION

If the most probable total error, E is greater than 2%, the jack will be recalibrated or more accurate gauges will be used to reduce the value of E to 2% or less. If the jack has any repairs performed that could affect the ram area then that jack will be recalibrated.

8. OMITTED READINGS (Computer Dropouts)

During the calibration of the ram using the Jack Calibration - Linear Regression Program - JKCALNR9 simultaneous readings of the gauge pressure and the load cell indicator are taken. If plotted, these readings would form a scatter diagram from which a "line of best fit" could be drawn. Most of these points will be reasonably close to the "line of best fit", however, one or two may not be close enough and may be considered to be in error. Therefore these "error" points will be automatically discarded by the computer and recomputed as stated in the JKCALNR9 program. If more than one-third of the points are eliminated in this manner, the data is considered unsatisfactory and recalibration performed.

JACK CALIBRATION - LINEAR REGRESSION

PROJECT. V. C. SUMMER
JACK DESCRIPTION.
THEORETICAL RAM AREA.
CALIBRATING DEVICE USED.
CALLIBRATING GAUGE DESCRIPTION.

CONTRACT/PART NO.
TONS REGISTER NO. 9366
MAX PRESSURE. PSI
REGISTER NO. CONSTANT. 1600
REGISTER NO.

INPUT

ACTUAL GAUGE READING (PSI)	LOAD CELL READOUT	COMPUTED FORCE (K)
6100	79.50	1272.000
7010	91.00	1456.000
7900	103.00	1648.000
5990	78.00	1248.000
7030	91.80	1468.800
7700	101.80	1628.800
6080	79.70	1275.200
7010	91.90	1470.400
7740	101.60	1625.600

FOR INFORMATION ONLY

* - - THESE READINGS HAVE BEEN OMITTED FROM THE FINAL CALCULATIONS

ERRORS IN JACK CALIBRATION
ERROR IN STANDARD ********** 0.0100 KSI
INTERPOLATION IN GAUGE ********** 0.0025 KSI
ACCURACY OF GAUGE ********** 0.0000 KSI
ERRORS IN GAUGE CALIBRATION
INTERPOLATION IN MASTER ********** 0.0125 KSI
INTERPOLATION IN FIELD GAUGE **** 0.0125 KSI
ACCURACY OF MASTER ********** 0.0300 KSI
ACCURACY OF FIELD GAUGE ********** 0.1050 KSI
ERRORS IN FIELD USE OF GAUGE
INTERPOLATION ERROR ********** 0.0125 KSI
ACCURACY ERROR ********** 0.1050 KSI

MAXIMUM GAUGE READING USED ********** 10.0000 KSI

***** FORCE(K)= 213.438 X GAUGE READING(KSI) -29.878 *****

CORRELATION = 0.9988227 N/NO = 1.0000 (NOT < .6667)
MAXIMUM ERROR RATIO IN JACK ********** .0088
MAXIMUM ERROR RATIO IN GAUGES ********** .0153
MAXIMUM TOTAL ERROR RATIO ********** .0177

COMPUTED BY. CHECKED BY.

JACK CALIBRATION — LINEAR REGRESSION

[redacted]JECT. MIDLAND
CONTRACT/PART NO. 365-468
[redacted]CK DESCRIPTION. PRESCON (PINE)
TONS
REGISTER NO. 0 1
THEORETICAL RAM AREA.
MAX PRESSURE.
PSI
CALIBRATING DEVICE USED.
REGISTER NO.
CONSTANT. 1600
CALLIBRATING GAUGE DESCRIPTION.
REGISTER NO.

INPUT

ACTUAL GAUGE READING (PSI)	LOAD CELL READOUT	COMPUTED FORCE (K)	
500	17.00	272.000	
1000	24.70	395.200	*
2000	39.60	633.600	*
3000	44.60	713.600	*
4000	60.20	963.200	
5010	75.40	1206.400	
6000	90.60	1449.600	
6600	99.70	1595.200	
500	17.20	275.200	
1000	24.70	395.200	*
2000	39.60	633.600	*
3000	44.90	718.400	*
4000	60.20	963.200	
5000	75.30	1204.800	
6000	90.60	1449.600	
6600	99.60	1593.600	
500	17.00	272.000	
1000	24.60	393.600	*
2000	39.60	633.600	*
3000	44.90	718.400	*
4000	60.20	963.200	
5000	75.20	1203.200	
6020	90.80	1452.800	
6600	99.50	1592.000	

FOR INFORMATION ONLY

* - - THESE READINGS HAVE BEEN OMITTED FROM THE FINAL CALCULATIONS

ERRORS IN JACK CALIBRATION
- ERROR IN STANDARD ********** 0.0100 KSI
- INTERPOLATION IN GAUGE ********** 0.0025 KSI
- ACCURACY OF GAUGE ********** 0.0000 KSI

ERRORS IN GAUGE CALIBRATION
- INTERPOLATION IN MASTER ********* 0.0125 KSI
- INTERPOLATION IN FIELD GAUGE **** 0.0125 KSI
- ACCURACY OF MASTER ********** 0.0300 KSI
- ACCURACY OF FIELD GAUGE ********* 0.1050 KSI

ERRORS IN FIELD USE OF GAUGE
- INTERPOLATION ERROR ********** 0.0125 KSI
- ACCURACY ERROR ********** 0.1050 KSI

MAXIMUM GAUGE READING USED ********** 10.0000 KSI

[redacted]LIBRATION DEVIATIONS ARE NOT
[redacted]THIN 2% --- RECALIBRATE JACK

COMPUTED BY. DW CHECKED BY.

RAM/JACK CALIBRATION RECORD — FORM 12.8.G - B

PSC Formerly Inryco Surveillance

PROJECT PALISADES CONTRACT/PART NO. 7N314

Jack Description PINE Size 750 Tons Register No. 9180

Theoretical Ram Area 150.7 Max. Pressure 5700 PSI

Calibrating Device BREWER Register No. 418 Constant 15956

Calibrating Gauge HEISE Register No. 57-8462 Date DUE: 5-7-90

Raw Data By D Brenan 8/18/87 WITNESS W.E. Nunnenkamp

Mean Ram Area 149.613 sq.in. K= -3.260 Kips Agency Consumers Power Q.A. Date 8-18-87

Computed By D Brenan QC Check [signature] 8-18-87

Title Mgr. Eng. Date 8/18/87 Title MGR, Q.C./PSC Date 8/18/87

Target PSI	Gauge Reading PSI	Load Cell Readout
1000	1073	10.0
1500	1547	14.45
2000	2016	18.75
2500	2526	21.0
3000	3012	28.15
3500	3521	32.60
4000	4013	37.50
4500	4506	41.80
5000	5020	46.6
1000	1010	9.1
1500	1545	14.25
2000	2026	18.85
2500	2550	23.70
3000	3023	28.25
3500	3502	32.75
4000	4014	37.40
4500	4537	42.40
5000	5009	46.70
1000	1004	8.95
1500	1531	14.00
2000	2006	18.45
2500	2521	23.35
3000	3018	28.2
3500	3510	32.8
4000	4007	37.4
4500	4513	42.2
5000	~~5024~~ DB 8/18/87 5024	47.0

COMMENTS

RUN 1 POSITION 2"

TARGET	ACTUAL	READOUT
5700	5713	53.30

RUN 2 POSITION 4"

TARGET	ACTUAL	READOUT
5700	5710	53.40

RUN 3 POSITION 6"

TARGET	ACTUAL	READOUT
5700	5725	53.60

JACK CALIBRATION - LINEAR REGRESSION ANALYSIS

C14

PROJECT PALISADES NUCLEAR PLANT
JACK DESCRIPTION: PINE TONS: 750
THEORETICAL RAM AREA (sq.in): 150.7
CALIBRATING DEVICE USED: BREWER REGISTER NO.: 418
CALIBRATING GAUGE DESCRIPTION: HEISE

CONTRACT NO. 7N314
REGISTER NO.: 9180
MAX PRESSURE (psi):
CONSTANT= 15956
REGISTER NO.: S7-846

.....INPUT.....		
TUAL GAUGE READING (psi)	LOAD CELL READOUT	COMPUTED FORCE (k)
1073	10.00	159.560
1547	14.45	230.564
2016	18.75	299.175
2526	21.00	335.076*
3012	28.15	449.161
3521	32.60	520.166
4013	37.50	598.350
4506	41.80	666.961
5020	46.60	743.550
5713	53.30	850.455
1010	9.10	145.200
1545	14.25	227.373
2026	18.85	300.771
2550	23.70	378.157
3023	28.25	450.757
3502	32.75	522.559
4014	37.40	596.754
4537	42.40	676.534
5009	46.70	745.145
5710	53.40	852.050
1004	8.95	142.806*
1531	14.00	223.384
2006	18.45	294.388
2521	23.35	372.573
3018	28.20	449.959
3510	32.80	523.357
4007	37.40	596.754
4513	42.20	673.343
5024	47.00	749.932
5725	53.60	855.242

* - - THESE READINGS HAVE BEEN OMITTED FROM THE FINAL COMPUTATIONS

ERRORS IN JACK CALIBRATION
- ERROR IN STANDARD ..... 0.0100 ksi
- INTERPOLATION IN GAUGE ..... 0.0000 ksi
- ACCURACY OF GAUGE ..... 0.0000 ksi

ERRORS IN GAUGE CALIBRATION
- INTERPOLATION IN MASTER ..... 0.0000 ksi
- INTERPOLATION IN FIELD GAUGE .... 0.0050 ksi
- ACCURACY OF MASTER ..... 0.0100 ksi
- ACCURACY OF FIELD GAUGE ..... 0.0275 ksi

ERRORS IN FIELD USE OF GAUGE
- INTERPOLATION ERROR ..... 0.0050 ksi
- ACCURACY ERROR ..... 0.0275 ksi

MAXIMUM GAUGE READING USED ..... 5.7250 ksi

** FORCE (k) = 149.613 (sq.in.) X GAUGE READING (ksi) -3.260 (k) **

CORRELATION = 0.99995909 N/NO= 0.9333 (NOT < .66667)
MAXIMUM ERROR RATIO IN JACK ..... .0179
MAXIMUM ERROR RATIO IN GAUGE ..... .0073
MAXIMUM TOTAL ERROR RATIO ..... .0194

RAM/JACK CALIBRATION RECORD — FORM 12.8.G - B

PSC Formerly Inryco Surveillance

PROJECT PALISADES CONTRACT/PART NO. 7N314

Jack Description PINE Size 750 Tons Register No. 9184

Theoretical Ram Area 150.7 Max. Pressure 5700 PSI

Calibrating Device BREWER Register No. 418 Constant 15956

Calibrating Gauge HEISE Register No. 57-8462 Date DUE: 5-7-90

Raw Data By D Bronars 8.18.87 WITNESS C Brooks

Mean Ram Area 149.747 sq.in. K= 5.762 Kips Agency MGR, Q.C./PSC Date 8/18/87

Computed By D Bronars QC Check H. F. Hendrickson

Title Mgr. Eng Date 8.18.87 Title MGR., Q.A./PSC. Date 8/19/87

Target PSI	Gauge Reading PSI	Load Cell Readout
1000	1047	9.40
1500	1532	14.05
2000	2039	18.70
2500	2569	23.65
3000	3002	27.80
3500	~~4002~~ 3502 DB 8.18.87	32.55
4000	~~37~~ 4023 DB 8.18.87	37.35
4500	4500	41.85
5000	5009	46.15
1000	1022	9.25
1500	1541	14.10
2000	2009	18.60
2500	2513	23.20
3000	3035	28.25
3500	3505	32.60
4000	4011	37.15
4500	4517	42.15
5000	5010	46.70
1000	1049	9.55
1500	1525	14.00
2000	2037	18.80
2500	2526	23.00
3000	3007	28.05
3500	3521	32.75
4000	4010	37.10
4500	4514	42.30
5000	5026	46.80

COMMENTS

RUN 1 POSITION 2"

TARGET	ACTUAL	READOUT
5700	5722	53.50

RUN 2 POSITION 4"

TARGET	ACTUAL	READOUT
5700	5727	53.35

RUN 3 POSITION 6"

TARGET	ACTUAL	READOUT
5700	5707	53.30

PROJECT PALISADES NUCLEAR PLANT — CONTRACT NO. 7N314
JACK DESCRIPTION: PINE — TONS: 750 — REGISTER NO.: 9184
THEORETICAL RAM AREA (sq.in): 150.7 — MAX PRESSURE (psi):
CALIBRATING DEVICE USED: BREWER — REGISTER NO.: 418 — CONSTANT= 15956
CALIBRATING GAUGE DESCRIPTION: HEISE — REGISTER NO.: S7-846

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.....INPUT..... ACTUAL GAUGE READING (psi)	LOAD CELL READOUT	COMPUTED FORCE (k)
1047	9.40	149.986
1532	14.05	224.182
2039	18.70	298.377
2569	23.65	377.359
3002	27.80	443.577
3502	32.55	519.368
4023	37.35	595.957
4500	41.85	667.759
5009	46.15	736.369
5722	53.50	853.646
1022	9.25	147.593
1541	14.10	224.980
2009	18.60	296.782
2513	23.20	370.179
3035	28.25	450.757
3505	32.60	520.166
4011	37.15	592.765
4517	42.15	672.545
5010	46.70	745.145
5727	53.35	851.253
1049	9.55	152.380
1525	14.00	223.384
2037	18.80	299.973
2526	23.00	366.988
3007	28.05	447.566
3521	32.75	522.559
4010	37.10	591.968
4514	42.30	674.939
5026	46.80	746.741
5707	53.30	850.455

* - - THESE READINGS HAVE BEEN OMITTED FROM THE FINAL COMPUTATIONS

ERRORS IN JACK CALIBRATION	
ERROR IN STANDARD	0.0100 ksi
INTERPOLATION IN GAUGE	0.0000 ksi
ACCURACY OF GAUGE	0.0000 ksi
ERRORS IN GAUGE CALIBRATION	
INTERPOLATION IN MASTER	0.0000 ksi
INTERPOLATION IN FIELD GAUGE	0.0050 ksi
ACCURACY OF MASTER	0.0100 ksi
ACCURACY OF FIELD GAUGE	0.0275 ksi
ERRORS IN FIELD USE OF GAUGE	
INTERPOLATION ERROR	0.0050 ksi
ACCURACY ERROR	0.0275 ksi
MAXIMUM GAUGE READING USED	5.7270 ksi

** FORCE (k) = 149.747 (sq.in.) X GAUGE READING (ksi) -5.762 (k) **

CORRELATION = 0.99994124 N/NO= 1.0000 (NOT < .66667)
MAXIMUM ERROR RATIO IN JACK ..... .0148
MAXIMUM ERROR RATIO IN GAUGE ..... .0073
MAXIMUM TOTAL ERROR RATIO ..... .0165

COMPUTED BY: DRamos DATE: 8-18-87 CHECKED BY: [illegible] DA: 8-24-87

RAM/JACK CALIBRATION RECORD FORM 12.8.G - B

PSC Formerly Inryco Surveillance

PROJECT PALISADES CONTRACT/PART NO. 7N314

Jack Description PINE Size 750 Tons Register No. 9185

Theoretical Ram Area 150.7 Max. Pressure 5700 PSI

Calibrating Device BREWER Register No. 418 Constant 15956

Calibrating Gauge HEISE Register No. S7-8462 Date DUE: 5-7-90

Raw Data By D Bronars 8.18.87 WITNESS

Mean Ram Area 149.604 sq.in. K= 1.478 Kips Agency MGR, Q.C./PSC Date 8/18/87

Computed By D Bronars QC Check H.F. Hendrickson

Title Mgr. Eng. Date 8.18.87 Title MGR., Q.A./PSC Date 8/19/87

Target PSI	Gauge Reading PSI	Load Cell Readout
1000	1008	9.4
1500	1500	13.9
2000	2018	18.85
2500	2507	23.40
3000	3036	28.50
3500	3528	33.10
4000	4010	37.60
4500	4506	41.95
5000	5018	46.95
1000	1036	9.7
1500	1516	14.05
2000	2025	18.95
2500	2554	23.80
3000	3041	28.55
3500	3501	32.40
4000	4009	37.55
4500	4505	42.45
5000	5014	47.00
1000	1040	9.70
1500	1533	14.10
2000	2007	18.6
2500	2505	23.4
3000	3026	28.4
3500	3555	33.4
4000	4028	37.85
4500	4511	41.70
5000	5011	46.85

COMMENTS

RUN 1 POSITION 2"

TARGET	ACTUAL	READOUT
5700	5752	53.80

RUN 2 POSITION 4"

TARGET	ACTUAL	READOUT
5700	5714	53.70

RUN 3 POSITION 6"

TARGET	ACTUAL	READOUT
5700	5725	53.40

JACK CALIBRATION - LINEAR REGRESSION ANALYSIS

PROJECT PALISADES NUCLEAR PLANT — CONTRACT NO. 7N314

JACK DESCRIPTION: PINE — TONS: 750 — REGISTER NO.: 9185

THEORETICAL RAM AREA (sq.in): 150.7 — MAX PRESSURE (psi):

CALIBRATING DEVICE USED: BREWER — REGISTER NO.: 418 — CONSTANT= 15956

CALIBRATING GAUGE DESCRIPTION: HEISE — REGISTER NO.: S7-846

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.....INPUT.....		
ACTUAL GAUGE READING (psi)	LOAD CELL READOUT	COMPUTED FORCE (k)
1008	9.40	149.986
1500	13.90	221.788
2018	18.85	300.771
2507	23.40	373.370
3036	28.50	454.746
3528	33.10	528.144
4010	37.60	599.946
4506	41.95	669.354
5018	46.95	749.134
5752	53.80	858.433
1036	9.70	154.773
1516	14.05	224.182
2025	18.95	302.366
2554	23.80	379.753
3041	28.55	455.544
3501	32.40	516.974
4009	37.55	599.148
4505	42.45	677.332
5014	47.00	749.932
5714	53.70	856.837
1040	9.70	154.773
1533	14.10	224.980
2007	18.60	296.782
2505	23.40	373.370
3026	28.40	453.150
3555	33.40	532.930
4028	37.85	603.935
4511	41.70	665.365
5011	46.85	747.539
5725	53.40	852.050

* - - THESE READINGS HAVE BEEN OMITTED FROM THE FINAL COMPUTATIONS

ERRORS IN JACK CALIBRATION	
ERROR IN STANDARD	0.0100 ksi
INTERPOLATION IN GAUGE	0.0000 ksi
ACCURACY OF GAUGE	0.0000 ksi
ERRORS IN GAUGE CALIBRATION	
INTERPOLATION IN MASTER	0.0000 ksi
INTERPOLATION IN FIELD GAUGE	0.0050 ksi
ACCURACY OF MASTER	0.0100 ksi
ACCURACY OF FIELD GAUGE	0.0275 ksi
ERRORS IN FIELD USE OF GAUGE	
INTERPOLATION ERROR	0.0050 ksi
ACCURACY ERROR	0.0275 ksi
MAXIMUM GAUGE READING USED	5.7520 ksi

** FORCE (k) = 149.604 (sq.in.) X GAUGE READING (ksi) -1.478 (k) **

CORRELATION = 0.99992991 N/NO= 1.0000 (NOT < .66667)

MAXIMUM ERROR RATIO IN JACK ..... .0127

MAXIMUM ERROR RATIO IN GAUGE ..... .0073

MAXIMUM TOTAL ERROR RATIO ..... .0146

8-24-87

RAM/JACK CALIBRATION RECORD — FORM 12.8.G - B

PSC Formerly Inryco Surveillance

PROJECT PALISADES CONTRACT/PART NO. 7N314

Jack Description PINE Size 750 Tons Register No. 9180

Theoretical Ram Area 150.7 Max. Pressure 5700 PSI

Calibrating Device BREWER Register No. 418 Constant 15956

Calibrating Gauge HEISE DIGITAL Register No. 57-8462 Date 5/7/90

Raw Data By D Brenan 12/8/87 WITNESS Robert Ward

Mean Ram Area 150.005 sq.in. K= 3.219 Kips Agency Inryco for B. Date 12/8/87

Computed By D Brenan QC Check [signature]

Title Mgr Eng Date 12/8/87 Title MGR, Q.C. / PSC Date 12/8/87

Target PSI	Gauge Reading PSI	Load Cell Readout
1000	1044	9.55
1500	1545	14.2
2000	2008	18.6
2500	2534	23.5
3000	3003	27.9
3500	3517	32.7
4000	4021	37.45
4500	4517	42.15
5000	5030	46.9
1000	~~10~~ DB 12/18/87 1023	9.15
1500	1520	14.2
2000	2001	18.7
2500	2536	23.65
3000	3014	28.20
3500	3517	32.90
4000	4008	37.5
4500	4535	42.55
5000	5010	46.95
1000	1057	9.4
1500	1540	14.4
2000	2013	18.8
2500	2554	23.85
3000	3010	28.15
3500	3513	32.85
4000	4024	37.70
4500	4537	42.5
5000	5010	47.0

COMMENTS

RUN 1 POSITION 1 3/4"

TARGET	ACTUAL	READOUT
5700	5722	53.5

RUN 2 POSITION 4"

TARGET	ACTUAL	READOUT
5700	5727	53.7

RUN 3 POSITION 6 1/4"

TARGET	ACTUAL	READOUT
5700	5712	53.6

JACK CALIBRATION - LINEAR REGRESSION ANALYSIS

PROJECT PALISADES NUCLEAR PLANT — CONTRACT NO. 7N314

JACK DESCRIPTION: PINE — TONS: 750 — REGISTER NO.: 9180

THEORETICAL RAM AREA (sq.in): 150.7 — MAX PRESSURE (psi):

CALIBRATING DEVICE USED: BREWER — REGISTER NO.: 418 — CONSTANT= 15956

CALIBRATING GAUGE DESCRIPTION: HEISE DIGITAL — REGISTER NO.: S7-846

C20

.....INPUT.....		
ACTUAL GAUGE READING (psi)	LOAD CELL READOUT	COMPUTED FORCE (k)
1044	9.55	152.380
1545	14.20	226.575
2008	18.60	296.782
2534	23.50	374.966
3003	27.90	445.172
3517	32.70	521.761
4021	37.45	597.552
4517	42.15	672.545
5030	46.90	748.336
5722	53.50	853.646
1023	9.15	145.997*
1520	14.20	226.575
2001	18.70	293.377
2536	23.65	377.359
3014	28.20	449.959
3517	32.90	524.952
4008	37.50	598.350
4535	42.55	678.929
5010	46.95	749.134
5727	53.70	856.837
1057	9.40	149.986*
1540	14.40	229.766
2013	18.80	299.973
2554	23.85	380.551
3010	28.15	449.161
3513	32.85	524.155
4024	37.70	601.541
4537	42.50	678.130
5010	47.00	749.932
5712	53.60	855.242

* - - THESE READINGS HAVE BEEN OMITTED FROM THE FINAL COMPUTATIONS

ERRORS IN JACK CALIBRATION	
ERROR IN STANDARD	0.0100 ksi
INTERPOLATION IN GAUGE	0.0000 ksi
ACCURACY OF GAUGE	0.0000 ksi
ERRORS IN GAUGE CALIBRATION	
INTERPOLATION IN MASTER	0.0000 ksi
INTERPOLATION IN FIELD GAUGE	0.0050 ksi
ACCURACY OF MASTER	0.0100 ksi
ACCURACY OF FIELD GAUGE	0.0275 ksi
ERRORS IN FIELD USE OF GAUGE	
INTERPOLATION ERROR	0.0050 ksi
ACCURACY ERROR	0.0275 ksi
MAXIMUM GAUGE READING USED	5.7270 ksi

** FORCE (k) = 150.005 (sq.in.) X GAUGE READING (ksi) -3.219 (k) **

CORRELATION = 0.99997228 N/NO= 0.9333 (NOT < .66667)

MAXIMUM ERROR RATIO IN JACK ..... .0087

MAXIMUM ERROR RATIO IN GAUGE ..... .0073

MAXIMUM TOTAL ERROR RATIO ..... .0114

COMPUTED BY D Bi... DATE 12/9/92 CHECKED BY Ronald Hough

RAM/JACK CALIBRATION RECORD — FORM 12.8.G - B

PSC Formerly Inryco Surveillance

PROJECT PALISADES CONTRACT/PART NO. 7N314

Jack Description PINE Size 750 Tons Register No. 9184

Theoretical Ram Area 150.7 Max. Pressure 5700 PSI

Calibrating Device BREWER Register No. 418 Constant 15956

Calibrating Gauge HEISE DIGITAL Register No. 57-8462 Date 5/7/90

Raw Data By D Brenan 12/8/87 WITNESS A Brooks WAIVED BY: CP+L

Mean Ram Area 150.032 sq.in. K= 3.292 Kips Agency MGR, Q.C./PSC Date 12/8/87

Computed By D Brenan QC Check H.F. Hendrickson

Title Mgr. Eng Date 12/8/87 Title MGR., Q.A./PSC Date 1-6-88

Target PSI	Gauge Reading PSI	Load Cell Readout
1000	1060	9.85
1500	1563	14.50
2000	2018	18.65
2500	2530	23.50
3000	3047	28.40
3500	3536	32.95
4000	4031	37.65
4500	4516	42.25
5000	5014	46.95
1000	1066	9.90
1500	1564	14.55
2000	2022	18.85
2500	2501	23.25
3000	3044	28.3
3500	3552	33.15
4000	4024	12/8/87 DB 37.6
4500	4535	42.45
5000	5009	46.90
1000	1048	9.75
1500	1512	14.0
2000	2021	18.8
2500	2513	23.4
3000	3030	28.25
3500	3516	32.85
4000	4030	37.75
4500	4507	42.25
5000	5013	47.0

COMMENTS

RUN 1 POSITION 2"

TARGET	ACTUAL	READOUT
5700	5746	53.80

RUN 2 POSITION 4"

TARGET	ACTUAL	READOUT
5700	5730	53.70

RUN 3 POSITION 6"

TARGET	ACTUAL	READOUT
5700	~~57.40~~ 5740 DB 12/8/87	53.85

JACK CALIBRATION - LINEAR REGRESSION ANALYSIS

PROJECT PALISADES NUCLEAR PLANT — CONTRACT NO. 7N314
JACK DESCRIPTION: PINE — TONS: 750 — REGISTER NO.: 9184
THEORETICAL RAM AREA (sq.in): 150.7 — MAX PRESSURE (psi):
CALIBRATING DEVICE USED: BREWER — REGISTER NO.: 418 — CONSTANT= 15956
CALIBRATING GAUGE DESCRIPTION: HEISE DIGITAL — REGISTER NO.: S7-846

C22

.....INPUT.....		
TUAL GAUGE READING (psi)	LOAD CELL READOUT	COMPUTED FORCE (k)
1060	9.85	157.167
1563	14.50	231.362
2018	18.65	297.579
2530	23.50	374.966
3047	28.40	453.150
3536	32.95	525.750
4031	37.65	600.743
4516	42.25	674.141
5014	46.95	749.134
5746	53.80	858.433
1066	9.90	157.964
1564	14.55	232.160
2022	18.85	300.771
2501	23.25	370.977
3044	28.30	451.555
3552	33.15	528.941
4024	37.60	599.946
4535	42.45	677.332
5009	46.90	748.336
5730	53.70	855.837
1048	9.75	155.571
1512	14.00	223.384
2021	18.80	299.973
2513	23.40	373.370
3030	28.25	450.757
3516	32.85	524.155
4030	37.75	602.339
4507	42.25	674.141
5013	47.00	749.932
5740	53.85	859.231

* - - THESE READINGS HAVE BEEN OMITTED FROM THE FINAL COMPUTATIONS

ERRORS IN JACK CALIBRATION
- ERROR IN STANDARD ..... 0.0100 ksi
- INTERPOLATION IN GAUGE ..... 0.0000 ksi
- ACCURACY OF GAUGE ..... 0.0000 ksi

ERRORS IN GAUGE CALIBRATION
- INTERPOLATION IN MASTER ..... 0.0000 ksi
- INTERPOLATION IN FIELD GAUGE .... 0.0050 ksi
- ACCURACY OF MASTER ..... 0.0100 ksi
- ACCURACY OF FIELD GAUGE ..... 0.0275 ksi

ERRORS IN FIELD USE OF GAUGE
- INTERPOLATION ERROR ..... 0.0050 ksi
- ACCURACY ERROR ..... 0.0275 ksi

MAXIMUM GAUGE READING USED ..... 5.7460 ksi

** FORCE (k) = 150.032 (sq.in.) X GAUGE READING (ksi) -3.292 (k) **

CORRELATION = 0.99999046 N/NO= 1.0000 (NOT < .66667)
MAXIMUM ERROR RATIO IN JACK ..... .0106
MAXIMUM ERROR RATIO IN GAUGE ..... .0073
MAXIMUM TOTAL ERROR RATIO ..... .0129

COMPUTED BY D Brennan DATE 12/18/87 CHECKED BY R. M Klimek 12-15-87

RAM/JACK CALIBRATION RECORD FORM 12.8.G - B

PSC Formerly Inryco Surveillance

PROJECT PALISADES CONTRACT/PART NO. 7N314

Jack Description PINE Size 750 Tons Register No. 9185

Theoretical Ram Area 150.7 Max. Pressure 5700 PSI

Calibrating Device BREWER Register No. 418 Constant 15956

Calibrating Gauge HELSE DIGITAL Register No. 57-8462 Date 5/7/90

Raw Data By D Bronars 12/8/87 WITNESS Robert Ward

Mean Ram Area 150.563 sq.in. K= -3.623 Kips Agency Consumers Power Date 12/8/87

Computed By D Bronars QC Check

Title Mgr. Eng Date 12/8/87 Title MGR. Q.C./PSC Date 12/8/87

Target PSI	Gauge Reading PSI	Load Cell Readout
1000	1077	10.0
1500	1527	14.2
2000	2076	19.3
2500	2515	23.45
3000	3007	28.05
3500	3516	32.85
4000	4009	37.55
4500	4510	42.30
5000	5012	47.0
1000	1070	9.9
1500	1548	14.35
2000	2017	18.85
2500	2543	23.80
3000	3030	28.35
3500	3536	33.90
4000	4034	37.85
4500	4525	42.50
5000	5030	47.25
1000	1053	9.75
1500	1522	14.15
2000	2050	19.10
2500	2562	23.95
3000	3015	28.25
3500	3509	32.90
4000	4030	37.80
4500	4535	42.6
5000	5035	47.35

COMMENTS

RUN 1 POSITION 2"

TARGET	ACTUAL	READOUT
5700	5728	53.80

RUN 2 POSITION 4"

TARGET	ACTUAL	READOUT
5700	5736	53.95

RUN 3 POSITION 6"

TARGET	ACTUAL	READOUT
5700	5730	53.9

JACK CALIBRATION - LINEAR REGRESSION ANALYSIS

PROJECT PALISADES NUCLEAR PLANT — CONTRACT NO. 7N314
JACK DESCRIPTION: PINE — TONS: 750 — REGISTER NO.: 9185
THEORETICAL RAM AREA (sq.in): 150.7 — MAX PRESSURE (psi):
CALIBRATING DEVICE USED: BREWER — REGISTER NO.: 418 — CONSTANT= 15956
CALIBRATING GAUGE DESCRIPTION: HEISE DIGITAL — REGISTER NO.: S7-846

C24

.....INPUT.....		
ACTUAL GAUGE READING (psi)	LOAD CELL READOUT	COMPUTED FORCE (k)
1077	10.00	159.560
1527	14.20	226.575
2076	19.30	307.951
2515	23.45	374.168
3007	28.05	447.556
3516	32.85	524.155
4009	37.55	599.148
4510	42.30	674.939
5012	47.00	749.932
5728	53.80	858.433
1070	9.90	157.964
1548	14.35	228.969
2017	18.85	300.771
2543	23.80	379.753
3030	28.35	452.353
3536	33.90	540.908*
4034	37.85	603.935
4525	42.50	678.130
5030	47.25	753.921
5736	53.95	860.826
1053	9.75	155.571
1522	14.15	225.777
2050	19.10	304.760
2562	23.95	382.146
3015	28.25	450.757
3509	32.90	524.952
4030	37.80	603.137
4535	42.60	679.726
5035	47.35	755.517
5730	53.90	860.028

* - - THESE READINGS HAVE BEEN OMITTED FROM THE FINAL COMPUTATIONS

ERRORS IN JACK CALIBRATION
- ERROR IN STANDARD ..... 0.0100 ksi
- INTERPOLATION IN GAUGE ..... 0.0000 ksi
- ACCURACY OF GAUGE ..... 0.0000 ksi

ERRORS IN GAUGE CALIBRATION
- INTERPOLATION IN MASTER ..... 0.0000 ksi
- INTERPOLATION IN FIELD GAUGE .... 0.0050 ksi
- ACCURACY OF MASTER ..... 0.0100 ksi
- ACCURACY OF FIELD GAUGE ..... 0.0275 ksi

ERRORS IN FIELD USE OF GAUGE
- INTERPOLATION ERROR ..... 0.0050 ksi
- ACCURACY ERROR ..... 0.0275 ksi

MAXIMUM GAUGE READING USED ..... 5.7360 ksi

** FORCE (k) = 150.563 (sq.in.) X GAUGE READING (ksi) -3.623 (k) **

CORRELATION = 0.99999492 — N/NO= 0.9667 (NOT < .66667)
MAXIMUM ERROR RATIO IN JACK ..... .0065
MAXIMUM ERROR RATIO IN GAUGE ..... .0073
MAXIMUM TOTAL ERROR RATIO ..... .0098

COMPUTED BY D. Brewer — DATE 12/19/83 — CHECKED BY Ronald Hough

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

APPENDIX D

Surveillance Procedures

D1

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

SURVEILLANCE PURPOSE

Prepared by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bonasso Title Mgr, Engineering Date 5.15.87

1. PURPOSE

The purpose of the Surveillance Quality Control Manual is to provide those procedures that will be necessary to perform the In-Service Inspection (Surveillance) of the Post-Tensioning System Tendons for Consumers Power Company's Palisades Nuclear Power Plant.

1. 1. These procedures shall be used for the required Inspections, Testing and Evaluation of the selected tendons as shown in PSC Procedure SQ 2.0.

1. 2. In addition, each procedure provides as necessary, the reporting responsibilities for PSC Personnel for notification of the Owner in writing of unacceptable conditions that may have been detected as a result of the Inspections, Tests or Evaluations.

2. It shall be the responsibility of the Owner to evaluate the seriousness of the unacceptable condition and to formulate, with the assistance of the PSC Engineering Department, a means of corrective action.

2. 1. It shall further be the Owner's responsibility to draft and submit a formal report to the United States Nuclear Regulatory Commission describing the unacceptable condition and the required corrective action.

3. This Surveillance Quality Control Manual has been developed using Regulatory Guide 1.35 Proposed Revision 3 and the latest state-of-the-art Engineering, Construction and Quality Assurance techniques.

D3

PSC PROCEDURE SQ 2.0
SCOPE
MAY 20, 1987
Page 1 of 2
REVISION 0
REVISION 1, 8-14-87
△2 REVISION 2, 8-24-87

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

SURVEILLANCE SCOPE

△2 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-24-87

△2 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-24-87

△2 Approved by D Bronaugh Title Mgr, Eng. Date 8-24-87

1. SCOPE

(2) 1. 1. The required Inspections, Testing and evaluations of the Post-Tensioning System of the Palisades Nuclear Power Plant shall be performed for the tendons and types of activities shown below.

PROCEDURE NUMBERS

Tendon No.	Visual Inspection	Monitor Forces	Deten/Reten Tendon	Remove Wire	Test Wire	Common Tendon
	SQ 6.0 SQ 6.1 SQ 7.0 SQ 8.0 SQ 8.1 SQ 8.2 SQ 8.3	SQ 9.0	SQ 10.0 SQ 10.1 SQ 10.5 SQ 11.0	SQ 10.2	SQ 10.3	*
D1-09	X	X	NO	NO	NO	
D1-38	X	X	NO	NO	NO	
D2-03	X	X	NO	NO	NO	
D3-18	X	X	X	X	X	
V-14	X	X	NO	NO	NO	
V-124	X	X	X	X	X	
V-230	X	X	NO	NO	NO	
V-250	X	X	NO	NO	NO	
H-59AC	X	X	NO	NO	NO	
H-77AC	X	X	NO	NO	NO	
H-65BF	X	X	NO	NO	NO	
H-74BF	X	X	X	X	X	
H-42DF	X	X	NO	NO	NO	

1. 2. EXPLANATION

1. 2. 1. "X" means the tendon shown shall be Inspected for the stated requirements during this Surveillance.

1. 2. 2. "NO" means that Inspection is not required for that tendon.

1. 2. 3. In addition to the above, a visual inspection of all grease cans for grease or water leakage, and damage to the can will be performed and any observations are to be reported to the Owner.

1. 2. 4. "*" Common Tendons to be selected upon completion of the Surveillance.

(2) 8-24-87 ADD INFO.

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

CONSTRUCTION EQUIPMENT LIST

Prepared by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bronaas Title Mgr, Engineering Date 5.15.87

1. EQUIPMENT

The following list of equipment should be availabe for use during the Surveillance operations. This list is only intended as a guide.

1. 1. Miscellaneous shackles, hooks, chain hoists, Come-Alongs, hoisting slings.

1. 2. Banding equipment.

1. 3. Communications equipment - Walkie Talkies or Sound Powered Phones.

1. 4. Buckets, pails, rags, brushes.

1. 5. Miscellaneous Tools, hammers, wrenches, ratchets, sockets, bundling wire, screw drivers, pliers, heavy duty wire cutters, files, pry bars, etc.

1. 6. Miscellaneous nuts, bolts, pins, washers, wooden blocks, rags, lights, extension cords, tape, etc.

1. 7. Hydraulic pumps for rams.

1. 8. Platforms, scaffolding, ladders, man-lifts, cable, ropes, etc.

1. 9. Buttonheader.

1. 10. Plastic Bags, Plastic Sheeting (Visqueen).

1. 11. Wire coiler.

1. 12. Band or Drum heaters.

1. 13. Fluid Pump for drum.

1. 14. Empty 55 Gallon drums.

1. 15. Stressing Shims.

1. 16. Grease can gaskets.

1. 17. 55 Gallon drums of Viscosity Oil Visconorust 2090 P4 (Certified).

1. 18. 55 Gallon drums of Viscosity Oil Viscor #16 Solvent (Cerfified).

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

QUALITY CONTROL EQUIPMENT LIST

Prepared by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bronaus Title Mgr, Engineering Date 5.15.87

1. INSPECTION EQUIPMENT

The following items shall be required for the Inspections stated in each procedure. Each piece of testing and measuring equipment shall be in a currently calibrated condition. Items in excess of those shown as being required for that procedure and being used during the Inspections of that procedure shall be documented on the appropriate Data Sheet where they were used, for Name, Identification and Recalibration Date.

1. 1. SQ 6.0

1. 1. 1. Surface Thermometer.

1. 1. 2. Pocket-Probe Thermometer.

1. 1. 3. Sample of new 2090 P4 grease in a closed container (for Color Match).

1. 2. SQ 7.0

1. 2. 1. Suitable quantities of clean, unused 1 quart containers; plastic or steel.

1. 3. SQ 8.0

1. 3. 1. Magnifying Glasses with suitable illumination.

1. 3. 2. Optical Comparator with 0.005" Measuring Reticle.

1. 3. 3. Steel Ruler, Steel Tapeline.

1. 4. SQ 8.1 (If Necessary)

1. 4. 1. 400 Grit Wet or Dry Sandpaper.

1. 4. 2. Steel Wool - Medium Coarseness.

1. 5. SQ 8.3

1. 5. 1. Optical Comparator with 0.005" Measuring Reticle.

1. 5. 2. Feeler Gauges.

1. 5. 3. Steel Ruler, Steel Tapeline.

1. 6. SQ 9.0 & SQ 10.0

1. 6. 1. Stressing Jacks.

1. 6. 2. Pressure Gauges.

1. 6. 3. Steel Ruler.

1. 6. 4. Caliper. (Optional)

1. 6. 5. Heise Digital Gauge (Verification of Pressure Gauge Calibration, refer to Procedure QA 10.1).

1. 6. 6. Surface Thermometer.

1. 6. 7. Feeler Gauges.

1. 6. 8. Dial Gauge (0.001" increments for detension deflection measurements)

1. 7. SQ 10.1

Refer to Section 1.3 of this procedure - same equipment.

1. 8. SQ 10.2

1. 8. 1. Tendon Wire Pulling Ram. (Optional)

1. 8. 2. Steel Ruler, Steel Tapeline.

1. 8. 3. Pressure Gauge, if used with the hydraulic pump for the Pulling Ram.

1. 9. SQ 10.3 If PSC is requested to test wire samples.

1. 9. 1. Steel Ruler, Steel Tapeline.

1. 9. 2. 1" O.D. Micrometer.

1. 9. 3. Wire Test Apparatus.

1. 9. 4. Pressure Gauge, if used with the hydraulic pump for the Apparatus.

1. 10. SQ 10.5

1. 10. 1. Steel Ruler, Steel Tapeline.

1. 11. SQ 11.0

Refer to Section 1.6 of this procedure - same equipment.

1. 12. SQ 12.1

1. 12. 1. Surface Thermometer.

1. 12. 2. Pocket-Probe Thermometer.

1. 12. 3. Steel Ruler, Steel Tapeline.

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

INSPECTION PREREQUISITE CHECKLIST

Prepared by H. F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H. F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bronars Title Mgr. Engineering Date 5.15.87

1. CHECKLIST

The following items shall be checked prior to beginning the work. This is not a Quality Control Documentation requirement and is only presented as a reminder list to those personnel who will be dependent on these items.

1. 1. Verify that all the Construction Equipment cited in PSC Procedure SQ 3.0 has been prepared or arrangements made for acquisition.

1. 2. Verify that the Quality Control Equipment cited in PSC Procedure SQ 4.0 has been ordered or is available for use.

1. 3. Verify that the Wire Test Apparatus described in PSC Procedure SQ 10.3 has been calibrated and that the Wire Test Stressing Washers are available for use. If the Owner requests PSC to test wire samples.

1. 4. Verify that the Grease Testing Laboratory has been qualified and ready to receive the grease samples. If the Owner requests PSC to test grease samples.

1. 5. Verify that suitable quantities of the various forms are available or the means to generate a suitable quantity is available on site.

1. 6. Verify that controlled copies of the PSC Quality Assurance Manual and the PSC Surveillance Quality Control Manual are available.

1. 7. Verify that the Engineering Data has been included in Procedure SQ 9.1 for Prestress Force and Procedure SQ 11.1 Section 3 for Elongation and Retensioning information.

1. 8. Verify that the Stressing Jacks and Pressure Gauges have been calibrated and that documentation has been provided.

1. 8. 1. Verify that each item supplied as Quality Control Equipment has been calibrated and that suitable documentation accompanies each item.

1. 9. Verify that all Field Quality Control Personnel are qualified and that copies of certifications exist for each Inspector.

1. 10. Verify that the Construction Personnel are familiar with the operating manuals for the equipment and that suitable training has been provided to familiarize them with the Surveillance requirements.

1. 10. 1. Verify that the Construction Personnel are familiarized with Safety Comments for the Surveillance Program.

1. 10. 2. Verify that the Construction Personnel have been familiarized with the OSHA safety requirements and any selective safety measures imposed by the Owner or his Agent.

1. 10. 3. Verify that the On-Site Radiological Safety Training requirements have been completed.

1. 11. Verify that the identity and location of each tendon to be inspected is correct.

1. 12. Verify that suitable quantities of 2090 P4 grease and Viscor #16 Solvent are available with the required documentation.

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

GREASE CAN REMOVAL

⚠1 Prepared by H.T. Hendrickson Title MGR., Q.A. Date 8-13-87
⚠1 Approved by H.T. Hendrickson Title MGR., Q.A. Date 8-13-87
⚠1 Approved by D Bionaz Title Mgr. Eng Date 8-13-87

1. PURPOSE

This procedure will establish the requirements for the removal of Grease Cans (architectural caps) for purposes of evaluation and visual inspection during In-Service-Inspection (surveillance) of the Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

3. QUALIFICATION

As stated in PSC Procedure QA 4.1.

4. EQUIPMENT

The gauges and test equipment necessary for the Quality Control activities will be itemized in PSC Procedure SQ 4.0.

5. 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 verbal release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 6.0

6. PRECAUTIONS

6. 1. A tendon grease can weighs in excess of 50 pounds and may contain about 30 pounds of grease. Be prepared to support this weight when the grease can is unbolted and removed.

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

6. 3. **CAUTION NEVER STRIKE THE BUTTONHEADS, THE WIRES, OR THE ANCHORAGES OF A STRESSED TENDON WITH A HAMMER OR ANY OTHER OBJECT.**

⚠1 8-14-87 NO CHANGE

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

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

7. PREREQUISITES

7. 1. QCD- Document the tendon identification, tendon end or buttress number on Data Sheet 6.0

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

7. 3. It may be advantageous to pack the outside of the grease can with dry ice to further solidify the grease column. This will be at the option of the PSC Construction Superintendent.

7. 3. 1. Once the grease can has been removed, the tendon end anchorage and shims may be packed with dry ice to further solidify the grease column. This will be at the option of the PSC Construction Superintendent.

7. 4. QCD- Document the use of dry ice to solidify the grease column on Data Sheet 6.0, for each occurrence.

7. 5. QCD- Document the temperature of the surface of the concrete near the tendon with a surface thermometer, within a 3 foot radius of the center of the grease can or tendon void, on Data Sheet 6.0. It shall not be necessary to take the temperature again, if dry ice is used. Also document the ambient air temperature.

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7. 6. Care shall be exercised to avoid splashing or spilling grease on concrete and other surfaces. Spilled grease shall be removed and cleaned using Viscosity Oil, Viscor # 16 industrial solvent or equivalent, by scrubbing with brushes and wiping the excess with rags. It may be advantageous to tape plastic sheeting around the bearing plate and concrete to lessen the effect of spilled grease.

8. REMOVAL OF GREASE CAN

8. 1. At the option of the PSC Construction Superintendent, the grease inlet plug may be removed from the grease can to allow any excess pressure to escape. Reinstall the plug after depressurization. It is advisable to perform this removal if the grease is in a liquid condition.

8. 1. 1. In the event that the plug cannot be removed, loosen the top bolts of the can a few turns. Then loosen the bottom bolts on the can. The can shall then be broken loose from the top. The purpose here is to relieve any pressure that might be present, which could cause the grease to exit in an unpredictable manner.

8. 2. Remove all the grease can hold down bolts.

8. 3. Carefully, remove the grease can to prevent any foreign matter from dropping into the grease in that can.

8. 4. Be sure to maintain control of the gasket. The gasket will be scrapped.

⚠1 8. 5. Carefully, clean any sediment or dirt from the bottom of the grease can flange. Do not brush this into the grease in the can, if that grease is to be reused. No old grease from the grease can is to be reused, it shall be scrapped for the Palisades Surveillance.

⚠1 8. 6. If the grease is still in an acceptable condition and fit for reuse, the can shall be covered with a plastic bag or sheeting to prevent any dirt or water from entering the can. No old grease from the grease can is to be reused, it shall be scrapped for the Palisades Surveillance.

⚠1 5-14-87 ADD INFO.

8. 7. QCD- Determine the amount of grease that may have been lost during removal of the grease can on Data Sheet 6.0. The Grease Loss from the tendon duct shall be kept separate and posted as required of Section 10.3 of this procedure.

⚠1 8. 7. 1. If the grease in the grease can is to be scrapped, that quantity shall be documented on Data Sheet 6.0. No old grease from the grease can is to be reused, it shall be scrapped for the Palisades Surveillance.

⚠1 8. 7. 2. If the grease is to be reused, this fact shall be documented on Data Sheet 6.0. Also document the covering of the can. No old grease from the grease can is to be reused, it shall be scrapped for the Palisades Surveillance.

8. 8. QCD- Observe the coating of grease on the inside of the grease can, on the bearing plate, shims, anchorage and buttonheads. Note the completeness of the grease coverage on each item and document that evaluation accordingly on Data Sheet 6.0.

8. 8. 1. Where the coverage is complete, check as Complete coverage.

8. 8. 2. Where the coverage is incomplete and bare metal is visible, check as Partial coverage and estimate the Percentage of Uncoated metal for each item.

8. 8. 2. 1. Uncoated metal is defined as that area that is dry and without any coating of grease. Some care should be used in judging uncoated metal, as the thickness of the coating has no bearing on acceptability. Very thin coatings will be slightly tacky and will readily hold fingerprints.

8. 9. QCD- Any other unusual conditions shall be documented on Data Sheet 6.0, such as: water or other liquid present or draining during grease can removal and document the quantity; quantities of dirt or other foreign matter in or around the tendon end or grease can, etc.

⚠1 8-14-87 ADD INFO.

8. 10. QCD- The color of the grease on or around the tendon shall be compared to a sample of new unused grease for color or other variations from the new sample. While color is not a factor requiring acceptance, significant variations in color could be a sign of degradation of the protection medium.

8. 10. 1. If the colors of the samples are reasonably close to each other, check the Match area on Data Sheet 6.0 and identify the color.

8. 10. 2. If the colors vary greatly, check the No Match area and identify the color and variation, i.e., medium brown, darker than new sample.

9. ANCHORAGE CLEANUP

Where the tendon is to be monitored for retention of forces, detensioned, or visually inspected, it will be necessary to perform a cleanup of the tendon end anchorage assembly to permit inspection and/or thread engagement for force measurements.

9. 1. Any grease removal shall be performed in such a manner to prevent damage, such as scratches, on the anchorage or tendon wires. The removal process shall not add any contaminants to the remaining grease or that grease which could be taken for chemical analysis.

9. 2. If a large quantity of grease is to be removed, it shall be necessary to provide a clean container to hold the grease until the inspections are completed. It may be necessary to take the samples for chemical analysis from this material, so cleanliness shall be maintained.

9. 2. 1. It is suggested that a plastic bag or sheeting be used to line the temporary storage container. This way the material remains clean and reusable or may be easily scrapped.

9. 3. Excess grease shall be removed from the tendon anchorage threads using clean non-metallic devices. Use bristle brushes of medium stiffness with suitable quantities of solvent to dilute and wash away the grease. This cleanup must be sufficient to permit engagement of the anchorage threads with the pull rod and stressing adaptor threads and to provide satisfactory conditions for inspection.

9. 4. Continue the cleanup of the remaining portions of the tendon end, to include the shims, buttonheads, anchorage and bearing plate as necessary.

9. 5. Viscosity Oil, Viscor #16 industrial solvent shall be used to complete whatever cleanup may be necessary to perform subsequent activities.

9. 6. QCD- Document the quantity of grease removed from the anchorage on Data Sheet 6.0.

10. TENDON PROTECTION

All tendon ends and anchorages shall be protected by covering with a plastic bag or sheeting whenever the tendon is not being worked on and smear on or brush a light coating of grease onto the wires, buttonheads and anchorage prior to covering.

10. 1. It will be acceptable to replace the grease cans as a temporary measure, using the old gaskets, until that tendon can be completed.

10. 2. QCD- Document the method of tendon protection on Data Sheet 6.0.

10. 3. QCD- Document only the Grease Losses that are detected from the tendon duct. These losses shall be kept separate from the losses that occur from the tendon end anchorage assembly and the grease can.

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11. DOCUMENTATION

The items requiring documentation in this procedure shall be documented on Data Sheet 6.0.

11. 1. The Data Sheet references the applicable Section number of the procedure for each QCD point.

11. 2. Some information from Data Sheet 6.0 will require posting to Data Sheet 12.0 of PSC Procedure SQ 12.0.

11. 3. Some information from PSC Procedure SQ 7.0 will require posting to Data Sheet 6.0 of this Procedure.

12. ATTACHMENTS

12. 1. Data Sheet 6.0.

⚠ 8-14-87 FORMAT CHANGE

PSC PROCEDURE SQ 6.0 D22
GREASE CAN REMOVAL
DATA SHEET 6.0
MAY 20, 1987

Revision 0
⚠1 Revision 1, 8-14-87

SHEATHING FILLER DOCUMENTATION

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

FILLER DATA Date Removal Started _____ Q.C. Signoff

(7.4) Dry Ice Used on Grease Can _____, Dry Ice Used Around Anchorage _____ _____

(7.5) Temp. of Concrete _____F. Thermometer No. _____ Recalib. Date _____ _____
Ambient Temp. _____F. Thermometer No. _____ Recalib. Date _____ _____

(8.7) Amount of Grease Lost ____ Gal. (8.7.1) Amount of Grease in Can _____ Gal. _____

(8.7.2) Grease to be Reused ☐ YES ☐ NO (8.7.2) Grease in Can Protected ____ _____

(8.8) GREASE COATING:

Grease Can	- Complete ____	Partial ____	Uncoated _____	%
Buttonheads	- Complete ____	Partial ____	Uncoated _____	%
Anchorage	- Complete ____	Partial ____	Uncoated _____	%
Shims	- Complete ____	Partial ____	Uncoated _____	%
Bearing Plate	- Complete ____	Partial ____	Uncoated _____	%

_____

(8.9) Unusual Conditions: _____
_____ _____

(8.10.1) Grease Color: Match ___ Color _____ Comment _____
(8.10.2) No Match ___ Color _____ Comment _____ _____
(9.6) Amount of Grease Removed _____ Gal. - Will this be scrapped? ☐ YES ☐ NO _____

⚠ SQ 7.0 SAMPLES
(6.1) Grease Samples Taken ____ Quarts. (6.1) Samples Identified _____
(6.1) Location of Sample Removal _____ _____

(7) Grease Analysis: ☐ Accept ☐ Unacceptable Engr. Notified _____ _____

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection _____ _____

(10.3) Amount of Grease Lost _____ Gal. - Will this be scrapped? ☐ YES ☐ NO _____

⚠ (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

(8.7)____ + (8.7.1)____ + (9.6)____ + SQ7.0 (6.1)____ + (10.3)____ = _____

TOTAL GREASE LOSS _____ Gal. Post to DS 12.1 _____

Q.C. Review _____ Level _____ Date _____

Title _____

⚠1 8-14-87 ADD INFO.

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

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

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronars Title Mgr. Eng Date 8-13-87

1. PURPOSE

This procedure will establish the requirements for performing an inspection of the Post-Tensioning Tendon System for evidence of water during the scheduled In-Service Inspection of the Tendon System of Consumers Power Company's Palisades Nuclear Power Plant.

2. SCOPE

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

3. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

4. QUALIFICATION

As stated in PSC Procedure QA 4.1.

5. EQUIPMENT

5. 1. CONSTRUCTION

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

5. 2. QUALITY CONTROL EQUIPMENT

5. 2. 1. Suitable quantities of clean, unused, preferably non-metallic containers for obtaining water samples.

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

5. 2. 3. Indelible permanent marking devices and/or labels for the sample containers.

5. 2. 4. Flashlights and batteries.

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5. 2. 5. Pens; Markers; Data Sheets; Tendon Inspection List.

6. PRECAUTIONS

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

6. 1. Section 3.1: Tendon Wire Breaking Strength

6. 2. Section 3.2.2: Personnel Safety

6. 3. Section 3.6: Construction Safety: Personnel Safety

6. 4. A tendon grease can weighs in excess of 50 pounds and may contain about 30 pounds of grease. Be prepared to support this weight when the grease can is unbolted and removed.

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

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

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

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

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7. QUALITY CONTROL

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

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

8. PREREQUISITES

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

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

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

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

⚠ 8-14-87 NO CHANGE

9. GREASE CAN REMOVAL

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

9. 1. Position platform, as required, at the end of the tendon to be inspected. (As part of Grease Can Removal Procedure, SQ 6.0)

9. 2. Place a container and/or a protective cover under the tendon grease can to protect adjacent areas from dripping grease. (As part of Grease Can Removal Procedure, SQ 6.0)

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

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

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

9. 5. Remove the bolts holding the grease can to the bearing plate. The grease can must be fully supported as the bolts are being removed. Care should be taken when removing the end cap since the bulk filler may drop off or drip as a liquid of medium viscosity. Allow the Inspector the opportunity to obtain water samples, if any water is present. (As part of Grease Can Removal Procedure, SQ 6.0)

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

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

9. 7. 1. QCD- Document the quantity of water detected and if a sample was collected.

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

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

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

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

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

10. DISTINGUISHING CHARACTERISTICS

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

10. 1. OBSERVABLE MOISTURE

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

⚠ 8-14-87 NO CHANGE

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⚠ 10. 2. SIGNIFICANT MOISTURE

"Significant Moisture" is defined to be a quantity of water 1/2 pint (8 ounces) or more which has collected, concentrated or observed to be draining out of the tendon anchorage assembly or grease can. Also "Significant Moisture" may be seen in the form of grease being in a mushy off-color condition when a very fluid mixture of grease and water is present even though there is no free standing water for sample collection. This quantity is considered to be from a condition other than water formed through condensation.

10. 2. 1. Any tendon which is defined to have "Significant Moisture" shall have that end of its adjacent tendons inspected visually for water. The tendon originally found with water shall be deemed acceptable and an isolated occurrence if none of the adjacents are found to contain "Significant Moisture".

10. 2. 1. 1. Any adjacent tendon end inspected for water shall have grease samples taken per PSC Procedure SQ 7.0.

11. NOTIFICATION

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

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

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

12. SAMPLE RETENTION/TESTING

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

⚠ 8-14-87 ADD INFO.

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

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

13. DOCUMENTATION

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

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

14. ATTACHMENTS

14. 1. Data Sheet 6.1.

⚠ 8-14-87 FORMAT CHANGE

D31

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
MAY 20, 1987

Revision 0

PROJECT:_____ DATE:_____

TENDON NO.: _____ TENDON END/BUTTRESS NO.: _____ SURVEILLANCE _____

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments_____

(9.7) IN GREASE CAN

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

Comments_____

(9.8) AROUND TENDON ANCHORAGE

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

Comments_____

(9.10) DURING DETENSIONING

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

Comments_____

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

CONDITION: OBSERVABLE _____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED Yes No

(12.2) SAMPLES STORED AT _____

QC Signoff _____ Level_____ Date _____

QC Review _____ Level _____ Date _____

Title _____

D32

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

GREASE SAMPLES - ACQUIRE AND EVALUATE

Prepared by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Brenars Title Mgr, Eng Date 5.15.87

1. PURPOSE

This procedure will establish the requirements for the taking of Grease samples for purposes of laboratory chemical analysis during In-Service-Inspections of Post Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0. This procedure only requires Quality Control actions.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1, only for Quality Control Personnel.

4. PREREQUISITES

4. 1. Two, one quart, unused paint cans, with lids, will be required for each tendon end.

4. 2. The preliminary actions of PSC Procedure SQ 6.0 shall be completed.

5. QUALITY CONTROL

The Quality Control Documentation (QCD) point in this procedure is a Quality Control Hold Point. Work shall not progress beyond this point without a verbal release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 6.0 of PSC Procedure SQ 6.0.

6. SAMPLE REMOVAL

6. 1. QCD - Two, one quart samples of grease shall be taken from each end of the tendon. Each sample can shall be identified by unit number, tendon number, tendon end, sample number and date. It is preferred that the grease be taken from the area of the anchorage, but may also be taken from the grease can or tendon void. Document the amount of samples taken and the location of removal on Data Sheet 6.0 of PSC Procedure SQ 6.0.

6. 1. 1. Sample #1 shall be turned over to the Owner for testing. Sample #2 shall be retained by PSC and held in reserve in the event of loss, retesting or for verification of the results of the original testing. If Sample #1 tests are acceptable, Sample #2 will be turned over to the Owner for disposition.

6. 1. 2. In the event that the test results for Sample #1 do not meet the stated requirements of Section 7 of this Procedure, the Owner may test Sample #2 or request PSC to have Sample #2 tested, in accordance with PSC Procedure SQ 7.2. The Owner shall be responsible for developing the necessary nonconformance reports and the applicable corrective action.

6. 1. 3. If PSC is required to test Sample #2 and that sample fails to meet the requirements of Section 7 of this Procedure, the Owner or his agent shall be immediately notified of the deficiency, with a letter to follow shortly thereafter. The Owner shall be responsible for developing the necessary nonconformance reports and applicable corrective action.

7. ACCEPTANCE OF ANALYSIS

The chemical analysis of the grease samples only concern the concentration of water soluble impurities, water in the samples and where required a Neutralization Number.

7. 1. The following concentrations shall not be exceeded:

7. 1. 1. Water soluble Chlorides - 10 ppm

7. 1. 2. Water soluble Nitrates - 10 ppm

7. 1. 3. Water soluble Sulfides - 10 ppm

7. 1. 4. Water Content (H_2O) - 10% dry weight

7. 1. 5. Neutralization No. - $\geq$ 0 mg. KOH/g

7. 2. The Neutralization Number shall be provided through the test method specified on the PSC Purchase Order to the Testing Laboratory. It shall not be necessary for PSC Personnel to evaluate the acceptability of the results, only to verify that the information has been reported as required. The Owner shall be responsible for evaluation and acceptance of the test results.

7. 2. 1. TEST METHOD ASTM D-974 MODIFIED

The test results for this method shall be reported in mg. KOH/g for the following items:

7. 2. 1. 1. Total Base Number (TBN)

8. NOTIFICATION NON-ACCEPTANCE

In the event that neither sample meets the required controls of Section 7 above, the Owner shall be formally notified by PSC Personnel for those unacceptable results after reviewing the reports. If PSC Quality Control are still on site when the tests have been completed, the Owner shall be notified of this deficiency with a nonconformance report.

8. 1. The Owner shall be responsible for evaluating the significance of the deficiency and to determine if corrective measures are required.

8. 2. QCD- Document the acceptability or non-acceptability of the Grease Analysis and the need for notification of the Owner on Data Sheet 6.0

9. DOCUMENTATION

Items requiring documentation in this procedure shall be documented on Data Sheet 6.0, which will be seen in PSC Procedure SQ 6.0.

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

SHEATHING FILLER ANALYSIS

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronars Title Mgr, Eng Date 8-13-87

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1. PURPOSE

This procedure will establish the requirements for laboratory chemical analysis of Sheathing Filler (Grease) samples taken during the In-Service-Inspections (surveillance) of the Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Plant.

2. RESPONSIBILITY

2. 1. The laboratory that performs the testing/analysis shall be responsible for controlling the samples, performing the analysis, documenting the analysis on Laboratory letterhead stationery and submitting the reports to:

PRECISION SURVEILLANCE CORPORATION
900 Jorie Blvd. Suite 80
Oakbrook, IL 60521
Attention: Quality Assurance

2. 1. 1. The Laboratory shall further be responsible to utilize trained personnel for the analysis and maintain the calibrated status, traceable to the NBS, for all test or measuring devices that may be used in providing test results.

2. 1. 2. The Laboratory shall provide open access for inspection, survey or audit, as the need might arise, to PSC or its customers.

2. 2. The PSC Quality Assurance Section shall be responsible for the qualification of Laboratory sources.

2. 3. Where specified in the Contract Documents, the Owner or his Agent shall have the right of approval for Laboratory sources.

2. 4. The PSC Quality Control and/or Engineering Department shall review the reports for accuracy and content as required by PSC Procedure SQ 7.2 and for evaluation of the acceptability of those results according to the requirements of PSC Procedure SQ 7.0, Section 7.

2. 4. 1. This report shall be submitted to the Owner or his Agent with the final Surveillance Report.

⚠1 8-14-87 NO CHANGE

3. SAMPLES

The Grease shall be sent to the Laboratory by any convenient mode of transportation. The sample cans have been marked to show the unit number, the tendon number, the tendon end or buttress identification and sample number. The can shall be securely closed to prevent leakage and packaged to prevent damage.

3. 1. The samples shall maintain a form of identification throughout testing, that shall provide traceability to the original sample identification.

3. 2. The Laboratory shall notify PSC if it appears that the sample container has been damaged, tampered with, or any other occurrence that could contaminate the grease sample.

4. TEST DESCRIPTIONS

Each sample of Grease (Sheathing Filler) shall be analyzed for the concentrations of water soluble impurities of Chlorides (Cl), Nitrates (NO3) and Sulfides (S), water content and when specified the Neutralization Number.

5. TEST METHOD

Each sample of Grease shall be mixed and tested as follows:

⚠5. 1. WATER SOLUBLE IMPURITIES (ASME SECTION XI TABLE IWL 2525-1)

A water extraction of each sample of grease shall be made and tested as follows:

5. 1. 1. Using a spatula, coat the inside, bottom and sides of a one liter glass beaker with 100 (plus or minus 10) grams of the grease.

5. 1. 2. The coated beaker shall be filled with about 900 cubic centimeters of distilled water at room temperature.

5. 1. 3. Heat the filled beaker in an oven or by use of an immersion heater to 100 degrees F. (37.8 degrees C) plus or minus 2 degrees F. for 4 hours. DO NOT HEAT ON A HOT PLATE.

⚠ 8-14-87 ADD INFO.

5. 1. 4. Run a blank on distilled water. If titrate use a microburet, 1 ml or 5 ml with 0.01 - 0.05 ml graduation levels.

5. 1. 5. Decant water and analyze for soluble ions. Test only for salts in leached water.

5. 1. 6. The water extraction shall be tested by the below cited test procedures for the appropriate water soluble ions. The results shall be reported as parts per million (ppm) in the extracted water.

5. 1. 6. 1. Clorides (C1) by ASTM D-512

5. 1. 6. 2. Nitrates (NO3) by ASTM D-992, Brucine Method or Cadminum Reduction Method.

5. 1. 6. 3. Sulfides (S) APHA 427C (American Public Health Association) Methylene Blue Method.

5. 2. WATER CONTENT

Water content (H_2O as percent of dry weight) shall be determined in accordance with ASTM D-95.

5. 3. NEUTRALIZATION NUMBER

The Neutralization Number shall be provided when specified in the PSC Purchase Order or the Contract Documents. As two methods are recognized for determining the Neutralization Number, the PSC Purchase Order shall specify the method of testing and this procedure shall detail additional test controls, methods and reporting structure.

5. 3. 1. TEST PER ASTM D974 MODIFIED

When the test method is specified to be ASTM D-974 Modified, the test shall be performed in accordance with that method and the following modification:

5. 3. 1. 1. MODIFICATION OF D-974

5. 3. 1. 1. 1. Heat a 10 gram sample of Grease, 10 milliliters Isopropyl Alcohol and 5 milliliters Toluene until the sample is solubilized.

5. 3. 1. 1. 2. Add 90 milliliters Distilled water and 20 milliliters 1N Sulfuric Acid.

5. 3. 1. 1. 3. Place in a steam bath for one-half hour. Stir well.

5. 3. 1. 1. 4. Add Phenolphthalein indicator and titrate with 1N Sodium Hydroxide until the lower layer just turns pink.

5. 3. 1. 1. 5. Calculate the Base Number in mg. KOH/g of sample. [(20) (acid normality)-(milliliter base) (base normality)] 56/g of sample.

5. 3. 1. 1. 6. Report this as the Total Base Number (TBN) in mg. KOH/g.

6. REPORT

Two copies of each report for the analysis of grease shall be submitted to PSC.

6. 1. Each report shall bear the date of testing and sample identification as it appears on each can.

6. 2. Each report shall be signed by the Laboratory Manager, who shall ultimately be responsible for the content.

6. 3. ACCURACY

6. 3. 1. The concentration of water soluble chlorides, nitrates and sulfides shall be reported within an accuracy of 0.1 ppm.

6. 3. 2. The concentration of water shall be reported within an accuracy of 0.1 percent of dry weight of grease.

⚠1 8-14-87 FORMAT CHANGE

6. 3. 3. The Neutralization Number shall be reported within an accuracy of 0.01 mg. reagent per gram of grease.

7. SAMPLE DISPOSAL

The remaining sample grease may be scrapped 30 days after the issue of the report, unless the Laboratory is requested in writing to hold the samples for a longer period of time.

7. 1. The Quality Control Department shall retain the option of disposing of the samples in less than 30 days if the results of the grease analysis are acceptable.

⚠1 8-14-87 FORMAT CHANGE

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

ANCHORAGE INSPECTION OF STRESSED TENDON

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronaugh Title Mgr. Eng Date 8-13-87

1. PURPOSE

This procedure will establish the requirements for the visual inspection of the tendon end anchorage, shims, bearing plate and wires during In-Service-Inspection (surveillance) of Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

4. EQUIPMENT

The gauges and test equipment necessary for the Quality Control activities will be itemized in PSC Procedure SQ 4.0.

5. 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 verbal release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 8.0.

6. PRECAUTIONS

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

6. 2. **IF AT ANY TIME A CRACKED OR BROKEN ANCHORHEAD IS DETECTED AS A RESULT OF THESE INSPECTIONS, ALL WORK SHALL STOP. ALL PERSONNEL SHALL BE MOVED AWAY FROM THAT AREA. THE PSC CONSTRUCTION SUPERVISOR SHALL BE NOTIFIED. THE WORK AND/OR INSPECTIONS SHALL CONTINUE AFTER A SAFETY EVALUATION HAS BEEN MADE AND ONLY AT THE DIRECTION AND CONTROL OF THE PSC CONSTRUCTION SUPERVISOR AND THE OWNER'S ENGINEER RESPONSIBLE FOR THE IN-SERVICE INSPECTIONS.**

⚠1 8-14-87 NO CHANGE

7. PREREQUISITES

7. 1. The Anchorage Cleanup will be completed.

7. 2. The tendon will be in a stressed condition.

⚠1 8. ANCHORAGE INSPECTION

The tendon anchorage, including the shop head, field head and bushing, bearing plate, stressing shims and buttonheads of all selected tendons shall be visually inspected for signs of corrosion, cracks, missing buttonheads and malformed buttonheads.

8. 1. CORROSION INSPECTION

⚠1 8. 1. 1. BUTTONHEADS

The Conditions of Corrosion that could be seen on Buttonheads will be described in PSC Procedure SQ 8.1, Corrosion Evaluation Criteria for Tendon Wire or Buttonheads. As the tendon is still in a stressed condition, there will not be much area to review for Corrosion Conditions, therefore only the exposed, visible portions of the buttonheads shall be evaluated.

8. 1. 1. 1. QCD- Document the Corrosion Condition of the buttonheads on Data Sheet 8.0.

8. 1. 2. ANCHORAGE, SHIMS, BEARING PLATE

The Corrosion Levels that could be seen on Anchorages, Shims, or Bearing Plates will be described in PSC Procedure SQ 8.1, Corrosion Evaluation Criteria, Other Than Wire. As the tendon is still in a stressed condition, the areas to be reviewed will be somewhat limited, therefore only the exposed, visible portions of the anchorage, shims and bearing plate shall be evaluated.

8. 1. 2. 1. QCD- Document the Corrosion Level of each item on Data Sheet 8.0.

⚠1 8-14-87 ADD INFO.

8. 2. CRACKS

The Anchorages, Shims and Bearing Plates shall be visually inspected for cracks.

8. 2. 1. QCD- If no cracks are present, "None" shall be entered into the "Cracks" area of Data Sheet 8.0 for each item as it occurs.

8. 2. 2. QCD- If cracks are present in any item, regardless of size, the crack shall be sketched on Sketch Sheet 8.0 and identified with a Sketch Number, which shall be entered into the "Cracks" area of Data Sheet 8.0.

8. 3. BUTTONHEAD PHYSICAL INSPECTION

While the tendon is in a Stressed Condition, it shall be necessary to inspect the buttonheads/wires for those buttonheads/wires that may be missing or protruding/unseated. The buttonheads do not require inspection for dimensional size, splits, slips or eccentricity. PSC Procedure SQ 8.2 has been included in this Inspection Program for purposes of information only.

8. 3. 1. In the event that it becomes necessary to perform an Inspection and Evaluation of the Buttonheads, at the Owner's Request, then the requirements of Section 8.3.3.1 following shall apply, with the quality requirements of Procedure SQ 8.2 being used for acceptance.

8. 3. 2. The intention of the following inspections is to acquire information on the function of the tendon since the original installation or previous surveillance. All conditions for buttonheads and wires, whether missing or defective, shall be documented. Actions such as Continuity Tests shall only take place for those conditions of Buttonheads or Wires that are in excess of those noted during the original installation, previous surveillance or at the specific request of the Owner.

⚠1 8-14-87 NO CHANGE

8. 3. 3. Wire and buttonheads shall be inspected for the following information and documented by the appropriate code on Data Sheet 8.0. The circle represents the buttonhead location on the anchorhead. To correctly orient the buttonhead on the anchorage, it shall be necessary to accurately locate the anchorage Heat or Code Number on the Anchorage Sketch with respect to the hole pattern alignment, on Data Sheet 8.0.

8. 3. 3. 1.  = Offsize buttonhead

8. 3. 3. 1. 1. Malformed buttonheads shall be documented as Offsize buttonheads, with no other distinguishing Category Codes.

8. 3. 3. 1. 2. To further identify specific deficiencies, a Category Code letter shall be used. An arrow shall point at the deficient buttonhead and the Category Code letter shall be placed at the tail end and in such a location so as not to obscure information.

8. 3. 3. 1. 2. 1. B = Crack that bisects the buttonhead.

8. 3. 3. 1. 2. 2. A = Slip beyond 45 angle.

8. 3. 3. 1. 2. 3. K = Cracked (In excess of 0.060" for one or more splits.)

8. 3. 3. 1. 2. 4. S = Two inclined splits in same plane - angle between 20 to 45 degrees.

8. 3. 3. 1. 2. 5. X = Intersecting cracks.

8. 3. 3. 2.  = Protruding/Unseated Wire/Buttonhead.

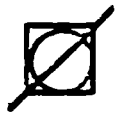
8. 3. 3. 2. 1. Place an arrow pointing at the protruding buttonhead, with the distance of protrusion above the other buttonheads at the tail end and in such a location so as not to obscure information.

⚠1 8-14-87 FORMAT CHANGE

8. 3. 3. 3.  = Broken/Missing Wire/Buttonhead

8. 3. 3. 3. 1. This code shall be used to identify occurrences for this surveillance, where those wires are not removed. See Section 8.3.3.5 for Code after removal.

8. 3. 3. 4.  = Previously Identified As Missing; whether a result of a previous surveillance or as a result of the original installation.

8. 3. 3. 5.  = A discontinuous wire that was removed during this surveillance and previously identified as Broken/Missing.

8. 3. 3. 6.  = Each wire that was removed during this surveillance for purposes of physical testing.

8. 3. 4. QCD- Document the Buttonhead Inspection on the Sketch shown on Data Sheet 8.0 in accordance with the Buttonhead Code shown of Data Sheet 8.0 and as explained in Section 8.3.3 of this procedure.

8. 3. 5. QCD- Document the Heat Number Code Identification Number for each anchorage component on Data Sheet 8.0

8. 3. 6. QCD- Document the total amount of Offsize Buttonheads for each category (B, A, K, S, or X) on Data Sheet 8.0, when applicable, otherwise mark N/A for Not Applicable.

8. 3. 7. If it is readily apparent that a buttonhead is missing (compare the original or previous buttonhead inspection records to the current records) and cannot be located around the anchorage, it is possible that it may be in the grease of the grease can or other lost grease.

8. 3. 7. 1. If it is necessary to search for missing buttonheads, the grease shall be strained through a mesh screen of not greater than 1/4" grids.

△1 8-14-87 FORMAT CHANGE

8. 3. 7. 2. QCD- Document whether the buttonhead has been found or not, on Data Sheet 8.0.

8. 3. 7. 3. QCD- Document the total amount of Effective Buttonheads.

8. 4. PROTRUDING BUTTONHEADS

Protruding or unseated buttonheads are representative of a number of undesirable conditions; broken wires, incorrect wire length, restrained wires, etc. It is unlikely that individual wires can be verified for continuity while the tendon is stressed. Therefore, any evaluation of protruding wires shall be performed in accordance with PSC Procedure SQ 10.5 after the tendon is Detensioned, but only for those wires in excess of the original installation or previous surveillance.

8. 4. 1. QCD- Document the amount of Protruding/Unseated buttonheads of Data Sheet 8.0. Add the Protruding and Broken buttonheads together and post the total on Data Sheet 8.0 and evaluate for the following.

8. 4. 1. 1. If the quantity of Protruding/Unseated wires and Broken/Missing wires since the original installation or previous surveillance totals less than 3, it shall only be necessary to report the quantity as required in Section 9 of this procedure.

8. 4. 1. 2. If the quantity of Protruding/Unseated wires and Broken/Missing wires or Protruding/Unseated wires alone since the original installation or previous surveillance total 3 or more, it shall be necessary to perform a Continuity Test of the Protruding/Unseated wires. The Continuity Test shall be performed in accordance with PSC Procedure SQ 10.5 after the tendon is Detensioned.

8. 4. 1. 2. 1. QCD- Document the need for a Continuity Test and mark or identify the protruding wires that shall be evaluated.

△1 8-14-87 FORMAT CHANGE

8. 4. 1. 3. It should be noted that if the Continuity Test detects a quantity of 1 or more Broken/Missing wires in the group of Protruding/Unseated wires, when added to the Broken/Missing wires of this inspection, it shall be necessary to notify the Owner of this condition in accordance with Section 9 of this Procedure.

8. 4. 1. 3. 1. It shall be acceptable to continue working and notify the Owner at the earliest opportunity, but within 24 hours of discovery.

9. NOTIFICATION

The Owner shall be formally notified when each one or more of the following conditions are detected as a result of the inspection of a tendon. Notification shall be by a nonconformance report or a formal letter.

9. 1. CORROSION CONDITION "E" - when detected for Buttonhead Inspection, the Owner shall be notified by a nonconformance report.

9. 2. CORROSION LEVEL 3, 4, or 5 - when detected for Anchorages, Shims and/or Bearing Plates, the Owner shall be notified by a nonconformance report.

9. 3. CRACKS - no matter how small, when detected for Anchorages, Shims and/or Bearing Plates, the Owner shall be notified by a nonconformance report.

9. 4. OFFSIZE BUTTONHEADS - when detected for Buttonheads, during the Detensioned Anchorage Inspection of PSC Procedure SQ 10.1, report the quantity of each Category on Data Sheet 8.0.

9. 5. PROTRUDING WIRES - when detected for Buttonhead/Wires and a Continuity Test is not performed, the quantity and length of protrusion of each Buttonhead shall be reported.

9. 6. PROTRUDING WIRES - shall be reported for quantity and length of protrusion, if found to be continuous after the Continuity Test but still unseated after Retensioning.

⚠1 8-14-87 NO CHANGE

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9. 7. ADDITIONAL MISSING OR BROKEN WIRES/BUTTONHEADS - when detected for a quantity of 1 or more since the original installation or previous surveillance, the Owner shall be notified by a nonconformance report.

10. DOCUMENTATION

The items in this procedure requiring documentation shall be documented on Data Sheet 8.0.

10. 1. The Data Sheet references the applicable section number of the procedure for each QCD point.

10. 2. Sketch Sheet 8.0 accompanies this procedure and shall be filled in for the required information if applicable.

11. ATTACHMENTS

11. 1. DATA SHEET 8.0

11. 2. SKETCH SHEET 8.0

⚠1 8-14-87 NO CHANGE

ANCHORAGE INSPECTION DOCUMENTATION

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

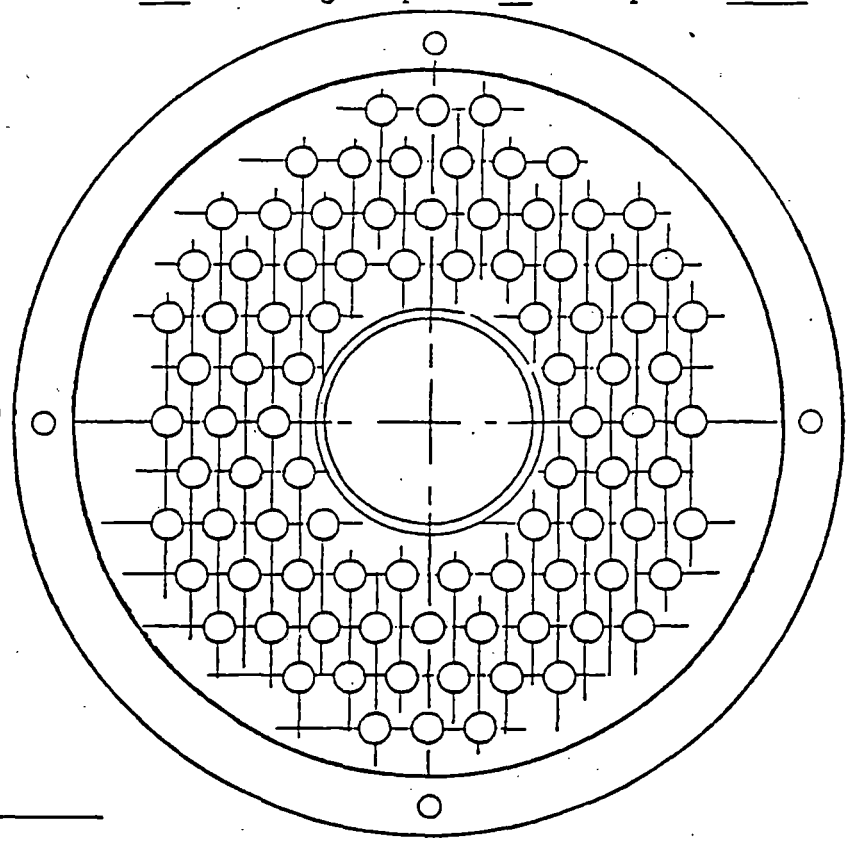
(8.3.5) ANCHORHEAD I.D. _____ BUSHING I.D. _____ Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition _____ _____
(8.1.2) Anchorage Head Level _____ (8.2) Cracks _____
(8.1.2) Bushing Level _____ (8.2) Cracks _____
(8.1.2) Shims Level _____ (8.2) Cracks _____
(8.1.2) Bearing Plate Level _____ (8.2) Cracks _____ _____
SQ 10.1.(8.1.2) Coating - Complete ___ Incomplete ___ Lgth. of Air Pocket ___ _____
SQ 10.1 (8.2.1) Wire - Condition ___ Coating Complete __ Incomplete _____ _____

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
▲ = Protruding
□ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks



(8.3.5) Locate Anchorage Heat Code on Sketch _____ _____

(8.3.6) Offsize Totals
B = _____
A = _____
K = _____
S = _____
X = _____

(8.3.7.2) Buttonheads Found _____ _____
(8.3.7.3) Total Effective BH _____ _____
(8.4.1) Protruding BH ____ Missing BH ____ Total BH _____ _____
(8.4.1.2.1) Continuity Test Required _____ Wires Identified/Marked _____ _____
Bushing Thread Joint Line _____ _____
Reporting: Accept Unacceptable Engineer Notified NCR NO._____ _____

Q.C. Review _____ Level _____ Date _____

Title _____

PSC PROCEDURE SQ 8.0
ANCHORAGE INSPECTION
SKETCH SHEET 8.0 D52
MAY 20, 1987

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

Sketch each crack as it appears in the Anchorage, Shims or Bearing Plate. Identify each unit by name; apply the heat code identification if available and locate that identification on the sketch. Use as many Sketch Sheets as necessary being sure to list the page number below and to apply a Sketch Number to each unit with cracks.

Q.C. Signoff _____ Title _____ Date _____

Q.C. Review _____ Level _____ Date _____

Title _____

D53

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

CORROSION EVALUATION CRITERIA

⚠1 Prepared by H. F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H. F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronaas Title Mgr Eng Date 8-13-87

1. CORROSION EVALUATION CRITERIA FOR TENDON WIRE OR BUTTONHEADS

The following criteria shall be used for evaluation during visual inspection of tendon wire. Wire in Condition rating A, B, C, or D shall be acceptable. Sandpaper cleaning, noted below, is only a means of evaluation and will be done only at the discretion and approval of the PSC Quality Control Section.

1. 1. A - EXCELLENT CONDITION

Bright, uniformly colored wire, but may be somewhat blackened; no foreign matter, visible rust or pitting. No cleaning for inspection is required. Two heavy passes with 100 grit sandpaper to bright metal.

1. 2. B - GOOD CONDITION

Partial loss of color; little foreign matter and a small quantity of light rust may be present; no pitting. The oxide coat will be more discernable when viewed parallel to the length of the wire. Rag, wipe cleaning may be required for inspection. Five heavy passes with 100 grit sandpaper to bright metal.

1. 3. C - FAIR CONDITION

Major loss of color; some foreign matter and a large quantity of light rust may be present; no pitting. Rag cleaning or steel wool cleaning may be required for inspection. Ten heavy passes with 100 grit sandpaper to bright metal.

1. 4. D - USABLE CONDITION

Almost total loss of color; much foreign matter and small quantities of heavy rust in the form of a red oxide dust; no pitting. Rag wiping, steel wool and sandpaper cleaning will be required for inspection. Twenty heavy passes with 100 grit sandpaper to bright metal.

△1 8-14-89 NO CHANGE

1. 5. E - REJECTED CONDITION

Areas of pitting with or without hard, crusty, scaly red oxide. Heavy sanding or scraping may be required for inspection cleaning. Thirty or more passes with 100 grit sandpaper to bright metal.

2. OTHER CONTROLS

2. 1. Wires shall not be sanded without the specific approval of the PSC Quality Control Inspector. Normally it is not necessary to perform sanding of the wire. The purpose of the sanding is to provide a uniform means of bringing the wire to a bright metal condition, where there is difficulty encountered in performing a visual evaluation.

2. 2. CLEANUP FOR EVALUATION

During the course of wire manufacture or as a result of storage, the tendon wires may become blackened or quite dull. There may be areas of wire condition, from A to E, that may be encountered requiring special cleanup in order to conduct a proper evaluation. The following steps will provide an acceptable means of cleanup with a uniform method of investigating questionable areas of the wire.

2. 2. 1. Steel wool should first be tried for brightening the area to be reviewed. If this does not provide an adequate cleanup, cleanup can be performed with an automotive type wet-or-dry sandpaper of 400 grit, but not coarser than 320 grit.

2. 2. 1. 1. None of the above methods will reduce the cross-sectional area of the wire, unless used to great excess. In that case the sample under examination would probably be so encrusted that it might be classed as rejected or Condition E.

1 8-14-87 ADD INFO.

2. 2. 2. Once the area has been satisfactorily brightened and cleaned of residue, use an optical comparator of 5 to 10 power magnification, preferably with a source of illumination built in. Otherwise a flashlight with fresh batteries or a small floodlight would be acceptable.

2. 2. 3. Evaluate the area from several viewing points to acquire a true evaluation of the condition.

2. 2. 4. Other mechanical devices may be used to assist in evaluation, such as using a needle to probe the depth of a pit and then measuring the depth on a small scale or ruler.

⚠1 3. CORROSION EVALUATION CRITERIA FOR ANCHORAGE COMPONENTS

The following criteria shall be used for evaluation of anchorages, shims and bearing plates of the post-tensioning system. Corrosion Levels 1 and 2 shall be acceptable conditions.

⚠1 3. 1. CORROSION LEVEL - 1

No visible oxidation or pitting. The steel will be bright or blackened somewhat by aging, with no signs of visible oxidation that cannot be wiped off with a rag. Be aware that the anchorage might be black or dark blue as a result of heat treatment. This coloration is not a deficiency and does not require reporting.

3. 2. CORROSION LEVEL - 2

Visible oxidation, but no evidence of pitting. The steel will be reddish brown in color and showing evidence of corrosion or light encrustation, which can be removed.

3. 3. CORROSION LEVEL - 3

The steel will be reddish brown in color and showing evidence of heavy corrosion and encrustation, which is very difficult to remove. Visible signs of pitting in excess of 0.000", but not greater than 0.005".

⚠1 8-14-87 ADD INFO.

3. 4. CORROSION LEVEL - 4

Coloration and encrustation as noted in Level 3 above. Visible signs of pitting in excess of 0.005" in depth, but not greater than 0.010" in depth.

3. 5. CORROSION LEVEL - 5

Coloration and encrustation as noted in Level 3 above. Visible signs of pitting in excess of 0.010" in depth. Locate the area of the most severe pitting and take a measurement of the deepest pitting for purposes of documentation.

4. OTHER CONTROLS

It may be necessary to scrape away areas of corrosion to obtain measurements or permit evaluation. It is suggested that Section 2.2 of this procedure be used for preliminary cleanup, with scraping being employed as a last resort.

△1 8-14-87 NO CHANGE

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

BUTTONHEAD EVALUATION CRITERIA

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronaas Title Mgr. Eng. Date 8.13.87

D59

1. BUTTONHEAD EVALUATION CRITERIA

The following criteria, based on Inryco Buttonhead Specification BS1610, shall be used for the evaluation of the Buttonheads for the Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Plant.

1. 1. DIAMETER: 0.366" minimum to 0.395" maximum.

Does not require inspection for In-Service Inspection.

1. 2. HEIGHT: 0.252" minimum to 0.272" maximum.

Does not require inspection for In-Service Inspection.

1. 3. ECCENTRICITY

Shall not exceed 0.010" from the axis of the wire. Does not normally require inspection during In-Service Inspection.

1. 4. SPLITS

A split is defined as a fissure or opening visible at the surface of the wire, the length of which shall not exceed an angle of plus or minus 30 degrees to the axis of the wire. The split width will be oriented almost perpendicular to the wire axis or across the fissure at its widest point. Does not normally require inspection during In-Service Inspection.

1. 4. 1. The sum total of all splits, or the opening of one split on a buttonhead, less than 30 degrees to the axis of the wire, shall not exceed 0.060".

1. 4. 2. A buttonhead will be permitted to have more than one split.

1. 4. 3. Splits shall not bisect the buttonhead.

1. 4. 4. Splits shall not intersect on any portion of the buttonhead or wire.

1. 4. 5. Two inclined splits, within an angle between 20 to 45 degrees and in the same plane, shall not be acceptable.

⚠1 8-14-87 NO CHANGE

D60

△1 1. 4. 6. The permissible opening of any one split between the angles of 30 to 45 degrees, with respect to the wire axis, shall not exceed 0.002".

△1 1. 5. SLIPS

A slip is defined as a slanting fissure or opening usually visible at the surface of the buttonhead, the length of which will be oriented between the angles of 30 degrees to 45 degrees, with respect to the wire axis. Does not normally require inspection during In-Service Inspection.

1. 5. 1. Any one slip shall not exceed 0.002" in width. If the opening is greater than 0.002" it shall be considered a split.

1. 5. 2. A buttonhead will be permitted to have more than one slip.

1. 5. 3. Slips shall not exceed an angle of 45 degrees to the wire axis.

1. 6. OTHER UNUSUAL MALFORMATIONS

During a visual inspection of the buttonheads on a tendon in a stressed condition only gross defects may be detected such as;

1. 6. 1. Incompletely formed buttonheads.

1. 6. 2. Buttonheads crushed by the Buttonheader gripping dies.

1. 6. 3. Double-upset buttonheads; two buttonheads formed on the same wire, one on top of the other.

1. 7. DETENSIONED CONDITION

Other malformations may be detected visually when the tendon has been detensioned and the anchorage pushed back about 12 inches.

1. 7. 1. Horizontal off-set rings or portions of such rings. The buttonheads shall have smooth contours.

△1 8-14-87 ADD INFO.

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1. 7. 2. Sharp indentations in the wire or buttonhead which have been caused by the Buttonheader gripping dies.

1. 7. 3. Discontinuities and imperfections which have been produced on the bearing surface or fillet of the buttonhead by chipped or damaged gripping dies. The bearing surface shall be a smooth, continuous surface.

1. 8. VISUAL GUIDE

The following sketches are not to scale, but are intended to be used as a guide for specific conditions that may be detected during a visual inspection of buttonheads.

△1 8-14-87 NO CHANGE

D62

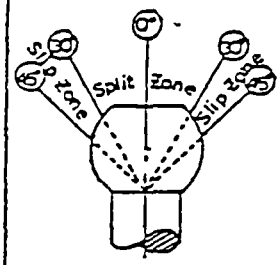
PSC PROCEDURE SQ 8.2
BUTTONHEAD EVALUATION
VISUAL GUIDE
MAY 20, 1987

Revision 0

BUTTONHEAD SPECIFICATION 1610

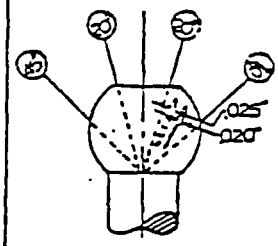
VISUAL GUIDE FOR ACCEPTANCE CRITERIA

Inryco
an Inland Steel company



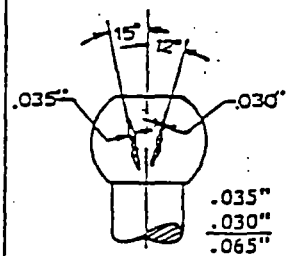
Angular acceptance limitations.

A. Reject



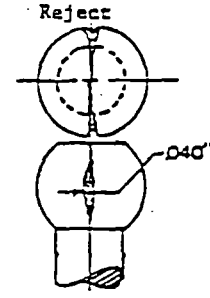
Two inclined splits in same plane within angle of 20° to 45°.

C. Reject



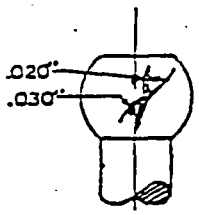
Sum of splits less than 30° exceeds .060".

D. Reject



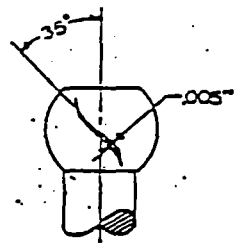
Splits bisect head even though size is within .060".

D. Reject



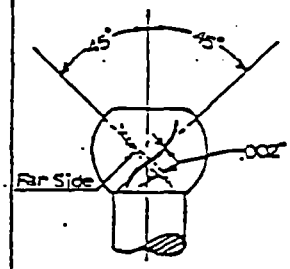
Splits intersect even though size is within .060".

E. or E. Reject



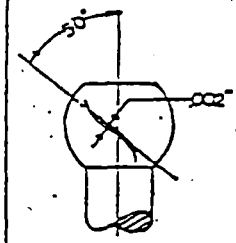
Slip in excess of .002" within angle of 30° to 45°.

C. Accept



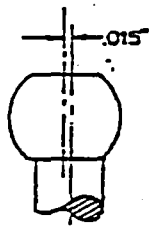
More than one slip with neither exceeding .002" or .060" total.

E. Reject



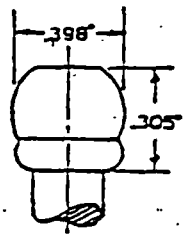
Slip beyond 45° angle even though size is within .002".

ECCENTRICITY
Reject



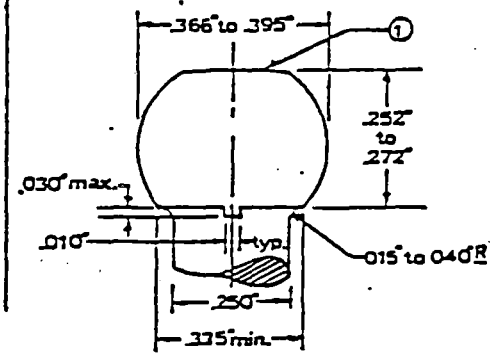
In excess of 0.010".

DOUBLE BUTTONHEAD
Reject



In excess of head width of 0.395"

STANDARD BUTTONHEAD



① - Top of head may be flat or slightly convex in configuration.

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

CONCRETE INSPECTION

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronaus Title Mgr. Eng Date 8.13.87

D64

1. PURPOSE

This procedure will establish the requirements for the visual inspection of the concrete around/adjoining the bearing plate during In-Service Inspections (surveillance) of Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0. This procedure only requires Quality Control actions.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1, only for Quality Control Personnel.

4. EQUIPMENT

As stated in PSC Procedure SQ 4.0.

5. QUALITY CONTROL

This procedure requires only documentation of the results of the inspection of the concrete.

6. PREREQUISITES

6. 1. The tendon will be in a stressed condition.

6. 2. The Grease Can will be removed.

6. 3. The anchorage may or may not be cleaned up or inspected.

⚠1 7. CONCRETE INSPECTION

The concrete adjoining the bearing plate of each selected tendon shall be inspected for cracks or any other abnormal material behavior for a distance of 12 inches around the edge of the bearing plate.

7. 1. QCD- Any crack that is 0.010" in width or wider shall be documented on Data Sheet 8.3.

⚠1 8-14-87 ADD INFO.

D65

7. 1. 1. The full length and width of each crack shall be documented as well as sketching the crack pattern.

8. NOTIFICATION - UNACCEPTABLE CONDITIONS

The Owner shall be formally notified when any crack width or gaps greater than 0.010" in width are detected.

9. DOCUMENTATION

Data Sheet 8.3 shall be used for documenting the requirements of this inspection.

10. ATTACHMENTS

10. 1. Data Sheet 8.3

⚠1 8-14-87 FORMAT CHANGE

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

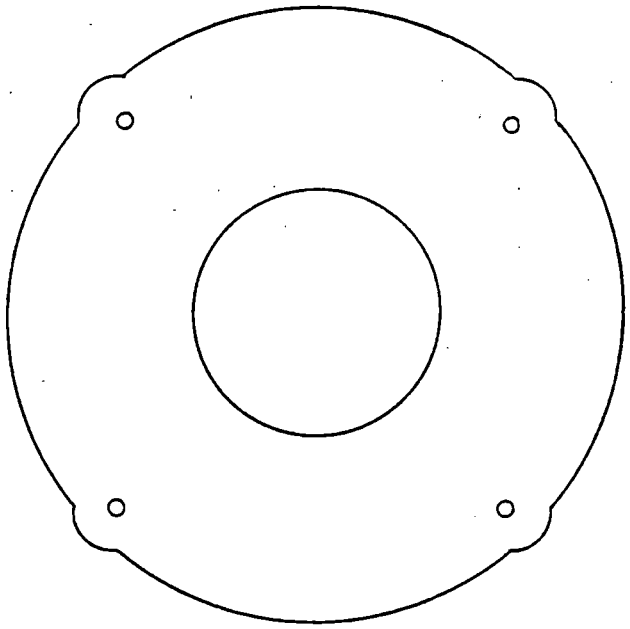
TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

BEARING PLATE I.D. NO._____

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff _____ Date _____

Title _____

Q.C. Review _____ Level ____ Date _____

Title _____

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

MONITORING & TENDON FORCE (LIFT-OFFS)

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87
⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87
⚠1 Approved by D Bronars Title Mgr. Eng. Date 8-13-87

1. PURPOSE

This procedure will establish the requirements for Monitoring the Forces that remain in a tendon for purposes of evaluating the Post-Tensioning System Tendons during In-Service Inspections (surveillance) of Consumers Power Company's Palisades Nuclear Power Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

4. EQUIPMENT

The gauges and test equipment necessary for the Quality Control activities will be itemized in PSC Procedure SQ 4.0.

5. PRECAUTIONS

Review the I.S.I. Tendon Surveillance Program Safety Comments for the following items that shall apply both for tendon force control and personnel safety.

5. 1. Section 3.2; Stressing Operations: Overstress Force

5. 2. Section 3.2.2; Personnel Safety

5. 3. Section 3.3; Stressing Adaptor: Full Engagement

5. 4. Section 3.4: Anchorage Engagement: Full Engagement

5. 5. Section 3.6; Construction Safety: Personnel Safety

5. 6. Section 3.7; Cracked or Broken Anchorhead

6. 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 verbal release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 9.0.

△1 8-14-87 NO CHANGE

7. PREREQUISITES

7. 1. The Grease Can will be removed.

7. 2. The Anchorage Inspection of the stressed tendon will be completed.

8. MEASUREMENTS

8. 1. STEEL RULERS

Measurements of tendon elongation or shim stack height shall be performed with calibrated steel rulers graduated in tenths of an inch (0.100"). The measurements shall be interpolated to the nearest 0.05". See Sketch 7.0 at the end of this procedure.

8. 1. 1. A steel caliper may be used to take the elongation measurement. One caliper blade shall be placed against the bearing plate and the other blade placed against the bottom of the anchorhead. The caliper blades shall be parallel to the tendon during measurement. When the parallel condition is established, the blades shall be locked and the caliper withdrawn without disturbing the blade setting. The caliper blades shall be placed on the steel ruler and the dimension determined. See Sketch 7.0 at the end of this procedure.

⚠1 8. 1. 2. Tendon elongation measurement shall be performed by measuring the distance between the bearing plate and the bottom of the anchorage for each end of the tendon except for Vertical Tendons which shall be measured only at the top end.

8. 2. PRESSURE GAUGES

Measurements of ram pressure (tendon force) shall be measured by calibrated pressure gauges capable of being read directly to 20 psi.

8. 2. 1. View the gauge face from a plane of view directly in front of the indicator needle to avoid parallax errors.

8. 2. 2. Gauge readings may be interpolated to the nearest 10 psi, if so desired.

⚠1 8-14-87 ADD INFO.

9. MONITORING OF TENDON FORCES

The intention of this operation is to monitor the amount of forces remaining in the tendon by taking liftoff readings as the tendon is being stressed. Subsequent evaluation of those liftoff readings for Predicted Forces including Normalizing Factors, shall determine if that force is acceptable or if degradation of the system has been detected.

9. 1. Monitoring of Tendon Force can be performed on both ends of the tendon in a simultaneous and controlled manner or on one tendon end at a time, independent of the opposite end of the tendon. These procedures have been developed so that they apply to each or one end of the tendon. Adequate communication shall be maintained between both ends of the tendon during the taking of liftoff readings for simultaneous stressing operations.

9. 1. 1. Regardless of the method of Monitoring there will probably be variations in the forces detected at each end of the tendon. If the average force for both ends of the tendon meet the control limits cited in Section 9.8.6 of this Procedure, that tendon will be acceptable. If the average force does not meet this control limit, then the action required of Section 9.8.6.1, 9.8.6.2, 9.8.7, 9.8.7.1 or 9.8.7.2 of this Procedure shall take place for the respective condition detected.

9. 1. 2. All data shall be documented on Data Sheet 9.0.

9. 1. 3. Document the averaging of the tendon end forces at item (9.8.5.3) of Data Sheet 9.0.

9. 2. QCD- Document the exterior surface temperature near the tendon and the ambient air temperature.

9. 3. If necessary, lubricate the anchorage threads with anti-seize compound.

9. 4. QCD- Document the amount of effective wires in each end of the tendon. Refer to Data Sheet 8.0 (8.3.7.3) for each end of the tendon.

9. 5. Couple the rams to each anchorage on that tendon.

⚠1 8-14-89 FORMAT CHANGE

9. 5. 1. QCD- Document the ram and gauge identification and the calibrated status of each. Also note the Ram Calibration Constant, K = ____.

9. 6. QCD- Document the dimension of each shim stack height, from the bearing plate to the bottom of the anchorage. It would be useful, but is not mandatory, to document the thickness of each shim in each shim stack, starting from the Bearing Plate and working up to the Anchorage.

9. 7. Establish the Tendon Liftoff Overstress Force for the end of the tendon being monitored. Tendon Liftoff Overstress Force for purposes of Monitoring of Tendon Force shall be that force value in excess of Liftoff, but less than the 80% of the Ultimate Strength of the tendon, which permits placement of the feeler gauges or provides complete looseness of the shim stacks. It is suggested that a value be selected at about the level of the Expected Force for that tendon, as shown in the Prestress Force Table of PSC Procedure SQ 9.1 and adjust up or down from that point.

⚠1 9. 7. 1. The tendon shall never be stressed beyond 80% of the Minimum Guaranteed Ultimate Tensile Strength (GUTS) of the effective wires remaining in that tendon. A 90 wire tendon shall not exceed a force of 848 kips during Detensioning or Retensioning operation. For a tendon with missing wires, the maximum tensil force shall be reduced accordingly by 9.42 kips/wire. The Overstress Force for Monitoring of Tendon Force will be found in Section 3 of PSC Procedure SQ 11.1.

⚠1 9. 7. 2. QCD- Document the selected Tendon Liftoff Overstress Force. From the Prestress Force Tables of Procedure SQ 9.1, document the 90% of Predicted Force (9PF), the 95% of Predicted Force (95PF) and the Predicted Force (PF), onto Data Sheet 9.0 from the Prestress Force Table of PSC Procedure SQ 9.1. Space is provided beneath each entry to document the gauge pressures for each Force requirement.

⚠1 8-14-87 ADD INFO.

⚠1 9. 7. 3. **CAUTION ONCE ACTUAL STRESSING BEGINS, THE RAM MUST NEVER BE EXTENDED TO THE FULL LIMIT OF ITS STROKE. HOLD THE EXTENSION TO AT LEAST 0.50" LESS THAN THE FULL STROKE OF THE RAM.**

9. 8. TENDON STRESSING (MONITORING)

9. 8. 1. Pressurize the rams in 1000 psi increments until liftoff is achieved. It is very likely that Liftoff will occur at some point before or after the selected Tendon Overstress Force. It is only necessary to observe that point where the load is removed from the shim stacks and both shim stacks are loose.

9. 8. 2. Insert one feeler gauge or shim stock, about 0.030" in thickness, into each shim stack. The gauges should be located about 180 degrees apart and approximately centered.

9. 8. 3. Reduce the ram pressure until the load is transferred on the shim stack. It shall not be necessary to return to zero gauge pressure, but at least 2000 psi less than the Pressure that was noted when the load was lifted off the shim stack.

9. 8. 4. Gradually pressurize the ram while pulling the feeler gauge. The point at which the feeler gauge comes loose and can be withdrawn is the Liftoff point.

9. 8. 5. Repeat Sections 9.8.1, 9.8.2, 9.8.3, and 9.8.4 until 3 consecutive Liftoff readings have been taken, which should be within 25 kips of each other.

9. 8. 5. 1. If the liftoff readings are outside the 25 kip control limit apply the average value for all 3 readings as the actual liftoff value for that tendon.

9. 8. 5. 2. When the shim stack is reset, the 25 kip value shall be observed as the control limit.

⚠1 8-14-87 ADD INFO.

9. 8. 5. 3. QCD- Document the force or pressure for each Liftoff of each shim stack. Place a circle around that Liftoff Value that was the last to have the feeler gauge or shim removed. (The last shim stack to come loose.) Do not intermix the values for the shim stacks. Stack 1 will always be Stack 1.

9. 8. 5. 4. QCD- Post the Circled Liftoff Values into the Circled Liftoff Value Column. It may be possible to have the Liftoff occur in each shim stack. Add the Circled Liftoff Values and divide by 3 to get the Actual Average. Post the Actual Average. Enter the Force from the opposite end of the tendon if it is available at this time. Calculate the Actual Average Liftoff Force (AALV) for this tendon.

⚠1 9. 8. 6. If the Actual Average Liftoff Value (AALV) is equal to or within the Predicted Force and 95% of Predicted Force of the Predicted Forces of the Prestress Force Table of Procedure SQ 9.1 or if the Actual Average Liftoff Value is equal to the 95% of Predicted Force but not in excess of 6% greater than the Predicted Force of the Predicted Forces of the Prestress Force Table of Procedure SQ 9.1, the Liftoff for that tendon shall be acceptable and the inspection shall progress to Section 10 of this Procedure. Where the Predicted Forces are shown for each end of a tendon in the Prestress Force Tables and these Predicted Forces are not identical, the Predicted Force Values for that tendon shall be averaged for comparison to the observed Actual Average Liftoff Value for that tendon.

⚠1 9. 8. 6. 1. If the Actual Average Liftoff Value exceeds the Predicted Force of the Predicted Forces by more than 6%, the Owner shall be notified in accordance with the requirements of Section 12 of this Procedure and the work shall continue. That tendon shall be Conditionally Acceptable.

⚠1 8-14-87 ADD INFO.

△1 9. 8. 6. 2. If the Actual Average Liftoff Value is less than 90% of the Predicted Force of the Predicted Force, that tendon shall be completely Detensioned in accordance with the requirements of Procedure SQ 10.0 and placed on "Hold" status. A Nonconformance Report shall be drafted and submitted to the Owner for investigation, evaluation and corrective action. The Nonconformance Report shall be considered as the notification medium required of Section 12 of this Procedure. The recommended Corrective Action shall constitute the means of releasing that tendon from "Hold" status to permit disposition of the Corrective Action. A copy of the Nonconformance Report shall be attached to the Data Sheet 9.0 for that tendon.

9. 8. 6. 3. QCD- The acceptance, nonacceptance or other actions required for the condition of that tendon shall be documented on Data Sheet 9.0 for the condition representative of that tendon. This shall be shown for (9.8.6) or (9.8.6.1) as that condition might apply. As a matter of convenience space has been provided for entering the Required Liftoff Pressure and Force ranges for purposes of comparison for acceptability.

△1 9. 8. 7. If the Actual Average Liftoff Value is equal to or greater than the 90% Predicted Force, but less than the 95% Predicted Force of the Predicted Forces of the Prestress Force Table of Procedure SQ 9.1 or less than the Minimum Required Prestress Force shown in the Prestress Force Table of Procedure SQ 9.1 whichever is greater, that tendon shall be considered unacceptable and the Adjacent Tendons shall be verified for liftoff force in accordance with Section 9.9 of this Procedure. The Adjacent Tendon Monitoring of Forces shall not be used more than once during an In-Service Inspection except to gather additional information if required.

△1 8-14-87 ADD INFO.

9. 8. 7. 1. QCD- Document the need for Adjacent Tendon Monitoring and the tendon numbers. Notify the Owner that Adjacent Tendon Monitoring is being performed.

⚠1 9. 8. 7. 2. The unacceptable tendon shall be Retensioned to a force value equal to but not in excess of 6% greater than the Predicted Force of the Predicted Forces shown in the Tables of Procedure SQ 9.1, following the requirements of Section 9.8.8 below, "Reset the Shim Stacks", and in accordance with the requirements of Section 11 of this Procedure, "Lockoff Tendon Load".

9. 8. 8. RESET THE SHIM STACKS

If it becomes necessary to change the Tendon Force Value at either end of the tendon, it shall be necessary to adjust the shim stacks to achieve the desired Force Value. The following section will provide the means for achieving that change.

9. 8. 8. 1. Adjust the stacks by removing, installing or shifting shims between stacks to obtain the required liftoff control. Try to maintain the same shim stack height. This should provide liftoff values relatively close to those originally documented for this tendon, then adding or subtracting shims in the same thickness and quantity to each shim stack will bring the Tendon Force to the required value. Observe the shim stack and anchorage control tolerances cited in Sections 11.1 and 11.2 of this Procedure.

⚠1 9. 8. 8. 1. 1. At any point prior to or during stressing, the field crew shall prepare shim stacks of uniform thicknesses, so that when the shims are placed, the height differential between individual stacks shall not exceed 0.0625 inches, thereby maintaining the integrity of the established parallelism between the bearing plate and anchorhead.

⚠1 8-14-87 ADD INFO.

9. 8. 8. 2. If the shim stack has been reset, it shall be necessary to establish a new liftoff force for the tendon. Repeat Sections 9.8.1 through 9.8.5.4.

9. 8. 8. 3. QCD- Document the new shim stack height.

9. 8. 8. 4. QCD- Document the new Actual Liftoff Value. Enter the new force and pressure reading for the shim stack on Data Sheet 9.0 for this tendon. It will be acceptable to use a new Data Sheet 9.0 for this tendon, but provide comments denoting that more than one Data Sheet exists for this tendon. Place a circle around that Liftoff Value that was the last to have the feeler gauge or shim removed. (The last shim to come loose.) Do not intermix the Values for the shim stacks. Stack 1 will always be Stack 1.

9. 8. 8. 5. QCD- Post the Circled Liftoff Values into the Circled Liftoff Column (9.8.8.5). It may be possible to have the Liftoff occur in each shim stack. Add the Circled Liftoff Values and divide by 3 to get the Actual Average. Post the Actual Average.

9. 9. <u>ADJACENT TENDON - MONITORING OF FORCES</u>

The Monitoring of Forces in tendons adjacent to the defective tendon shall follow the requirements of this procedure from Section 1 to Section 9.8.7.2. above, as each applies.

9. 9. 1. It shall be necessary to remove the Grease Can in accordance with PSC Procedure SQ 6.0 using Data Sheet 6.0 for the documentation requirements for each adjacent tendon.

9. 9. 2. Only one tendon shall be Monitored at one time.

9. 9. 3. It shall not be necessary to take Grease Samples.

△1 8-14-87 NO CHANGE

9. 9. 4. It shall be necessary to perform part of the Anchorage Inspection of PSC Procedure SQ 8.0. It shall only be necessary to clean up the Anchorage and Buttonheads so that Broken/Missing Wires can be detected to determine the amount of effective wires in that tendon. Data Sheet 8.0 shall be used to document this information for each Adjacent Tendon.

9. 9. 4. 1. Corrosion Condition or Buttonhead Inspection shall not be required.

9. 9. 5. It shall not be necessary to perform the Concrete Inspection of PSC Procedure SQ 8.3.

9. 9. 6. The technical operation for Monitoring the Forces of Adjacent Tendons shall start with Section 9.1 and continue to Section 9.8.6.2 of this procedure, with the documentation occurring on Data Sheet 9.0 for each Adjacent Tendon Monitored.

⚠1 9. 9. 7. The lost sheathing filler shall be replaced.

9. 10. ACCEPTANCE OF ADJACENT TENDON MONITORING

⚠1 9. 10. 1. If the Actual Average Liftoff values obtained from the Tendons Adjacent to the defective tendon meet the requirements of Section 9.8.6 of this Procedure, the deficiency of the unacceptable tendon shall be considered unique and therefore acceptable. If either or all tendons exceed the Predicted Force control by more than 6%, then the action of Section 9.8.6.1 of this Procedure shall take place.

⚠1 8-14-87 ADD INFO.

⚠1 9. 10. 2. If either or both of the Actual Average Liftoff Values obtained from the two Tendons Adjacent to the unacceptable tendon do not meet the requirements of Section 9.8.6 or 9.8.6.1 of this Procedure, the Owner shall be notified in accordance with Section 12 of this Procedure. The Unacceptable Tendon or Tendons shall be Retensioned to a value equal to but not in excess of 6% greater than the Predicted Force of the Predicted Forces, following the requirements of Section 9.8.8; Reset the Shim Stack and Lockoff Tendon Load in accordance with Section 11 of this Procedure.

9. 10. 3. QCD- Document the acceptability of the Monitoring of each Adjacent Tendon. If the results are unacceptable, the Notification required of Section 12 of this procedure shall be performed.

10. CONTINUING OPERATIONS

10. 1. If the tendon is to be Detensioned for purposes of continuing the inspection of anchorages, wire, shims, and the bearing plate, it shall be necessary to go to PSC Procedure SQ 10.0 for the operations to follow and this procedure shall be concluded at this point.

10. 2. If this tendon is only being Monitored, then the concluding operations shall start with Section 11 following.

11. LOCKOFF TENDON LOAD

11. 1. Prior to transferring the load onto the shim stacks, the following controls shall be observed.

⚠1 11. 1. 1. The space between the stacks of shim halves for the first shims in direct contact with the anchorage should not exceed a space of 0.1875". The remaining shims in the shim stack may be placed with a larger spacing but should not exceed 0.250" between stacks. These control dimensions shall apply to both axial directions as viewed from the top of the anchorage and/or shim stack.

⚠1 8-14-87 ADD INFO

11. 2. Decrease the pressure on the ram until the load is reseated on the shim stack. Once the load has been replaced, the following controls shall be observed and if required, the necessary adjustments shall be made.

⚠1 11. 2. 1. The anchorhead shall be centered within 0.1875" of the center of the trumpet, when placed on the bearing plate or shim stack. If not within the required 0.1875", the anchorage shall be realigned.

11. 2. 2. No part of the anchorhead shall overhang the shim stack.

11. 3. The ram force shall be reduced to zero. The ram shall not be removed from the anchorage until the load is completely transferred to the shims.

11. 4. The ram shall be uncoupled from the anchorage.

11. 5. Anti-seize compound if used, shall be removed from the anchorage by washing with Viscor #16 solvent, being careful not to contaminate the grease in the tendon.

11. 6. If the liftoff forces are determined to be acceptable, this tendon shall be completed by Replacing the Grease Can in accordance with PSC Procedure SQ 12.0.

12. NOTIFICATION

The Owner shall be formally notified when each one or more of the following conditions are detected as the result of the inspection of a tendon.

⚠1 12. 1. Deleted

⚠1 12. 1. 1. Deleted

12. 2. If Adjacent Tendon Liftoff Monitoring is to be performed.

⚠1 12. 3. If either of the Actual Average Liftoff Values obtained from the two Tendons Adjacent to the defective tendon is less than the 95% of Predicted Force Limit, the Owner shall be notified with a nonconformance report.

⚠1 8-14-87 ADD INFO.

12. 4. If a second Unacceptable Tendon is detected during the In-Service Inspection, the Owner shall be notified with a nonconformance report.

△1 12. 5. If the Actual Average Liftoff Value exceeds the Predicted Force Limit of the Predicted Forces by more than 6%.

△1 12. 6. If the Actual Average Liftoff Value is less than 90% of the Predicted Force of the Predicted Forces, a Nonconformance Report shall be issued as formal notification and the tendon place on "Hold" status after Detensioning.

13. DOCUMENTATION

The items requiring documentation in this procedure, shall be documented on Data Sheet 9.0

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

13. 2. Some information from Data Sheet 8.0 of PSC Procedure SQ 8.0, which has already been started for this tendon, shall require posting onto Data Sheet 9.0.

14. ATTACHMENTS

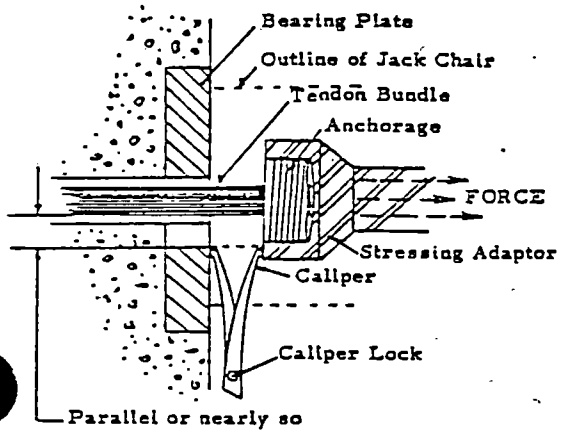
14. 1. Data Sheet 9.0

14. 2. Sketch 7-0

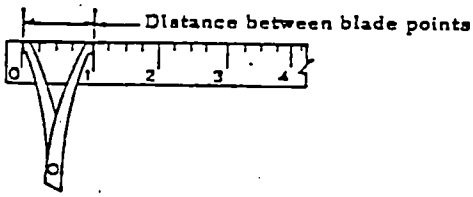
△1 8-14-87 ADD INFO.

D81

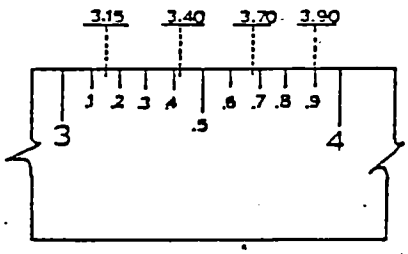
MEASUREMENT - SKETCH 7.0



Caliper placed between bearing plate and stressing adaptor, parallel to the tendon bundle. Lock caliper after taking dimension and before removal. Verify accuracy as necessary.



After caliper is removed without disturbing setting, place the caliper on the scale at a convenient point, but not on an uneven end and make the measurement.



Scale graduated in tenths of an inch (0.10") and estimated to the nearest 0.05 inches.

LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

Q.C.Signof

(9.2) Concrete Temp. _____F. Therm. No._____ Recal Date _____ _____
Ambient Temp. _____F. Therm. No._____ Recal Date _____ _____
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) _____ _____
(9.5.1) Ram ID _____ Recal Date _____ Ram Area _____ K=_____ _____
Gauge ID _____ Recal Date _____ Daily Check _____ _____

(9.6) Shim Stack Height #1 _____ #2 _____ Ruler ID _____ Recal Date _____ _____
Individual Shims: Stack #1 _____ Stack #2 _____ _____

1 (9.7.2) Tendon Liftoff Overstress Force _____ kips Pressure _____ psi _____
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) _____kips (95PF) _____kips (PF) _____kips _____
_____psi _____psi _____psi _____

(9.8.5.3) ACTUAL LIFTOFF: (9.8.5.4) Circled

	Stack #1	Stack #2	Actual
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____

Actual Average _____ _____
FORCE (opposite end) _____ kips FORCE (this end) _____ kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE _____ kips _____

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE _____ to _____psi FORCE _____ to _____kips _____
(9.8.6) Acceptable ☐YES ☐NO
1 (9.8.6.1) AALV Beyond 6% of (PF) ☐YES ☐NO Notify Owner _____ _____
1 (9.6.6.2) AALV Below (95PF) ☐YES ☐NO DETENSION ☐YES ☐NO NCR No._____
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED_____ Tendon #1 _____
Notify Owner _____ Tendon #2 _____ _____
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack _____ #2 Stack _____ _____

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE: (9.8.8.5) Circled

	Stack #1	Stack #2	Actual
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____

Actual Average _____ _____
FORCE (opposite end) _____ kips FORCE (this end) _____ kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE _____ kips _____

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept _____ Unacceptable _____
(9.10.3) #2 Accept _____ Unacceptable _____ Notify Owner _____ _____

Q.C. Review _____ Level _____ Date _____

Title _____

1 8-14-87 ADD INFO

D83

REVISION 0
REVISION 1, 8-14-87
△2 REVISION 2, 8-24-87

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

PRESTRESS FORCES

△2 Prepared by H.T. Hendrickson Title MGR., Q.A. Date 8-24-87

△2 Approved by H.T. Hendrickson Title MGR., Q.A. Date 8-24-87

△2 Approved by D Bronaw Title Mgr Eng Date 8-24-87

1. PURPOSE

The purpose of this procedure is to provide the Prestress Force Values that will be used during the Monitoring of Tendon Force, Detensioning Tendons, Retensioning Tendons, and for the evaluation of the acceptability of those forces observed during the various operations.

1. 1. The acceptability of the required values will be seen in those procedures that contain those activities that have need for the Predicted Prestress Force Values.

1. 2. ESTABLISHING PREDICTED FORCES

The Predicted Forces seen in the Tables of this Procedure have been developed based on the average forces remaining in a tendon. The forces for each end of the tendon have been averaged to provide a common force value for each end of the tendon, as well as the entire tendon.

2. ADJACENT TENDON MONITORING

In order to determine the acceptability of the Actual Liftoff Values for Adjacent Tendon - Monitoring of Forces, Procedure SQ9.0, it shall be necessary to formally request that information through Engineering, as soon as it is known that Adjacent Tendons require Monitoring.

2. 1. ADJACENT TENDON DATA

PALISADES NUCLEAR POWER PLANT
15 YEAR SURVEILLANCE
PRESTRESS FORCE TABLE (IN KIPS)

△2 8-24-87 NO CHANGE

(2) PALISADES NUCLEAR POWER PLANT
15 YEAR SURVEILLANCE
PRESTRESS FORCE TABLES (IN KIPS)

TENDON	END	MINIMUM REQUIRED PRESTRESS FORCE (MRPF)	PREDICTED FORCES		
			90% OF PREDICTED FORCE(9PF)	95% OF PREDICTED FORCE(95PF)	PREDICTED FORCE (PF)
D1-09	FIELD SHOP	584 584	554 (Avg.) 554 (554)	585 (Avg.) 585 (585)	615 (Avg.) 615 (615)
D1-38	FIELD SHOP	584 584	554 (Avg.) 554 (554)	585 (Avg.) 585 (585)	615 (Avg.) 615 (615)
D2-03	FIELD SHOP	584 584	554 (Avg.) 554 (554)	585 (Avg.) 585 (585)	615 (Avg.) 615 (615)
D3-18	FIELD SHOP	584 584	554 (Avg.) 554 (554)	585 (Avg.) 585 (585)	615 (Avg.) 615 (615)
V-14	SHOP	615	573	605	636
V-124	SHOP	615	573	605	636
V-230	SHOP	615	573	605	636
V-250	SHOP	615	573	605	636
H-59AC	FIELD SHOP	615 615	573 (Avg.) 573 (573)	605 (Avg.) 605 (605)	636 (Avg.) 636 (636)
H-77AC	FIELD SHOP	615 615	573 (Avg.) 573 (573)	605 (Avg.) 605 (605)	636 (Avg.) 636 (636)
H-65BF	FIELD SHOP	615 615	573 (Avg.) 573 (573)	605 (Avg.) 605 (605)	636 (Avg.) 636 (636)
H-74BF	FIELD SHOP	615 615	573 (Avg.) 573 (573)	605 (Avg.) 605 (605)	636 (Avg.) 636 (636)
H-42DF	FIELD SHOP	615 615	573 (Avg.) 573 (573)	605 (Avg.) 605 (605)	636 (Avg.) 636 (636)

(2) 8-24-87 ADD INFO.

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

DETENSIONING TENDONS

Prepared by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bronaas Title Mgr, Engineering Date 5.18.87

1. PURPOSE

This procedure will establish the requirements for Detensioning Tendons for purposes of visual inspection, testing and evaluation, during In-Service-Inspections (surveillance) of Post-Tensioning Systems Tendons of Consumers Power Company's Palisades Nuclear Power Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

4. EQUIPMENT

The gauges and test equipment necessary for the Quality Control activities will be itemized in PSC Procedure SQ 4.0.

5. PRECAUTIONS

Review the I.S.I. Tendon Surveillance Program Safety Comments for the following items that shall apply both for tendon force control and personnel safety.

5. 1. Section 3.2; Stressing Operations: Overstress Force.

5. 2. Section 3.2.2; Personnel Safety.

5. 3. Section 3.3; Stressing Adapter: Full Engagement.

5. 4. Section 3.4; Anchorage Engagement; Full Engagement.

5. 5. Section 6.0; Construction Safety: Personnel Safety.

6. QUALITY CONTROL

There are no Hold Points or documentation requirements for this Procedure.

7. PREREQUISITES

The tendon will have been Monitored for Tendon Force as required of PSC Procedure SQ 9.0, up to and including Section 9.8.7 and found to be acceptable. The Detensioning shall continue from that point where the final or third liftoff was taken. The tendon shall not be detensioned until the liftoffs are documented and acceptable.

8. DETENSIONING THE TENDON

Where a tendon is specified to require Detensioning, to permit elongation measurements and inspection of the Detensioned anchorages, wires, shims and bearing plates, the following operations shall take place. No documentation is required for this operation. Tendons requiring Detensioning shall be Detensioned simultaneously from both ends.

8. 1. With the final liftoff being completed and the load completely off the shims, all the shims shall be removed. If more clearance is required, the load on the tendon may be increased to the point of overstress or something less.

8. 1. 1. Keep the shims from each stack separate. This will permit the shims to be replaced without extensive rematching.

8. 1. 2. If it becomes necessary to document the size of each shim removed from the shim stack this shall be documented on Data Sheet 9.0 of PSC Procedure SQ 9.0, underneath the Shim Stack Height Dimension (9.6).

8. 2. With the shims removed, the load on the tendon shall be reduced to zero.

8. 3. ELONGATION MEASUREMENT

8. 3. 1. Elongation measurements shall be taken during Retensioning operations, refer to PSC Procedure SQ 11.0.

9. CONTINUING OPERATIONS

Once Detensioning is complete any number of operations may follow such as:

9. 1. Anchorage Inspection

9. 2. Continuity Test

9. 3. Tendon Wire Removal

9. 4. Retensioning the Tendon

10. ACCEPTANCE

There are no requirements for acceptance or non-acceptance during Detensioning of a Tendon.

11. DOCUMENTATION

There are no requirements for documentation in this Procedure.

D90

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

DETENSIONED ANCHORAGE INSPECTION

Prepared by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bronaus Title Mgr, Engineering Date 5.18.87

D91

1. PURPOSE

This procedure will establish the requirements for the visual inspection and evaluation of the tendon end anchorages, shims, bearing plate, buttonheads and wires during In-Service-Inspection (surveillance) of Post-Tensioning System Tendons after that tendon has been Detensioned of Consumers Power Company's Palisades Nuclear Power Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

4. EQUIPMENT

The gauges and test equipment necessary for the Quality Control activities will be itemized in PSC Procedure SQ 4.0.

5. 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 verbal release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 8.0 of PSC Procedure SQ 8.0 that has already been started for this tendon.

6. PRECAUTIONS

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

7. PREREQUISITES

7. 1. The Anchorage Cleanup will be completed.

7. 2. The tendon will be in a Detensioned Condition.

8. ANCHORAGE INSPECTION

The tendon anchorage, including the shop head, field head and bushing, bearing plate, stressing shims, and wires of all selected tendons shall be visually inspected for signs of excessive stress, corrosion, cracks, missing, broken or protruding wires. Buttonheads shall be inspected for cracks, splits and slips.

8. 1. If the anchorhead is not recessed into the trumpet tube, inspect the interior of the bearing plate and trumpet tube for any evidence of voids or incompleteness of the grease coverage. It should be noted that air pockets will be seen, probably in the shape of a cone. This is the typical condition of the grease in a solid condition and must not be construed as a deficiency.

8. 1. 1. Use a flashlight or other devices that could assist in evaluating this condition. Take a measurement from the outside of the bearing plate to that point where the grease can be seen as a solid plug.

8. 1. 2. QCD- Document the completeness of the coating on DS 8.0 and the depth of the air pocket into the trumpet or sheath. Areas that are bare or incomplete shall be documented for size and location on Sketch Sheet 8.0.

8. 2. If the anchorhead is not recessed into the trumpet tube, inspect the tendon wires from the bottom of the anchorage into the tendon duct for completeness of the grease coverage and for signs of corrosion. Use PSC Procedure SQ 8.1 to evaluate the Corrosion Condition of the wires.

8. 2. 1. QCD- Document the completeness of the coating and the Corrosion Condition rating for the tendon wires. Also refer to Section 8.7.1.2.

8. 3. If the anchorhead is not recessed into the trumpet tube, inspect the bottom side of the anchorages for Corrosion Level rating, using PSC Procedure SQ 8.1 to evaluate the anchorages.

8. 3. 1. QCD- Document the Corrosion Level rating for the anchorages. (8.1.2 of DS 8.0)

8. 4. Inspect the shims and bearing plate for signs of Corrosion using PSC Procedure SQ 8.1 for evaluation. Clean the shims and bearing plate as necessary to perform this evaluation.

8. 4. 1. QCD- Document the Corrosion Level ratings for the shims and bearing plate (8.1.2).

8. 5. Inspect the anchorages, shims and bearing plates for any evidence of cracking during the Corrosion Level evaluation.

8. 5. 1. QCD- Document any cracks found on Sketch Sheet 8.0 from PSC Procedure SQ 8.0. Include any dimensions that could help to locate or evaluate the cracks. Indicate whether cracks or excessive stress have been found on DS 8.2 (8.2).

8. 6. If the anchorhead is not recessed into the trumpet tube, the anchorages shall be pushed back from the ends of the wires toward the bearing plate. This may be accomplished manually or with mechanical devices, just so the anchorages, threads or wires are not damaged in any way.

8. 7. If the anchorhead is not recessed into the trumpet tube, inspect the wires from the bottom of the buttonheads to that point where the bottom of the anchorage was located, for signs of corrosion. The buttonheads shall be visually inspected at this time in accordance with the requirements of Section 8.3 of PSC Procedure SQ 8.0.

8. 7. 1. QCD- If the Corrosion Condition of this area of the wires is the same or better than that evaluated in Section 8.2.1 of this procedure, it shall not be necessary to enter any additional information on the Data Sheet.

8. 7. 1. 1. QCD- If the Corrosion Condition is of a lower rating than the original entry in the Corrosion Condition rating area shall be corrected to reflect that lower rating.

8. 7. 1. 2. It shall be acceptable to delay the documentation of Section 8.2.1 until this area of the wire has been inspected and evaluated. If both ratings are the same, only one entry need be made.

8. 8. If the anchorhead is not recessed into the trumpet tube, with the anchorages pushed back, protruding wires can be evaluated for Continuity through the use of PSC Procedure SQ 10.5.

8. 8. 1. If it is determined during this inspection that a protruding wire is broken, it shall not be necessary to perform the Continuity Test on that wire, but that wire shall be removed and the Owner notified with a nonconformance report.

8. 8. 2. If it is determined during this inspection that any other wire is broken, that wire shall be removed and the Owner notified with a nonconformance report.

8. 8. 3. QCD- Document the broken protruding wire as required of PSC Procedure SQ 10.5 on Data Sheet 8.0.

8. 8. 4. QCD- Additional broken wires shall be documented directly on Data Sheet 8.0 in the manner required of PSC Procedure SQ 8.0 Section 8.3.3.

8. 8. 5. If the amount of broken wires detected in this inspection increases the total quantity of Broken/Missing Wires/Buttonheads for the earlier Anchorage Inspection of this tendon in a stressed condition to 1 or more during this surveillance, it shall be necessary to notify the Owner of this condition in accordance with the requirements of Section 9 of this Procedure.

8. 8. 6. It shall be acceptable to continue working to complete all the inspections so that all the results are available for evaluation. The Owner shall be notified within 24 hours of discovery.

8. 9. The tendon wire to be used for physical testing shall be removed at this time, in accordance with PSC Procedure SQ 10.2.

8. 10. Damaged or excessively deformed shims shall be replaced at this time. Damage other than would be noted from the load resting on the shims shall be documented.

8. 10. 1. QCD- Document unusual damage or conditions for any item of the tendon end, on Sketch Sheet 8.0 (PSC Procedure SQ 8.0).

8. 11. With the completion of this inspection and the required documentation, if all results are acceptable, then it shall be permitted to continue working or inspecting the tendons.

8. 11. 1. Once the inspections of Procedure SQ 10.1 are completed, if nonconforming conditions are detected and the Owner notified in accordance with Section 9 of this procedure, no further work beyond PSC Procedure SQ 10.1 shall be performed on this tendon without the permission of the Owner, which should include a recommendation for corrective action.

8. 11. 2. The tendon ends shall be protected whenever it is not being worked or inspected. This protection shall include a light coating of grease and covering with a plastic bag, plastic sheeting or the grease can if that tendon is exposed to the weather.

8. 12. Prior to pulling the anchorage back to the ends of the wire, the tendon wires shall be coated with grease. The grease may be brushed on or poured on, just so the wires get coated.

8. 13. The anchorages shall be pulled back to the buttonheads.

8. 14. If the tendon was recessed into the trumpet, examine the tendon wires in the tendon duct after pulling back the anchorheads and recentering the tendon. If the tendon wires in the trumpet tube appear to be a little thin on grease coating, it shall be acceptable to brush some grease onto the wires as an additional measure of protection.

8. 15. That portion of wire extending from the back of the anchorage to the pushed back location of the anchorage shall be coated with grease.

8. 15. 1. Be prepared to catch any runoff of the grease as it is being applied to the tendon wires.

8. 16. The tendon shall now be ready for Retensioning, concluding this procedure.

9. NOTIFICATION

The Owner shall be formally notified when each one or more of the following conditions are detected as a result of the inspection of a tendon.

9. 1. CORROSION CONDITION "E"- when detected for the Wire Inspection, the Owner shall be notified with a nonconformance report.

9. 2. CORROSION LEVEL 3,4, or 5- when detected for Anchorages, Shims and/or Bearing Plates, the Owner shall be notified with a nonconformance report.

9. 3. CRACKS- no matter how small, when detected for Anchorages, Shims and/or Bearing Plates, the Owner shall be notified with a nonconformance report.

9. 4. PROTRUDING WIRES- shall be reported for quantity and length of protrusion, if found to be continuous after the Continuity Test but still unseated after Retensioning.

9. 5. ADDITIONAL MISSING OR BROKEN WIRES/BUTTONHEADS- when detected for a quantity of 1 or more since the original installation or previous surveillance, the Owner shall be notified with a nonconformance report, but it will not be necessary to stop work to await approval of the NCR.

10. DOCUMENTATION

The items in this procedure requiring documentation shall be documented on Data Sheet 8.0 which has already been started for this tendon from the Anchorage Inspection of PSC Procedure SQ 8.0.

10. 1. The Data Sheet references the applicable section number of the procedure for each QCD point.

D98

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

TENDON TEST WIRE REMOVAL

Prepared by H. F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H. F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bronaugh Title Mgr, Engineering Date 5.18.87

1. PURPOSE

This procedure will establish the requirements for removing a sample wire to be used for physical testing, during In-Service-Inspections (surveillance) of the Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Power Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

4. EQUIPMENT

Quality Control gauges or test equipment will not be required for this activity, except where hydraulic devices and gauges are used.

5. PRECAUTIONS

5. 1. **Caution - When pulling individual wires, never exceed the yield strength of that wire when pulling with the pulling device - 9425 pounds.**

5. 2. Discontinuous wires shall not be used for physical testing.

5. 3. If other Broken/Missing Wires are found in this tendon as a result of this inspection or previous inspections, it shall be necessary to select a wire from this tendon that would tend to balance the forces in that tendon anchorage and try to maintain symmetry with the missing wires in the hole pattern.

5. 4. **BE SURE THAT THE CORRECT WIRE HAS BEEN LOCATED BEFORE CUTTING.**

5. 5. **BE SURE** that this tendon requires sample wire removal.

5. 6. **USE CARE** to avoid damaging other wires or buttonheads.

5. 7. **AVOID** unnecessary marks or damage to the wire while removing.

5. 8. USE CARE when coiling the wire and securing it into a coil. This wire has considerable spring force and must be prevented from uncoiling violently.

6. PREREQUISITES

6. 1. The Anchorage Inspection will be complete and Data Sheet 8.0 available.

6. 2. The tendon will be Detensioned; Monitoring of Forces may have been completed.

7. WIRE REMOVAL

7. 1. A wire shall be selected.

7. 2. The Tendon Surveillance Wire Puller shown in Figure 2 of PSC Procedure SQ 10.5 shall be attached to the selected wire.

7. 3. The wire shall be pulled with the Wire Puller using as little force as possible, but not to exceed 9425 pounds.

7. 3. 1. If the wire cannot be moved by hand, it shall be acceptable to use any mechanical device to accomplish that purpose, such as a "Come-Along", "Chain-Hoist", "Chain Pawl" or hydraulic ram.

7. 3. 1. 1. It is unlikely that anything but the hydraulic ram will be able to exert such an amount of force so as to yield or break the wire. Therefore hydraulic devices shall be calibrated for area and controlled for force through a calibrated gauge or controlled for maximum force through a locking valve to control the amount of pressure to be exerted.

7. 3. 1. 1. 1. This hydraulic device and gauge shall be checked for calibration or pressure control prior to being used for the first time and after the completion of the surveillance.

7. 3. 1. 2. There remains a possibility that the wire might not be moved by a limited force. It shall be necessary to abandon that wire and select a new wire, continuing this process until a wire can be moved.

7. 4. Once a tendon wire is located that can be moved, it shall be witnessed for that movement at the opposite end of the tendon to verify that this is a continuous wire.

7. 5. Prepare to cut the wire at the opposite end of the tendon from where the wire is to be pulled.

7. 5. 1. QCD- Document the location of wire removal on Data Sheet 8.0 of Procedure SQ 8.0. Once this is posted, document that action on Data Sheet 10.2 of this Procedure.

7. 5. 2. Measure back from the buttonhead 1 inch plus or minus 1/16 inch and mark or scribe a line; it shall be acceptable to notch the wire with a file.

7. 5. 3. Cut the wire somewhere between the buttonhead and the marked line, but not on the line.

7. 5. 4. Pull the wire completely through the tendon duct.

7. 5. 4. 1. While pulling, the tendon wire shall be observed for Corrosion Condition and evaluated in accordance with PSC Procedure SQ 8.1, Section 1, for every 10 feet of length.

7. 5. 4. 1. 1. QCD- Document the Corrosion Condition rating on Data Sheet 10.2, for every 10 feet of length.

7. 5. 4. 1. 2. If the Corrosion Condition has progressed beyond Condition "D" as defined in Section 1 of PSC Procedure SQ 8.1, the Owner shall be notified with a nonconformance report. The Owner shall provide the final corrective action, which could include removing additional wires and performing Physical Testing.

7. 5. 4. 2. While the tendon wire is being pulled, it shall be cleaned of excess grease and coiled into coil form of not less than 60 inches in diameter. Solvent cleaning may be performed to facilitate cleaning before inspection.

7. 5. 4. 2. 1. It shall be acceptable to cut the wires into about 10 foot lengths if coiling is impractical. The cut wires shall be identified as required of Section 7.5.5 of this procedure.

7. 5. 4. 3. After the tendon wire has been pulled through, it shall be measured for length while being coiled, before being coiled or during cutting to short lengths.

7. 5. 4. 3. 1. QCD- Document the total length of wire on Data Sheet 10.2. Remember to include the one inch of wire length to be added from the marked line of Section 7.5.2.

7. 5. 4. 4. If the wire testing is to be performed on site, it shall be acceptable to cut the 3 sample wires while the wire is being pulled out and coiled. Refer to PSC Procedure SQ 10.3 for the control and documentation requirements. The sample shall be cut from each end and the middle of the wire and as cited in Section 7.5.4.4.1 below and shall be about 108" long, unless the wires are to be cut to the required testing length.

7. 5. 4. 4. 1. Sample selection shall include areas representative of significant corrosion or pitting if this condition exists on the removed wire or provide additional samples of this condition in addition to the original 3. Samples shall not contain gripper marks from the pulling device.

7. 5. 4. 4. 2. As a note of caution, be sure that the wire is moving freely before cutting. Otherwise there could be difficulty in removing the wire, requiring assist devices that could leave surface marks on the wire.

7. 5. 4. 4. 3. QCD- If the wire is cut for samples while being pulled, document the area of removal on Data Sheet 10.2 for later transfer to Data Sheet 10.3 of PSC Procedure SQ 10.3. Document each location of sample removal and tag each cut length for area of removal and tendon identification.

7. 5. 5. Attach a tag to the end of the wire being pulled that identifies the tendon and end of removal. If the wire is cut for samples during removal, the cut lead or front end of the wire shall be identified by tendon number and end of removal to permit reconstruction of that wire as it existed in the tendon.

7. 5. 6. The coiled wire, whether a single piece or cut pieces, shall be securely tied and covered with plastic sheeting or a plastic bag to protect the wire from inclement conditions.

7. 5. 6. 1. The covered coil of wire may be handed over to the Owner for storage and control.

7. 6. If it becomes necessary to remove any additional wires from a tendon for physical testing, this procedure shall be followed to include additional documentation. This includes Broken Wires or wires with Corrosion Condition evaluated as Rejected Condition "E".

7. 7. QCD- The wire or each wire that has been removed for physical testing during this surveillance shall be documented for location of removal on Data Sheet 8.0 of PSC Procedure SQ 8.0, using the appropriate Code Symbol. Document the posting of this information on Data Sheet 10.2.

7. 8. QCD- Document the identification and recalibration date of the measuring device and the wire Pulling Ram, if used, on Data Sheet 10.2.

8. DOCUMENTATION

The items requiring documentation in this procedure shall be documented on Data Sheet 10.2.

8. 1. Some information documented on Data Sheet 10.2 shall require subsequent posting to Data Sheet 8.0 of PSC Procedure SQ 8.0 and to Data Sheet 10.3 of PSC Procedure SQ 10.3.

9. ATTACHMENTS

9. 1. Data Sheet 10.2

9. 2. Sample Data Sheet 10.2

WIRE REMOVAL INSPECTION DOCUMENTATION

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

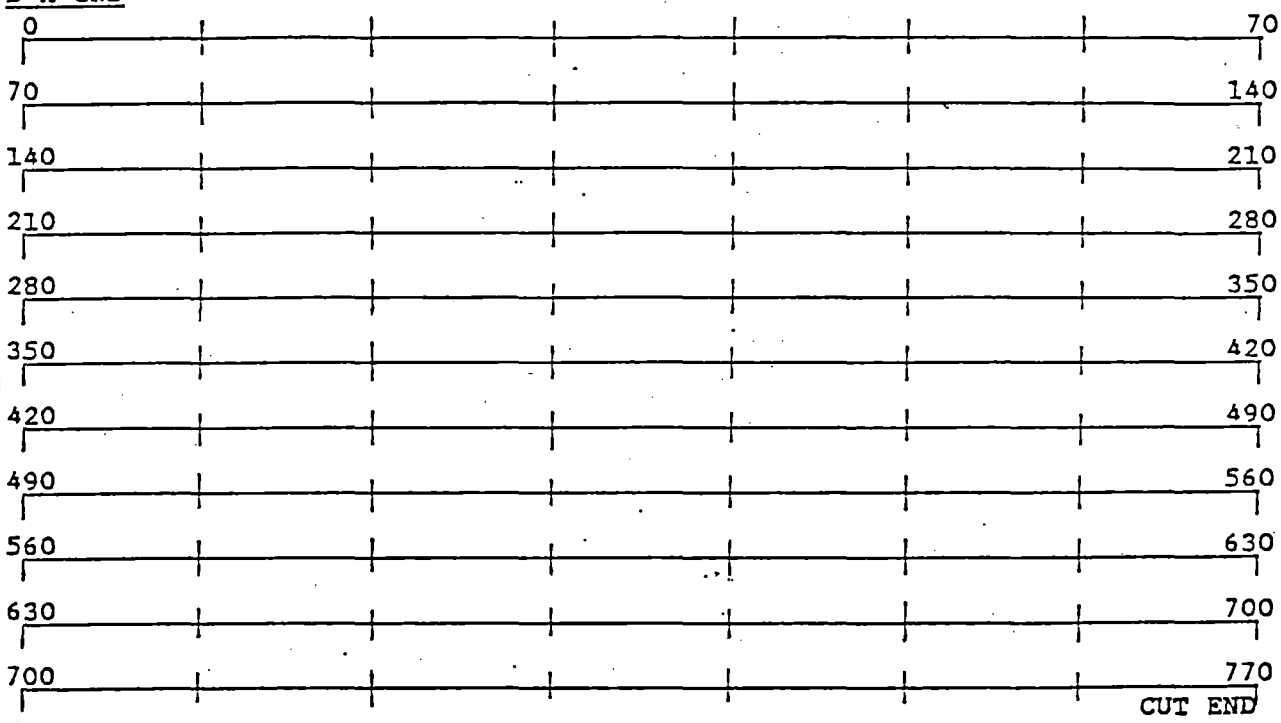
TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

DATE OF REMOVAL _____ DATE OF INSPECTION _____

INSPECTED BY _____ (7.5.4.3.1) LENGTH OF WIRE _____

(7.5.4.1.1) & (7.5.4.4.3)

B H END



Remember to add the 1 inch for the marked line to the length of the wire.
If the samples are removed, mark the location of removal here and on DS 10.3.

(7.8)
Measuring Device _____ I.D. _____ Recal Date _____
Wire Pulling Ram I.D. _____ Recal Date _____

CORROSION CONDITION (Refer SQ 8.1)

A = EXCELLENT
B = GOOD
C = FAIR
D = USABLE
E = REJECTED (Pitted)

} Document the Corrosion Condition for each 10 foot segment.

(7.5.1) & (7.7)
Post the location of wire removal to DS 8.0 _____

Q.C. Review _____ Level ___ Date _____

Title _____

SAMPLE

PSC PROCEDURE SQ 10.2
TEST WIRE REMOVAL
DATA SHEET 10.2
MAY 20, 1987 D106
Page 1 of 1
Revision 0

WIRE REMOVAL INSPECTION DOCUMENTATION

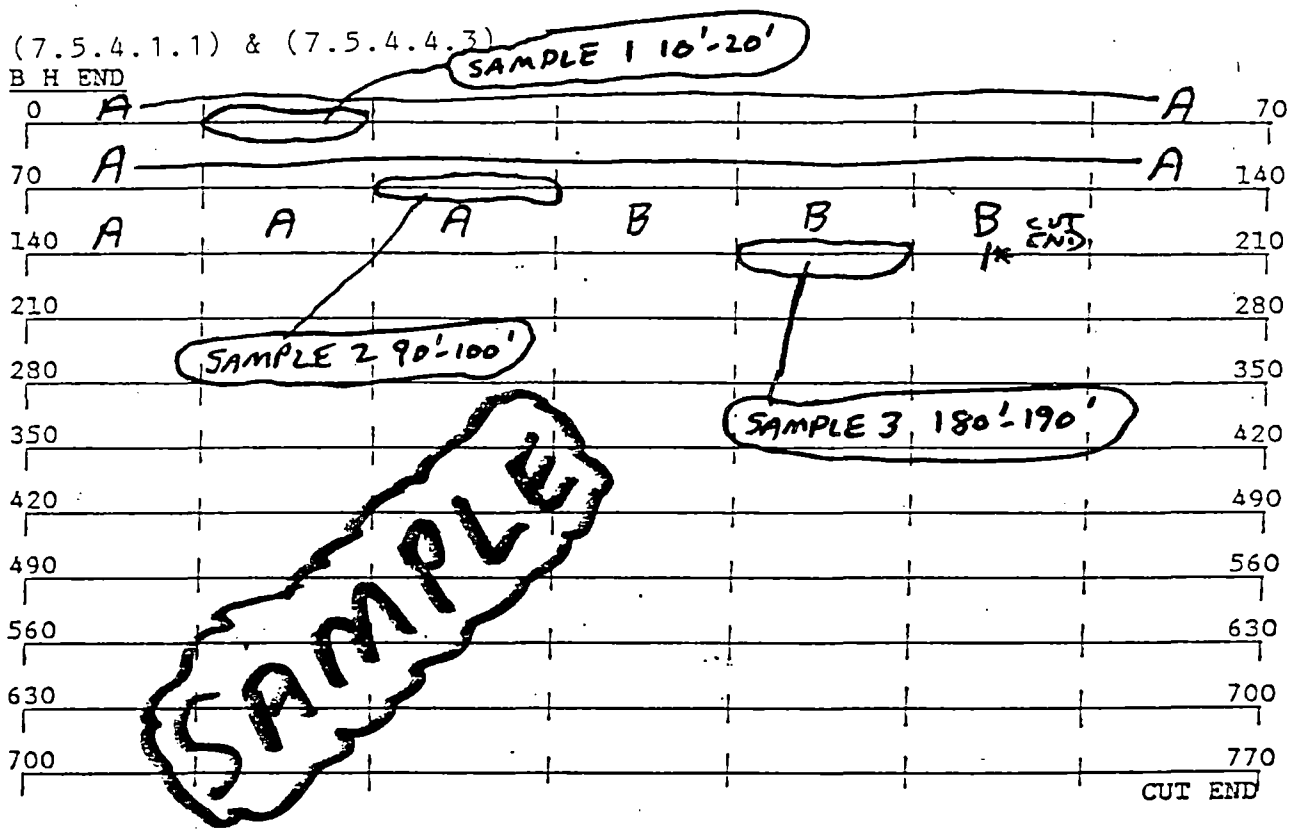
PROJECT PALISADES SURVEILLANCE NO. 15TH YEAR 5 YEAR 1987

TENDON NO. VC5 TENDON END/BUTTRESS NO. TOP SHOP END UNIT 1

DATE OF REMOVAL 6-12-87 DATE OF INSPECTION 6-12-87

INSPECTED BY C. Brooks (7.5.4.3.1) LENGTH OF WIRE 194'-7 5/8"

(7.5.4.1.1) & (7.5.4.4.3)



SAMPLE

Remember to add the 1 inch for the marked line to the length of the wire.
If the samples are removed, mark the location of removal here and on DS 10.3.

(7.8)
Measuring Device TAPELINE I.D. QC101 Recal Date 12-1-87
Wire Pulling Ram I.D. N/A Recal Date N/A

CORROSION CONDITION (Refer SQ 8.1)

A = EXCELLENT
B = GOOD
C = FAIR
D = USABLE
E = REJECTED (Pitted)

} Document the Corrosion Condition for each 10 foot segment.

(7.5.1) & (7.7)
Post the location of wire removal to DS 8.0 OK C. Brooks 6-12-87

Q.C. Review W.F. Hendrickson Level III Date 6-15-87

Title Mgr., Q.A.

D107

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

PHYSICAL TESTING OF TENDON WIRES

Prepared by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H.F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bronsma Title Mgr, Engineering Date 5.18.87

1. PURPOSE

This procedure will establish the requirements for the Physical Testing of tendon wires removed from Post-Tensioning System Tendons for purposes of testing and evaluation, during In-Service-Inspections (surveillance) of Consumers Power Company's Palisades Nuclear Power Plant.

2. SCOPE

The Owner may test the wires or have PSC test them per this procedure.

The intention of this procedure is to provide the means of physically testing an Acceptable Wire removed from a tendon. However, this Procedure shall also apply for the physical testing of wires which may have been found to be Broken or in an Unacceptable Corrosion Condition, should that be required by the Project Specification.

3. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

4. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

5. EQUIPMENT

Steel tapeline, steel ruler, 1" O.D. Micrometer, Wire Test Apparatus, Pressure Gauge.

6. QUALITY CONTROL

There are no Hold Points in this procedure, however all Quality Control Documentation (QCD) points shall require documentation as required on Data Sheet 10.3.

7. PRECAUTIONS

7. 1. Avoid looking into the test apparatus while the wire is being tensioned.

7. 2. Always maintained identification control of the samples so that the tendon identification is maintained, the direction of removal of the wire and the location of that sample as it was removed from the tendon wire.

7. 2. 1. As a means of maintaining consistency for testing, the end of the sample that is tagged (closest to pulling or buttonhead end) shall always be placed into the Wire Test Apparatus (Figure D 1) opposite or away from the ram end.

8. PHYSICAL TESTING

Tendon wires shall be tested to meet the requirements of ASTM A421-65. The following steps shall be used to test any tendon wire removed from the tendon, whether that is an Acceptable Wire, a Broken Wire or a Wire of an Unacceptable Corrosion Condition.

8. 1. The specimen wires will be of a length of 108", as removed during the performance of PSC Procedure SQ 10.2. Develop a separate Data Sheet for each sample tested. It will be acceptable to cut the sample to the Buttonheading Length of 101 inches plus or minus one inch. (See Section 8.3 of this Procedure.)

8. 1. 1. ACCEPTABLE WIRE

Three specimens shall be tested. One sample shall be taken from approximately the middle of the tendon wire length, with the two remaining samples being taken, one from approximately each end of the tendon wire.

8. 1. 2. BROKEN WIRE

If Broken Wires require testing, three specimens shall be tested. One sample shall be taken from the wire length about one foot from either side of the break. The two remaining samples shall be taken, one from approximately each end of the tendon wire.

8. 1. 3. UNACCEPTABLE CORROSION CONDITION

If Unacceptable Corrosion Condition Wires require testing, at least one specimen shall be tested, with that sample being taken from what is judged to be the worst representative section of the wire length. Other samples may be selected and/or tested at the request of the Owner or his agent.

8. 1. 4. QCD- Document the wire identification, location of removal and overall length on Data Sheet 10.3 from Data Sheet 10.2 of PSC Procedure SQ 10.2.

8. 2. Measure the diameter of the wire in 3 locations, each end and the middle.

8. 2. 1. QCD- Document the measurement of the wire and the measuring device on Data Sheet 10.3. Calculate and document the average of the 3 measurements.

8. 3. Cut each wire test sample to 101" long; this must be a square, neat cut to permit buttonheading.

8. 3. 1. Slide two Wire Test Stressing Washers (see Figure D 2) onto the wire, making sure the chamfered seats face to the outside of the wire.

8. 3. 2. Buttonhead both ends of the wire.

8. 3. 2. 1. QCD- Document the acceptance of the buttonheads on Data Sheet 10.3 using the acceptance criteria shown in PSC Procedure SQ 8.2.

8. 4. Measure the Gauge length of the wire; from inside of the buttonhead at one end to the inside of the buttonhead at the other end within an accuracy of plus or minus 0.050".

8. 4. 1. QCD- Document the Gauge length of the wire and the identification and recalibration date for the measuring device.

8. 5. Place the specimen into the Wire Test Apparatus and check for proper seating of the Stressing Washers in the pulling adaptors.

8. 6. Preload the wires to about 2.45 kips +0,-10% to seat the buttonheads in the Stressing Washers.

8. 6. 1. QCD- Document the preloading pressure and force, the identification and recalibration date of the Wire Test Apparatus.

8. 6. 1. 1. To obtain pressure when the force is specified, divide the force in pounds (kips X 1000) by the ram area to provide the required or actual gauge pressure.

8. 7. Reduce the preload force to 0 force.

8. 7. 1. QCD- Document the release of the preload force.

8. 8. Load the wire to 1.42 kips plus or minus 5%; this will provide 0.1% elongation.

8. 8. 1. QCD- Document the initial loading of the wire in force, pressure and actual elongation at this point. Elongation shall be measured to an accuracy of 0.050".

8. 9. Preset the Dial Indicator on the Wire Test Apparatus to measure 0.9% elongation. (0.9 in a Gauge length of 100")

8. 9. 1. QCD- Document the setting of the Dial Indicator.

8. 10. Load the wire until the Dial Indicator shows signs of movement, signaling the 0.9% elongation (pressure at 1% elongation).

8. 10. 1. QCD- Document the force or pressure at 1% elongation.

8. 11. Remove the Dial Indicator.

8. 11. 1. QCD- Document the "Rule" dimension reading at 1% elongation (approximately 1") to an accuracy of 0.050".

8. 12. Continue to load the wire to failure.

8. 12. 1. QCD- Document the maximum elongation measurement from the "Rule" to an accuracy of 0.50".

8. 12. 2. QCD- Document the maximum force or pressure reading at failure.

8. 13. Remove the sample wire (two pieces) and remove the Stressing Washers.

8. 13. 1. QCD- Document the type of failure, ductile or brittle, and the location of the wire break from the tagged end of the wire (opposite the ram).

8. 14. Calculate the following and document on Data Sheet 10.3.

8. 14. 1. QCD- Calculate the ultimate stress.

8. 14. 2. QCD- Calculate yield stress from the pressure reading at 1% elongation.

8. 14. 3. QCD- Calculate the percent of elongation under load at the point of failure, based on the actual Gauge length of the wire.

9. NOTIFICATION - UNACCEPTABLE CONDITIONS

The Owner shall be formally notified when each one or more of the following unacceptable conditions are detected as a result of the inspection or Physical Testing of a Tendon Wire.

9. 1. The diameter of the wire exceeds 0.250" plus or minus 0.002".

9. 2. The Corrosion Condition of the wire is Rejected Condition "E" as described in PSC Procedure SQ 8.1.

9. 3. The wire fails to meet the ultimate strength of 240,000 psi.

9. 4. The elongation at failure of a tendon wire test is less than 4% when measured in a gage length of 100 inches.

10. DOCUMENTATION

The items in this procedure requiring documentation shall be documented on Data Sheet 10.3.

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

10. 2. Some information from Data Sheet 10.2 of PSC Procedure SQ 10.2 shall require posting to Data Sheet 10.3.

11. ATTACHMENTS

11. 1. Data Sheet 10.3

11. 2. Figure D.1

11. 3. Figure D.2

D114

PSC PROCEDURE SQ 10.3
TESTING TENDON WIRES
DATA SHEET 10.3
MAY 20, 1987

Revision 0

WIRE TEST DOCUMENTATION

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

Q.C. SIGNOFF _____ TITLE _____ DATE _____

(8.1.4) Wire ID and Location of removal _____ Length _____

(8.2.1) Wire Diameters: Tag End _____ Middle _____ Ram End _____ Avg. _____
Measuring Device ID _____ Recal Date _____

(8.3.2.1) Buttonhead Inspection: Tag End _____ Ram End _____

(8.4.1) Gauge Length of Wire _____ Measuring Device ID _____ Recal Date _____

(8.6.1) Preload force or pressure _____ Pressure Gauge ID _____ Recal Date _____

(8.7.1) Force reduced to 0 _____

(8.8.1) Initial load of wire in force or pressure _____(0.1% elongation)

(8.9.1) Preset Dial Indicator _____(0.9% elongation) Indicator ID_____ Recal Date ____

(8.10.1) Force at 1% elongation _____ kips; Pressure _____ psi

(8.11.1) "Rule" reading measurement at 1% elongation _____

(8.12.1) Maximum elongation at failure, from "Rule" reading _____

(8.12.2) Maximum force at failure _____ kips; Pressure _____ psi

(8.13.1) Type of break _____ Location of break _____

(8.14) CALCULATIONS:

(1) Ultimate Stress _____ Max.Force · (π Diam.$^2 \div 4$)

(2) Yield Stress at 1% elongation _____ Force @ 1% (π Diam.$^2 \div 4$)

(3) Percent elongation at failure _____ 1 +("Rule"Dim @ Failure -"Rule"Dim @ 1%)

Sample: Accept _____ Unacceptable _____ Engr. Notified _____

Q.C. Review _____ Level _____ Date _____

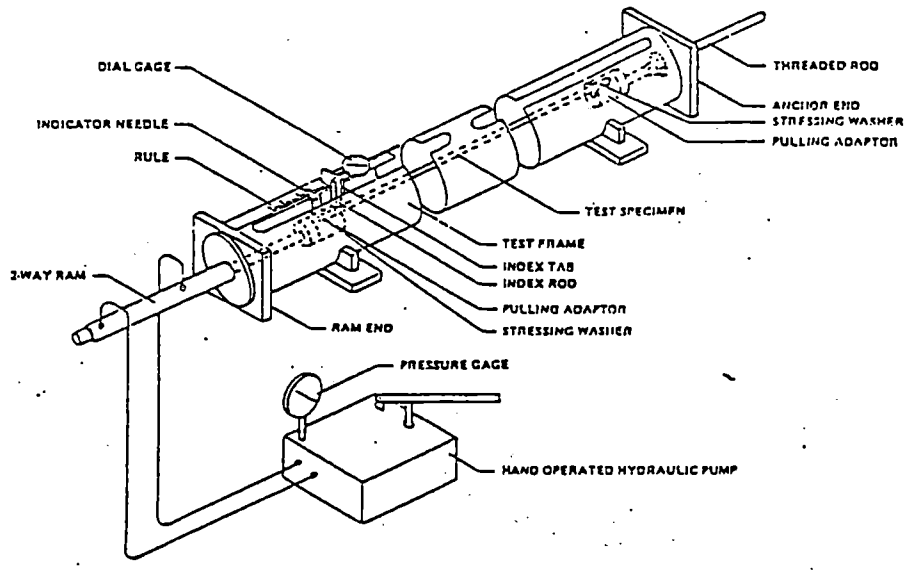
Title _____

D115

PSC PROCEDURE SQ 10.3
TESTING TENDON WIRES
FIGURE D.1
MAY 20, 1987

Revision 0

WIRE TEST APPARATUS - FIGURE D.1

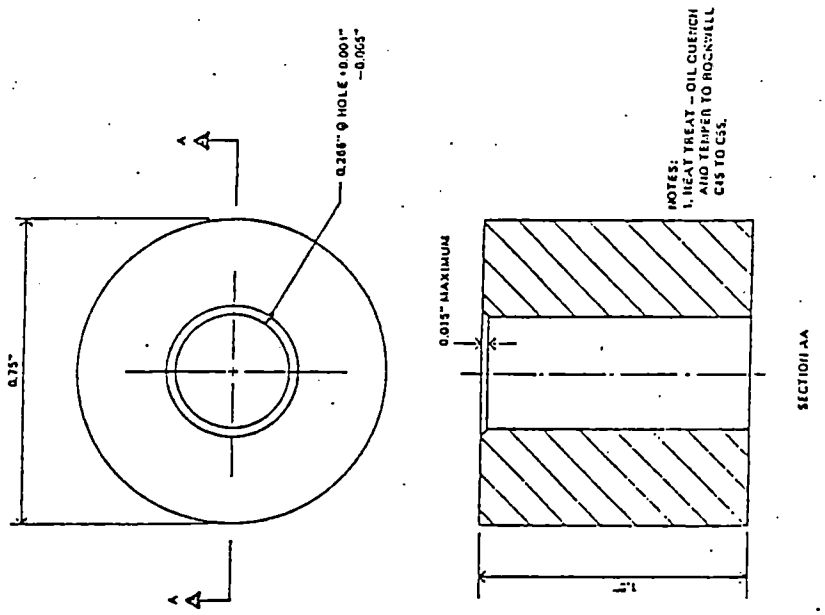


D116

PSC PROCEDURE SQ 10.3
TESTING TENDON WIRES
FIGURE D.2
MAY 20, 1987

Revision 0

WIRE TEST STRESSING WASHER - FIGURE D.2



D117

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

CONTINUITY TEST OF TENDON WIRES

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronaas Title Mgr. Eng Date 8.13.87

1. PURPOSE

This procedure will establish the requirements for performing a Continuity Test of tendon wires for purposes of visual inspection and evaluation of, usually, Protruding/Unseated tendon wires for Post-Tensioning System Tendons, during In-Service Inspection (surveillance) of Consumers Power Company's Palisades Nuclear Power Plant.

⚠1 2. SCOPE

The Continuity Test shall be performed when a quantity of 3 or more tendon wires are found to be Protruding/Unseated during the Buttonhead Inspection of PSC Procedure SQ 8.0. Also, a Continuity Test shall be performed on every wire of a tendon scheduled to be detensioned.

⚠1 2. 1. The Continuity Test may be performed at the request of the Owner for tendons other then those that are scheduled to be detensioned.

3. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

4. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

5. EQUIPMENT

A calibrated tapeline shall be the only Quality Control equipment required to perform the Continuity Test, except where calibrated hydraulic devices and gauges are used.

6. PRECAUTIONS

6. 1. **CAUTION - WHEN PULLING INDIVIDUAL WIRES, NEVER EXCEED THE YIELD STRENGTH OF THAT WIRE WHEN PULLING WITH THE PULLING DEVICE - 9425 POUNDS.**

7. PREREQUISITES

7. 1. The Grease Can will be removed and grease samples taken.

⚠1 8-14-89 ADD INFO.

7. 2. The Anchorage Inspection will be complete, with protruding wires in evidence.

7. 3. The tendon will be Detensioned; it might also have been Monitored for Forces.

7. 4. Each wire that was determined to be Protruding/Unseated as a result of the Buttonhead Inspection of PSC Procedure SQ 8.0 will be adequately identified either by marking, tagging or reference to Data Sheet 8.0.

7. 5. The anchorages at each end of the tendon will be pushed back about 12 inches.

8. CONTINUITY TEST

8. 1. The Protruding/Unseated wire shall be located.

8. 2. The Tendon Surveillance Wire Puller shown in Figure 2 of this procedure shall be attached to the wire to be tested.

8. 3. The wire shall be pulled with the Wire Puller using as little force as possible, but not to exceed 9425 pounds.

8. 3. 1. If the wire cannot be moved by hand, it shall be acceptable to use any mechanical device to accomplish that purpose, such as a "Come-Along", "Chain-Hoist", "Chain-Pawl" or hydraulic cylinder.

8. 3. 1. 1. It is unlikely that anything but the hydraulic cylinder will be able to exert such an amount of force so as to yield or break the wire. Therefore, hydraulic devices shall be calibrated for area and controlled for force through a calibrated gauge or controlled for maximum force through a locking valve to control the amount of pressure to be exerted.

8. 3. 1. 1. 1. This hydraulic device and gauge shall be checked for calibration or pressure control prior to being used for the first time and after the completion of the surveillance.

⚠1 8-14-87 FORMAT CHANGE

8. 3. 1. 2. There remains a possibility that the wire might not be moved by a limited force. It may be possible to break that wire loose with force in excess of 9425 pounds. This attempt shall only be undertaken with the mutual consent of the Owner's Engineer Responsible for the In-Service Inspection and the PSC Construction Manager.

8. 3. 1. 2. 1. If it is decided to exceed the control force, the amount of force used to move that wire shall be documented and evaluated for impact on the strength of the wire and the force to be applied to the Retensioning of the tendon.

8. 3. 1. 2. 2. QCD- Document the maximum force used to move the wire on Data Sheet 10.5, if over 9425 pounds.

8. 3. 1. 3. The wire shall be considered continuous if it can be observed to move at the opposite end of the tendon.

8. 3. 1. 3. 1. QCD- Document that wire as continuous on Data Sheet 10.5.

8. 3. 1. 4. If the wire cannot be observed to be moving, it could be broken and the pulling shall continue until that wire is removed.

8. 3. 1. 4. 1. QCD- Document that wire as discontinuous on Data Sheet 10.5. As the wire is drawn it shall be checked for condition and to determine the cause of breakage, if possible. Document the condition of the wire using PSC Procedure SQ 8.1, Corrosion Evaluation Criteria for Tendon Wire/Buttonheads. Also document, where possible, the reason for breaking.

⚠1 8-14-87 NO CHANGE

D121

8. 3. 1. 4. 2. QCD- If the wire is Broken, it shall be shown as broken on Data Sheet 8.0 and added to the total of Broken/Missing Wires and the Code Symbol modified to reflect that fact.

8. 3. 1. 4. 2. 1. If any or all of the Protruding/Unseated wires since the original installation or previous surveillance are found to be broken and when added to the amount of Broken/Missing Wires on Data Sheet 8.0 totals 1 or more, it shall be necessary to notify the Owner of this condition in accordance with the requirements of PSC Procedure SQ 8.0, Section 9.

8. 3. 1. 4. 2. 2. It shall be acceptable to continue working and notify the Owner at the earliest opportunity, but within 24 hours of discovery.

8. 3. 1. 5. If any or all the Protruding/Unseated wires have been determined to be continuous, each shall be reinspected for Protrusion after Retensioning to see if they have seated themselves. An evaluation of that condition shall be performed after Retensioning.

8. 3. 1. 5. 1. QCD- If any or all the Protruding/Unseated wires remain unseated after Retensioning, it shall be reported as required of PSC Procedure SQ 8.0 Section 9.6.

9. DOCUMENTATION

The items requiring documentation shall be documented on Data Sheet 10.5 or to Data Sheet 8.0 of PSC Procedure SQ 8.0.

9. 1. Some information may be required to be posted to Data Sheet 8.0 of PSC Procedure SQ 8.0.

⚠1 8-14-87 NO CHANGE

D122

10. ATTACHMENTS

10. 1. Data Sheet 10.5

10. 2. Figure 2

⚠1 8-14-87 NO CHANGE

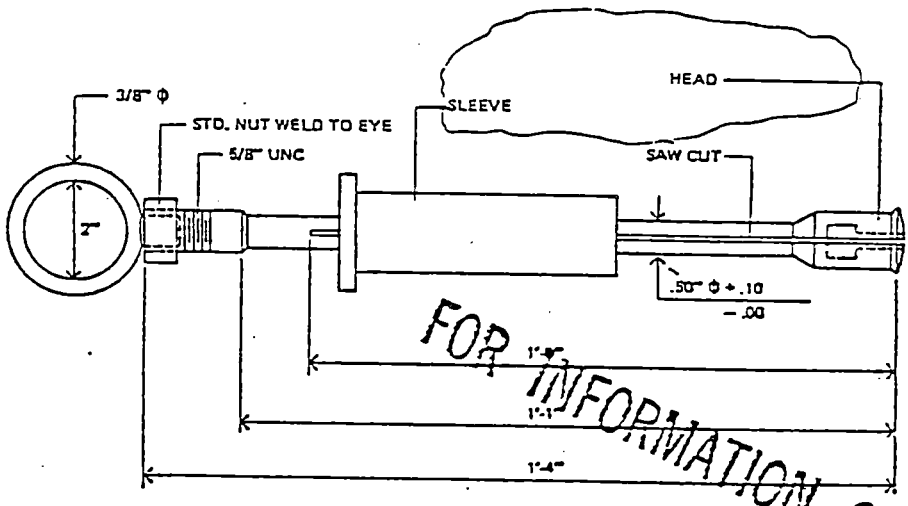
D123

PSC PROCEDURE SQ 10.5
CONTINUITY TEST
FIGURE 2
MAY 20, 1987

Revision 0

TENDON SURVEILLANCE WIRE PULLER -FIGURE 2

This is submitted for information only as the final product may vary somewhat from this design. Not a Quality Control Device.



FOR INFORMATION ONLY

NOTES:

1. The nut with the pulling ring welded to it may be replaced with an eye nut.

2. The anchor head must be pushed into the trumpet to give a clear distance of at least one foot between buttonheads and anchor head in order to use this tool. This permits the wires to move apart so that the tool will slip over the buttonheads.

PSC PROCEDURE SQ 10.5
CONTINUITY TEST
DATA SHEET 10.5 D124
MAY 20, 1987

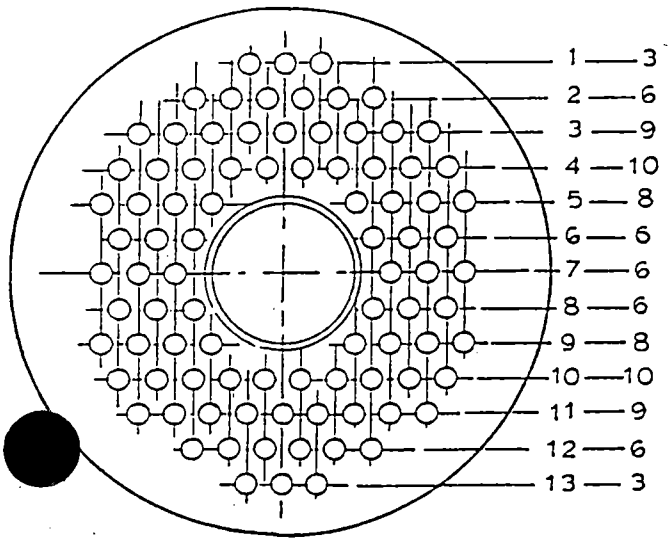
Revision 0

CONTINUITY TEST - INSPECTION DOCUMENTATION

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

Row/ Wire No.	Continuous	Force if Over 9425	Broken	Posted to DS 8.0	Corrosion Condition	COMMENTS	Q.C. Signoff
1 - 3							
2 - 6							
3 - 9							
4 - 10							
5 - 8							
6 - 6							
7 - 6							
8 - 6							
9 - 8							
10 - 10							
11 - 9							
12 - 6							
- 3							



Note that this form can be used to verify up to 17 individual wires in columnar fashion; if more than 17 are to be verified or if the entire tendon is to be verified, then a row by row inspection shall be performed.

Orient the anchorage sketch with the Heat Code Identification and note the wire number as it appears in each row starting at the left side in each row.

The Comments Area shall be used to identify particular wires or provide inspection remarks.

Q.C. Review _____ Level _____ Date _____

Title _____

D125

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

RETENSIONING TENDONS

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronaugh Title Mgr. Eng Date 8-13-87

1. PURPOSE

This procedure will establish the requirements for Retensioning Tendons after visual inspection, testing and evaluation during In-Service Inspections (surveillances) of Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Power Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

4. EQUIPMENT

The gauges and test equipment necessary for the Quality Control activities will be itemized in PSC Procedure SQ 4.0.

5. PRECAUTIONS

Review the I.S.I. Tendon Surveillance Program Safety Comments for the following items that shall apply both for tendon force control and personnel safety.

5. 1. Section 3.2; Stressing Operations: Overstress Force

5. 2. Section 3.2.2; Personnel Safety

5. 3. Section 3.3; Stressing Adapter: Full Engagement

5. 4. Section 3.4; Anchorage Engagement: Full Engagement

5. 5. Section 6.0; Construction Safety: Personnel Safety

6. 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 verbal release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 11.0.

⚠1 8-14-87 NO CHANGE

7. PREREQUISITES

All Inspections will be complete and acceptable.

8. MEASUREMENTS

8. 1. STEEL RULERS

Measurements of tendon elongation or shim stack height shall be performed with calibrated steel rulers graduated in tenths of an inch (0.100"). The measurements shall be interpolated to the nearest 0.050". See Sketch 7.0 at the end of this procedure.

8. 1. 1. A steel caliper may be used to take the elongation measurement. One caliper blade shall be placed against the bearing plate and the other blade placed against the bottom of the anchorhead. The caliper blades shall be parallel to the tendon during measurement. When the parallel condition is established the blades shall be locked and the caliper withdrawn without disturbing the blade setting. The caliper blades shall be placed on the steel ruler and the dimension determined. See Sketch 7.0 at the end of this procedure.

8. 1. 2. Tendon elongation shall be performed by measuring the distance between the bearing plate and the bottom of the anchorage for each end of the tendon except for Vertical Tendons, which shall be measured at the top only.

8. 2. PRESSURE GAUGES

Measurements of ram pressure (tendon force) shall be measured by calibrated pressure gauges capable of being read directly to 20 psi.

8. 2. 1. View the gauge face from a plane of view directly in front of the indicator needle to avoid parallax errors.

8. 2. 2. Gauge readings shall be interpolated to the nearest 10 psi.

△1 8-14-87 NO CHANGE

1 9. RETENSIONING TENDONS

The intention of this operation is to impart the required amount of stress into a tendon (stressing or restressing) in order to maintain the unity, balance and amount of forces necessary to develop the required Design or Predicted Tendon Force. This retensioning shall be performed using the same force values as applied during the original installation or previous surveillance, with consideration of number of the effective wires. This will provide a uniform system of control for the acquisition of data and evaluation during future surveillances.

9. 1. Retensioning of Tendons should be performed on both ends of a tendon in a simultaneous and controlled manner whenever possible. There may be circumstances where it may not be possible to stress both ends of the tendon simultaneously or where only one tendon end requires or can be stressed. Adequate communication shall be maintained between both ends of the tendon during the taking of liftoff readings for simultaneous stressing operations. Vertical Tendons shall be single end Retensioned from the Dome.

9. 1. 1. During the application of force to a tendon that is being simultaneous stressed from both ends, neither end of the tendon shall exceed the other by more than 1000 psi. For example, if End "A" has moved to 2000 psi, the load at that end shall be held until the Opposite or "B" End has achieved that value, then both shall progress to the next value.

9. 1. 2. All data shall be documented on Data Sheet 11.0.

9. 2. QCD- Document the exterior surface temperature near the tendon and the identification and calibrated status of the thermometer. Also document the ambient air temperature.

9. 3. If necessary, lubricate the anchorage threads with anti-seize compound.

9. 4. QCD- Document the amount of effective wires in each end of the tendon. Refer to Data Sheet 8.0 (8.3.7.3.) for each tendon end.

1 8-14-87 ADD INFO.

9. 5. Couple the rams to each anchorage on that tendon.

9. 5. 1. Be sure that buttonheads do not protrude a significant distance, about one inch or more, above the anchorage face. Otherwise full engagement of the stressing adaptor may bend the wire over before the buttonheads seat on the anchorage face.

9. 5. 2. Be sure that the anchorage does not recess itself inside the stressing adaptor during coupling. Otherwise the stressing adaptor will seat on the shim stack and will not be capable of being unthreaded from the anchorage.

9. 5. 3. QCD- Document the ram and gauge identification and the calibrated status of each. Also note the Ram Calibration Constant, K = _____ and the Ram Area.

9. 6. Determine the Pretensioning Force, Overstress Force and Lockoff (liftoff) Force or pressure values for that tendon based on the following requirements:

9. 6. 1. Pretensioning Force (PTF) - That force necessary to bring the tendon into a lightly stressed condition to remove slack and seat the buttonheads. This force establishes the base for Elongation Measurement. The Pretensioning Force values for each tendon to be Retensioned shall be seen in the Retensioning Data Section 3, PSC Procedure SQ 11.1.

9. 6. 2. Overstress Force (OSF) - That force at which maximum elongation is determined. Overstress values for each tendon to be Retensioned shall be seen in the Retensioning Data, Section 3, PSC Procedure SQ 11.1.

△1 8-14-87 FORMAT CHANGE

△1 9. 6. 3. Lock Off Force (LOF) - That force at which the tendon load is transferred to the shim stack from the ram and is representative of the force at which the tendon liftoff occurred during the Monitoring of Tendon Force. Refer to Data Sheet 9.0 for that tendon. The force being restored shall be held to a tolerance of plus 6% and minus 0%. If the tendon was lifted off at less than the Minimum Required Prestress Force shown in PSC Procedure SQ 9.1, that tendon shall be Locked Off at a force value equivalent to the Predicted Force, with a tolerance of plus 6%, minus 0%.

△1 9. 6. 4. The Prestressing Force Values will be found in Procedure SQ 9.1.

9. 6. 5. The Retensioning forces required for tendon Elongation, PTF and OSF will be seen in Section 3 of PSC Procedure SQ 11.1, with the Calculated Elongation dimensions.

9. 6. 6. QCD- Document the Calculated PTF, Step 1, Step 2, LOF and OSF Forces and Pressures. Document the Calculated Elongation for each increment. Post the Required Liftoff Value to (9.10.6), where it is being used for comparison to Actual Liftoff Values. The Required Liftoff Value will be taken from Data Sheet 9.0 which was documented for Monitoring the Force of the tendon being Retensioned.

9. 6. 7. The tendon shall never be stressed beyond 80% of the Minimum Guaranteed Ultimate Strength (GUTS) of the effective wires remaining in that tendon.

9. 7. Determine the theoretical (calculated) elongation for Step 1 (350 kips), Step 2 (600 kips), Liftoff and Overstress. Step 1, Step 2 and Overstress will be seen in the Tables shown in Section 3 of PSC Procedure SQ 11.1. The Force to be used for Liftoff Elongation measurement shall be determined from the Actual Average Liftoff Value acquired for that tendon from the Monitoring of Tendon Force, Data Sheet 9.0.

9. 7. 1. QCD- Document the calculated elongations for Step 1, Step 2, and Overstress. There is no calculated value for Liftoff Elongation.

△1 8-14-87 ADD INFO.

⚠1 9. 8. CAUTION - ONCE ACTUAL STRESSING BEGINS, THE RAM MUST NEVER BE EXTENDED TO THE FULL LIMIT OF ITS STROKE. HOLD THE EXTENSION TO AT LEAST 0.50" LESS THAN THE FULL STROKE OF THE RAM.

9. 9. TENDON STRESSING (RETENSIONING)

9. 9. 1. The shim space at each end of the tendon shall be approximately equalized by pressurizing the stressing units. (Teamwork is especially important from now on until the stressing is completed.) The two stressing crews shall verbally confirm the equalization of the shim space, or adjust it as necessary. This shim space, or distance from the bearing plate to the back of the anchorhead should be approximately equal at both ends.

9. 9. 2. Once the shim space is approximately equalized at each end of the tendon, it will not be necessary to equalize the shim space for single end stressing operations, the ram or rams shall be pressurized to the Pretensioning Force value (PTF) for the amount of effective wires remaining in the tendon.

9. 9. 2. 1. QCD- Document the actual PTF in kips and pressure in psi and the Actual Elongation Measured at the Actual PTF.

9. 9. 3. Continue pressurizing the ram past the PTF to Step 1 (350 kips).

9. 9. 3. 1. QCD- Document the Actual Elongation Measured at Step 1 and the Actual Force and Pressure observed at Step 1.

9. 9. 4. Continue pressurizing the ram past Step 1 to Step 2 (600 kips).

9. 9. 4. 1. QCD- Document the Actual Elongation Measured at Step 2 and the Actual Force observed at Step 2.

9. 9. 5. Continue stressing to the Overstress Force (OSF).

⚠1 8-14-87 ADD INFO.

9. 9. 5. 1. It may be necessary to multiple stage stress the tendon if the ram stroke is too short to accommodate reaching overstress. Stage stressing is accomplished by shimming the load at either end of the tendon when the stroke limit is reached. The pullrod shall be adjusted for the new stroke limit and stressing continued as cited below.

9. 9. 5. 2. QCD- Document the Overstress Pressure reached and measure the elongation of the tendon. Calculate the Actual Elongation by subtracting the Elongation at PTF (9.9.2.1) from the Elongation at OSF (9.9.5.2). The LOF Measured Elongation and Actual Liftoff Force Values will be posted after the shims have been replaced and Acceptable Liftoffs taken. The Shim Stack height and Liftoff Evaluation will, for practical purposes, be identical.

9. 9. 6. Calculate the variation between the Actual Elongation during Surveillance and Actual Measured Elongation at Original Installation using the following formula:

(Measured Elongation Surveillance) minus (Measured Elongation Installation) divided by (Measured Elongation Installation) times 100

⚠1 9. 9. 6. 1. The Measured Elongation of both ends of the tendon during the Surveillance shall be compared to the Original Installation or Previous Surveillance Measured Elongation, whichever is more current, for both ends of the tendon and should be around plus or minus 5%. It shall not be necessary to provide a comparison of any other increments of Elongation.

⚠1 9. 9. 6. 2. QCD- Document the percent of variation, if any. Document the identification and calibrated status of the measuring device.

⚠1 8-14-87 ADD INFO.

⚠1 9. 9. 6. 3. If the Measured Elongation, when compared to the Calculated Elongation is not within the plus or minus 5% tolerance, the load shall be reduced to zero and Sections 9.9.1 through 9.9.6.2 repeated. If the elongation does not meet the tolerance after the second restressing, the Owner shall be notified of the deficiency as required by Section 10 of this Procedure.

9. 9. 6. 4. QCD- Document the acceptance or non-acceptance of the elongation and the notification of the Owner, if applicable.

9. 9. 6. 4. 1. If in the judgement of the PSC Construction Superintendent it is felt that either or both elongation readings were unfair or inaccurate, it will be acceptable to repeat Section 9.9.6.3 to verify the accuracy of the elongations.

9. 9. 6. 5. If the elongation variation is acceptable, the work shall continue as follows.

9. 9. 7. Depressurize the ram reducing the force from Overstress to a point about 100 kips above Lockoff but below Overstress and prepare to install the shim stacks. As a guide, the original shim stack height should be considered as the starting point for achieving the restoration of force.

⚠1 9. 9. 8. At any point prior to or during stressing, the field crew shall prepare shim stacks of uniform thicknesses, so that when the shims are placed, the height differential between individual stacks shall not exceed 0.0625 inches, thereby maintaining the integrity of the established parallelism between the bearing plate and anchorhead.

9. 9. 8. 1. Badly deformed shims should be replaced by new or undeformed shims of equivalent thickness.

⚠1 8-14-87 ADD INFO.

△1 9. 9. 9. After the Lockoff point has been reached or slightly higher, the shims shall be placed between the bearing plate and anchorage in diametrically opposite pairs. Continue filling this gap with shims until a small enough space remains so that the anchorhead can be lowered to the shim stack effecting the load transfer within the required lockoff range. The shim gap shall be filled to the nearest 0.125" increment, as shims are not used in thickness of less than 0.125".

△1 9. 9. 9. 1. While the shims are being placed, the space between the stacks of shim halves for the first shims in direct contact with the anchorage shall not exceed a space of 0.1875 inch. The remaining shims in the shim stack may be placed with a larger spacing but shall not exceed 0.250 inch between stacks. The following control conditions will be observed during placement:

△1 9. 9. 9. 1. 1. The anchorhead should automatically center itself to within 0.1875" of the center of the trumpet when placed on the bearing plate or shim stack, because of the equipment design and interacting relationships. If an excess of 0.1875" is noted, that anchorhead shall be reset.

9. 9. 9. 1. 2. No part of the anchorhead shall overhang the shim stack.

9. 9. 10. Depressurize the ram to the required lockoff force. Adjust the shim stack height as may be required to achieve that force.

9. 9. 11. Any tendon may be stressed, detensioned, and restressed any number of times providing that overstress pressure is not exceeded. This may be necessary to accomplish distribution of forces or verify any action or activity after the tendon has been stressed. It will not be necessary to write a nonconformance to document these actions, and will be at the specific control and option of the PSC Quality Control Inspector.

△1 8-14-87 ADD INFO.

9. 9. 12. The ram pressure shall be reduced to zero.

9. 10. LIFTOFF VERIFICATION

To assure that the correct forces have been applied to the tendon, the following liftoff verification shall be performed.

9. 10. 1. Pressurize the rams in convenient increments until liftoff is achieved, but not to exceed overstress pressure.

9. 10. 2. With the load off the shim stack, insert one feeler gauge (about 0.030"), into each shim stack. The gauges should be located about 180 degrees apart and approximately centered.

9. 10. 3. Reduce the ram pressure until the load is reseated on the shim stack. It is not necessary to return to zero gauge pressure, but at least to a point about 1000 psi below the seating pressure of the load on the shim stack.

9. 10. 4. Gradually pressurize the ram while pulling the feeler gauges. The point at which the feeler gauges come loose and can be withdrawn is the liftoff point. Liftoff readings should be approximately equal for both halves of the shim stack.

9. 10. 5. Repeat Sections 9.9.10 through 9.10.4 until 3 consecutive liftoff readings have been taken, which are within 25 kips of each other.

9. 10. 5. 1. QCD- Document the new Actual Liftoff Value. Enter the new force or pressure readings for each shim stack on Data Sheet 11.0 for this tendon. Place a Circle around that Liftoff Value that was the last to have the feeler gauge or shim removed. (The last shim to come loose.) Do not intermix the Values for the shim stacks. Stack 1 will always be Stack 1.

⚠1 8-14-87 FORMAT CHANGE

9. 10. 5. 2. QCD- Post the Circled Liftoff Values to the Circled Liftoff Column. It may be possible to have the Liftoff occur in each shim stack. Add the Circled Liftoff Values and divide by 3 to get the Actual Average. Post the Actual Average. Calculate the Force Value and enter that as LOF in kips (9.9.5.2). Also document the Elongation Measured at Liftoff which is the same as the Shim Stack height.

9. 10. 6. The liftoff force for a retensioned tendon shall be acceptable if it is equal to, but not in excess of 6% greater than the lift off force that was documented for that tendon during Monitoring of Tendon Force for the current In-Service Inspection or as documented for the increased force required for Retensioning as stated in Procedure SQ 9.0, Section 9.8.7.2.

9. 10. 6. 1. If the liftoff force for a retensioned tendon cannot be restored to the force level specified by Section 9.10.6 above, that tendon force shall be transferred to the shim stack and the ram uncoupled. The anchorage shall be checked to see if any more wires or buttonheads have failed and the Owner notified of the deficiency. Operations shall continue at the direction of the Owner for this tendon.

9. 10. 6. 2. QCD- Document the Force for the Opposite End of the Tendon, This End of the Tendon and the Force for the Total Tendon. Document the acceptance or non-acceptance of the liftoffs and the notification of the Owner, if applicable. It may be necessary to develop special procedures to provide further evaluation of a deficient tendon.

9. 10. 7. If the liftoffs are acceptable, the load shall be transferred to the shim stack and the ram pressure reduced to zero.

⚠1 8-14-87 FORMAT CHANGE

9. 10. 8. With the ram at zero force or pressure, it shall be uncoupled from the anchorage.

9. 10. 9. A visual examination of the tendon just Retensioned, shall be performed to determine if any wires have broken during stressing. The number of additional wires or buttonheads that have broken or are missing shall be documented.

9. 10. 9. 1. QCD- Document additional broken/missing wires/buttonheads on Data Sheet 11.0 for later transfer to Data Sheet 8.0.

9. 10. 9. 2. QCD- Document the shim stack height for the final accepted liftoff.

9. 10. 9. 3. QCD- Document the condition of Protruding/Unseated wires from Data Sheet 8.0.

9. 10. 9. 4. QCD- Document additional Protruding/Unseated wires for later transfer to Data Sheet 8.0.

9. 11. The Retensioning is now concluded and Grease Can Replacement shall follow.

10. NOTIFICATION

The Owner shall be formally notified when each one or more of the following conditions are detected during Retensioning of Tendons.

10. 1. If liftoff cannot be achieved when the overstress force or pressure of 80% Tendon GUTS has been reached, the ram shall be depressurized and all operations on that tendon shall stop, until the Owner can provide resolution of that condition.

10. 2. If one or more additional broken/missing buttonheads/wires are detected, the Owner shall be notified with a nonconformance report.

⚠1 8-14-87 FORMAT CHANGE

10. 3. If the tendon Lift Off Force is not equal to or is in excess of 6% greater than the force that was documented during Monitoring of the Tendon Force for the current In-Service Inspection or as documented for the increased force required for Retensioning as stated in Section 9.8.7.2 of PSC Procedure SQ 9.0, the Owner shall be notified by a nonconformance report.

⚠1 10. 4. If the variation between the Measured Elongation at Installation and the Measured Elongation during Surveillance exceeds plus or minus 5%, the Owner shall be notified.

11. DOCUMENTATION

The items requiring documentation in this procedure shall be documented on Data Sheet 11.0.

11. 1. The Data Sheet references the applicable section number of this procedure for each QCD point.

11. 2. Some information from Data Sheet 8.0 of PSC Procedure SQ 8.0, which has already been started for this tendon, shall require posting onto Data Sheet 11.0.

11. 3. Some information from Data Sheet 11.0 shall require posting onto Data Sheet 8.0.

12. ATTACHMENTS

12. 1. Data Sheet 11.0

12. 2. Sketch 7.0

⚠1 8-14-87 ADD INFO.

RETENSIONING TENDONS - INSPECTION DOCUMENTATION

PROJECT _____ SURVEILLANCE NO. _____ YEAR _____

TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

QC Signoff

(9.2) Concrete Temp. _____F Therm. No._____ Recal Date _____ _____
Ambient Temp. _____F. Therm. No._____ Recal Date _____ _____

(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3)_____ _____
(9.5.3) Ram ID _____ Recal Date _____ Ram Area _____ K = _____
Gauge ID _____ Recal Date _____ Daily Check _____

_____

CALCULATED FORCE FOR ELONGATION MEASUREMENT AND RETENSIONING

Overstress shall not exceed 848 kips for a 90 Wire Tendon.

(9.6.6.) PTF = kips Pressure _____ psi (9.7.1)
Step 1 = kips Pressure _____ psi Elongation _____ in.
Step 2 = kips Pressure _____ psi Elongation _____ in.
LOF = _____ kips Pressure _____ psi
OSF = _____ kips Pressure _____ psi Elongation _____ in. _____

ACTUAL OBSERVED FORCE AND ELONGATION MEASUREMENTS

⚠1 (9.2.1) PTF = _____ kips Pressure _____ psi Elongation _____ in.
(9.3.1) Step 1 = _____ kips Pressure _____ psi Elongation _____ in.
(9.9.4.1) Step 2 = _____ kips Pressure _____ psi Elongation _____ in.
(9.9.5.2) LOF = _____ kips Pressure _____ psi Elongation _____ in.
OSF = _____ kips Pressure _____ psi Elongation _____ in.
TOTAL ELONGATION (9.9.5.2) minus (9.9.2.1) = _____ in. _____
(9.9.6.2) Elongation Variation _____% Ruler ID _____ Recal Date _____ _____
⚠1 (9.9.6.4) ELONGATION: Accept: ☐ YES ☐ NO Notify Owner: _____ _____

(9.10.5.1) ACTUAL LIFT OFF VALUES: (9.10.5.2) CIRCLED

Stack #1 - 1 _____	Stack #2 - 1 _____	Actual 1 _____	psi
2 _____	2 _____	2 _____	psi
3 _____	3 _____	3 _____	psi

(9.10.6) Required Liftoff Values_____ kips Actual Average _____ psi _____

(9.10.6.2) FORCE: Opposite End ___ kips. This End ___ kips. TOTAL TENDON ___ kips _____
LIFTOFF: Acceptable ☐ YES ☐ NO Notify Owner: ____ NCR No._____ _____

(9.10.9.1) Additional broken/missing wires ____ Amt.___ Engr.Notified:_____ _____
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) NCR No._____ _____
(9.10.9.2) Final Shim Stack Height #1 _____ #2 _____
(9.10.9.3) Protruding Unseated Wires (from DS 8.0) Seated _____ Unseated _____ _____

(9.10.9.4) Additional Protruding/Unseated Wires _____ _____
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) _____

Q.C. Review _____ Level _____ Date _____

Title _____

⚠1 8-14-87 ADD INFO.

D140

CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

PSC ENGINEERING DATA

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronars Title Mgr, Eng Date 8.13.87

1. PURPOSE

This procedure will establish the PSC Engineering requirements for the Retensioning of Tendons after the tendon has been Detensioned for purposes of Anchorage Inspection and Sample Wire Removal from the Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Power Plant. Tendon design for this Nuclear Power Plant Project was based on 90 wires.

2. SCOPE

The requirements for the Retensioning of Tendons have been described in PSC Procedure SQ 11.0. While there was some mention of the force values to be applied to a tendon in that Procedure, that was only intended as general information. This Procedure will provide the required Engineering Data for the Retensioning operation.

2. 1. The data shown herein shall establish the requirements for tendon elongation, PTF and OSF for tendon elongation during the Retensioning of Tendons and the Predicted Forces that affect each Surveillance Tendon.

2. 1. 1. PRETENSIONING FORCE (PTF)

The Pretensioning Force to be used for the Retensioning of Tendons with 90 wires will be about 150 Kips plus or minus 3 Kips, which accounts for the smallest interpolated pressure gauge reading of 10 psi. To determine the gauge pressure required, divide the PTF (150 Kips) by the ram area. The PTF removes the slack from the tendon and provides a baseline number for elongation measurement. The Table seen in Section 3 of this Procedure will provide the required data for the Retensioning of Tendons.

⚠1 8-14-87 NO CHANGE

2. 1. 2. OVERSTRESS FORCE (OSF) - FOR ELONGATION

The Overstress Force for Elongations is that force which must be achieved in order to develop the final lifted off dimension used in the comparison of actual tendon elongation to the original or calculated tendon elongation. This might not be the same Overstress Force identified as the "DO NOT EXCEED FORCE". The Overstress Force for this surveillance will be the same as used for the Original Installation and shall be based on the remaining Effective Wires. All tendons whether Dome, Horizontal or Vertical shall not exceed a force of 848 Kips for tendon Overstress, for a 90 wire tendon. The Overstress values shown in Section 3 of this Procedure shall be used for purposes of acquiring elongation measurements.

2. 1. 3. OVERSTRESS FORCE - DO NOT EXCEED

At no time shall any tendon be subjected to an Overstress Force which exceeds 848 Kips for a 90 wire tendon. Tendons with less than 90 wires shall be reduced in force by 9.42 Kips for each wire less than 90 or use the formula below:

Wire Breaking Strength = 11,781 pounds X 0.8 (Baseline Yield) = 9,425 pounds X amount of wires = Overstress Force: NOT TO BE EXCEEDED.

2. 1. 4. LIFTOFF FORCE (LOF)

The Liftoff Force is that force expected to be in the tendon at the time of this surveillance based on the data shown in the Tables provided in PSC Procedure SQ 9.1. The LOF and other Predicted Forces for the Surveillance Tendons will also be seen in this Table, while Section 2.1 will provide these values for those tendons Adjacent to the Surveillance Tendons.

⚠1 8-14-87 NO CHANGE

⚠1 3. PALISADES NUCLEAR POWER PLANT - SURVEILLANCE RETENSIONING AND ELONGATION DATA FOR DETENSIONED TENDONS

TENDON	AT INSTALLATION Force (Kips)		RETENSIONING Amt. Force (Kips)			ELONGATION BEYOND PTF INCHES Calculated		ORIG.
	PTF	OSF	Wires	PTF	OSF	350 (Kips)	600 (Kips)	ELONG.
D3-18	150	848	89	148	838	2.34	5.24	8.000
			88	146	829	2.39	5.32	
			87	145	819	2.43	5.40	
XXXXXXXXXX	XXXXXXX	XXXXXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXXXXXX	XXXXXXXXXXX	XXXXXXX
V-124	150	848	89	148	838	3.33	7.45	11.375
			88	146	829	3.40	7.56	
			87	145	819	3.46	7.68	
XXXXXXXXXX	XXXXXXX	XXXXXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXXXXXX	XXXXXXXXXXX	XXXXXXX
H-BF-74	150	848	89	148	838	2.42	5.40	8.250
			88	146	829	2.46	5.48	
			87	145	819	2.51	5.57	
XXXXXXXXXX	XXXXXXX	XXXXXXXXXX	XXXXXXX	XXXXXXX	XXXXXXX	XXXXXXXXXXX	XXXXXXXXXXX	XXXXXXX

⚠1 8-14-87 ADD INFO.

3. 1. NOTES CONCERNING ELONGATION DATA

3. 1. 1. The tendons for this project were based on 90 wires.

3. 1. 2. Pretensioning Force (PTF) for purposes of elongation shall be as shown in the tables above for a 90 or less wire tendon. For each wire less than 90, reduce PTF by 3 Kips. The Pretensioning Force used during installation was about 430 Kips.

3. 1. 3. Overstress Force (OSF) for purposes of elongation shall be as shown in the Table of Section 3 above for a 90 wire tendon. For each wire less than 90, reduce OSF proportionately for each tendon using the formula shown in Section 3.2 of this Procedure.

3. 1. 4. If less than 87 wires remain in the tendon, the required forces or pressures can be calculated from the formula shown in Section 3.2 of this Procedure.

3. 1. 5. If it becomes necessary to calculate any Elongation dimension, use the formula shown in Section 3.3 of this Procedure.

3. 1. 6. The Actual Overstress Elongation shown above is the total elongation for that 170 wire tendon. The Total Actual Measured Elongation at Installation shall be compared to the Total Actual Measured Elongation during Surveillance.

3. 2. FORCES DURING SURVEILLANCE

3. 2. 1. Overstress (OSF) during Retensioning =
(OSF During Installation) $\frac{\text{(No. of Wires @ RET)}}{\text{(No. of Wires @ INS)}}$

3. 2. 2. PreTensioning (PTF) during Retensioning =
(150 Kips) $\frac{\text{(No. of wires @ RET)}}{\text{(No. of Wires @ INS)}}$

3. 2. 3. ABBREVIATIONS

INS = Installation
RET = Retensioning

△1 8-14-87 NO CHANGE

3. 3. FORMULATION OF PREDICTED ELONGATIONS (for Information Only)

$$\frac{\triangle \text{ @ Installation}}{\text{Tendon Stress @ INS}} = \frac{\triangle \text{ @ Retensioning}}{\text{Tendon Stress @ RET}}$$

$$\triangle \text{ @ (RET)} = \frac{\left[\frac{(\text{OSF @ RET} - \text{PTF @ RET})}{(0.0491\ \text{in}^2)\ (\text{No. of Wires})}\right] \left(\triangle \text{ @ INS}\right)}{\left[\frac{(\text{OSF @ INS} - \text{PTF @ INS})}{(0.0491\ \text{in}^2)\ (\text{No. of Wires @ INS})}\right]}$$

$$\text{OSF @ RET} = \text{OSF @ INS}\ \frac{(\text{No. of Wires @ RET})}{(\text{No. of Wires @ INS})}$$

{ Refer to the Data Table seen in Section 3 of this Procedure for actual OSF Values.

$$\text{PTF @ RET} = \text{OSF @ INS}\ \frac{(\text{No. of Wires @ RET})}{(\text{No. of Wires @ INS})}$$

4. USE OF "K" (CONSTANT)

With the use of regression analysis for the calibration of ram area, as seen in the PSC Ram Calibration Procedure where error calculation is also considered within the computer program, the ram area no longer reflects the ram size, but instead provides an area measurement with a correction factor related to pressure. This correction factor becomes a "Constant" (K), related only to that ram being calculated for area. The constant is a factor that considers the amount of force necessary to overcome internal resistance. This Constant will vary from ram to ram and could be positive or negative; that is, it may have to be added or subtracted from the total force to provide the true actual force measurement, whether that force is PreTensioning Force, OverStress Force, or LockOff Force.

5. 1. FORMULA AND WORKING RELATIONSHIPS

The basic formula for determining stressing force or stressing pressure when three factors are known is:

$$F = \frac{A \times P}{1000} + K$$ (Remember that "K" could be plus or minus.)

5. 1. 1. Only P or F could be unknown and remain to be determined. The other three factors will always be provided before beginning the calculations.

5. 2. EXAMPLE - To find force in Kips

Where F = Force in Kips; A = Ram Area in square inches; P = Gauge Pressure in psi; K = Constant (given in Kips). Let A = 336; P = 4147.86; K = 8.32; then:

$$F = \frac{(336 \times 4147.86)}{1000} + (+8.32) \text{ or } F = 1393.68 + (+8.32) \text{ or } F = 1402 \text{ Kips}$$

5. 3. EXAMPLE - To find Gauge Pressure

Where it becomes necessary to determine P when 1437 Kips is the known force; A = 336; K = (-8.32); then:

$$P = \frac{F-K \times 1000}{A} \text{ or } P = \frac{1437-(-8.32)\times 1000}{336} \text{ or } P = \frac{1445.32}{.336} \text{ or } P = 4301.55$$

⚠1 8-14-87 NO CHANGE

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

GREASE CAN REPLACEMENT

Prepared by H. F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by H. F. Hendrickson Title MGR., Q.A. Date 5-15-87

Approved by D Bronaas Title Mgr, Engineering Date 5.18.87

1. PURPOSE

This procedure will establish the requirements for the Replacement of Grease Cans after visual inspection and evaluation has been completed for the tendon end anchorages, shims, bearing plates and wires during In-Service Inspection (surveillance) of Post-Tensioning System Tendons of Consumers Power Company's Palisades Nuclear Plant.

2. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

3. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

4. EQUIPMENT

There is no need for Quality Control equipment for this procedure.

5. QUALITY CONTROL

There is no need for Quality Control Documentation in this procedure except for Section 9.3.1 which shall be documented on Data Sheet 12.1 of PSC Procedure SQ 12.1.

6. PRECAUTIONS

Be prepared to support the weight of the grease can.

7. PREREQUISITES

All inspections and evaluations shall be completed with the possible exception of Grease Replacement. See Section 8 of this procedure.

8. GREASE REPLACEMENT

Prior to replacing the Grease Can, the total Grease Loss from Data Sheet 6.0 of PSC Procedure SQ 6.0 shall be known. The method of replacement, as cited in PSC Procedure SQ 12.1, shall be reviewed prior to the actual placement of the Grease Can on the bearing plate.

9. GREASE CAN REPLACEMENT - (To Bearing Plate)

Where the Grease Can bolts directly to the Bearing Plate, only minor cleaning and brushing shall be necessary to prepare the bearing plate and grease can for remounting to the bearing plate. It may be necessary to chase the threads in the bearing plate.

9. 1. Remove loose rust and scale; protect the tendon from dirt or debris from this cleanup.

9. 2. Clean any foreign material from the threaded bearing plate holes.

9. 3. Smear, swab or brush a coating of grease over all the exposed portions of the anchorages, bearing plate, shims, buttonheads and wires.

9. 3. 1. QCD- Document the coating of the tendon end anchorage assembly on Data Sheet 12.1 of PSC Procedure SQ 12.1, by entering the quantity of grease applied to the anchorage assembly into the area identified as (9.3.1).

9. 4. If the bolt cannot be properly installed in any hole in the bearing plate, a thread chaser or tap shall be used to clear the threads, so that the mounting bolt can be sufficiently tightened to compress the grease can gasket. Be sure that sufficient depth exists to permit complete tightening of the grease can flange to the Bearing Plate.

9. 5. Thread two aligning pins into the two holes of the bearing plate either diagonally opposite or the two holes on top.

9. 6. Clean and dry the flange sealing surface of the grease can.

9. 7. With the grease can on end, place the gasket retainer so that the holes line up with the holes in the grease can flange and apply glue to the grease can flange surface in such a quantity so as to hold the gasket in position. Place the gasket onto the glued area and allow it to dry for a few minutes. Pliobond or a similar industrial adhesive shall be used for gluing. Water soluble adhesives shall not be used.

9. 7. 1. New gaskets shall be used in the final placement of the grease can. Old or used gaskets may be used during temporary placement of the grease cans.

9. 8. Place the grease can over the tendon end and align the can by placing it over the two aligning pins. If slotted aligning pins are used, insert the tapered wedges through the slots in the aligning pins to hold the can in place. Be sure the gasket is in place and not pinched between the grease can and the bearing plate. For vertical tendons, the wedges and pins need not always be used. The grease can bolts may be used at this time while using a hoisting device to hold the can in place temporarily.

9. 8. 1. For Horizontal tendons and Dome tendons, the grease can shall be placed so that the bushing (inlet, outlet) is oriented in its highest altitude or toward the top of the containment. It is possible that the grease cans may have the bushing located in the center of the grease can, in which case orientation is not required.

9. 9. Place at least one washer, standard or hardened, over each of the bolts and put the bolts into the remaining holes of the bearing plate. Tighten by hand until seated. Remove the aligning pins and replace them with bolts and washers.

10. <u>GREASE CAN REPLACEMENT</u> - (To Anchorage)

Where the grease can seats onto the Bearing Plate, but is attached with studs that are threaded into the anchorage (field anchorhead or shop bushing), it may be necessary to install new grease can mounting studs into the anchorage, if the original stud threads are damaged to the extent where the grease can cannot be securely mounted. This system relies on bolting the grease can through the mounting studs with sufficient force to adequately seat the grease can and compress the gasket.

10. 1. Install the grease can mounting studs into the anchorage. A thread chaser or tap shall be used to clear fouled threads when necessary.

10. 2. Remove loose rust and scale; protect the tendon from dirt or debris from this cleanup.

10. 3. Clean any foreign material from the threaded mounting stud holes in the anchorage.

10. 4. Smear, swab or brush a coating of grease over all the exposed portions of the anchorages, bearing plate, shims, buttonheads and wires.

10. 4. 1. QCD- Document the coating of the tendon end anchorage assembly on Data Sheet 12.1 of PSC Procedure SQ 12.1, by entering the quantity of grease applied to the anchorage assembly, into the area identified as (9.3.1).

10. 5. Clean and dry the flange sealing surface of the grease can.

10. 6. With the grease can on end, apply glue to the grease can flange surface, in such a quantity so as to hold the gasket in position. Place the gasket onto the glued area and allow it to dry for a few minutes. Pliobond or a similar industrial adhesive shall be used for gluing. Water soluble adhesives shall not be used.

10. 6. 1. New gaskets shall be used in the final placement of the grease can. Old or used gaskets may be used during temporary placement of the grease cans.

10. 7. Align the grease can with the mounting studs and work the grease can onto the studs. Continue to work the grease can down the studs until the gasket and flange are uniformly flush against the Bearing Plate. Use care when handling the grease can to avoid damaging the gasket which has been glued to the Bearing Plate mounting flange of the grease can. To avoid damaging the mounting stud threads, it might become necessary to apply some form of protection over the stud threads, such as tape or cardboard, etc.

10. 8. Apply teflon tape to the threads on each stud where the top of the grease can will seat.

10. 9. Place a small neoprene washer onto each mounting stud. Place a washer onto each mounting stud and push the gasket and washer down the stud to the top of the grease can. The gasket shall contact the grease can. Place a nut onto each stud and thread the nut down to the washer.

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10. 10. Finger tighten the nuts to seat the can. Check the grease can for alignment on the Bearing Plate. Check to see that the gasket is still in position and resting flat between the grease can and bearing plate.

11. SECURING THE GREASE CAN

11. 1. Tighten each bolt with a wrench, equalizing the load on each bolt as well as possible. Tighten until there is evidence of metal to metal contact all around between the flange, gasket retainer, and bearing plate.

11. 1. 1. It is unlikely that it would be possible to achieve metal to metal contact while securing the grease can mounted to the studs. It will be necessary to stagger the tightening sequence to avoid unbalanced loading on the bottom of the can and gasket. Partially tighten one bolt, then go to the bolt diagonally opposite that bolt and partially tighten it. Continue the partial tightening of all the bolts until the grease can is fully seated with the balanced tightening. Perform the final tightening of all the bolts for that grease can.

11. 2. Apply a new wrapping of teflon tape to the grease can filler bushing prior to final insertion and tightening.

11. 3. The replacement is now complete and the grease can shall be refilled observing the requirements of PSC Procedure SQ 12.1.

12. DOCUMENTATION

None required for this operation, except for the posting of (9.3.1) to Data Sheet 12.1 of PSC Procedure SQ 12.1.

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CONSUMERS POWER COMPANY
PALISADES
NUCLEAR POWER PLANT

PRECISION SURVEILLANCE CORPORATION
IN-SERVICE INSPECTION
QUALITY CONTROL PROCEDURE

GREASE REPLACEMENT

⚠1 Prepared by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by H.F. Hendrickson Title MGR., Q.A. Date 8-13-87

⚠1 Approved by D Bronaugh Title Mgr, Eng. Date 8-13-87

1. PURPOSE

This procedure will establish the requirements for the Replacement of Grease in the tendon duct after visual inspection and evaluation of Post-Tensioning System Tendons during In-Service Inspections (surveillance) of Consumers Power Company's Palisades Nuclear Power Plant.

2. SCOPE

This procedure is intended to provide the Grease Replacement requirements for the wire post-tensioning system of Shallow-Domed nuclear containments with Dome, Horizontal and Vertical Tendons. This Procedure does not require a tolerance control for refilling the tendon void. However, the quantity of grease being replaced shall not be less than the quantity removed and/or lost.

3. RESPONSIBILITY

As stated in PSC Procedure QA 4.0.

4. QUALIFICATIONS

As stated in PSC Procedure QA 4.1.

5. EQUIPMENT

The gauges and test equipment necessary for the Quality Control activities will be itemized in PSC Procedure SQ 4.0.

6. 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 verbal release from the Inspector. The required information or evaluative data shall be documented on Data Sheet 12.1 of this procedure. It shall be necessary to acquire the total Grease Loss for the tendon from Data Sheet 6.0 of PSC Procedure SQ 6.0.

⚠1 8-14-87 NO CHANGE

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7. PRECAUTIONS

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.

7. 1. 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.

7. 1. 1. **CAUTION - DURING GREASING, BE AWARE THAT THE GREASE IS HOT AND BEING PUMPED UNDER PRESSURE.**

8. PREREQUISITES

8. 1. All Inspections will be complete.

8. 2. The tendon will be in a stressed condition.

8. 3. The Total Grease Loss and the Loss from the Tendon Duct will be known; from DS 6.0. Enter the quantities for (12.3) and Total Grease Loss onto Data Sheet 12.1.

8. 4. The Grease Can shall be ready to be installed or installed.

8. 5. Any Grease Loss that may have occurred as a result of Leaks from the Grease Can or Gasket since the original installation or previous surveillance, whichever is the most current, shall be estimated for quantity.

8. 5. 1. QCD- Document the estimated Grease Loss that results from Leakage onto DS 12.1.

8. 6. Any Grease Loss that may have been detected and documented since the original installation or previous surveillance, whichever is the most current, shall be determined. This will require input from the Owner's Maintenance or Quality Assurance Departments. If this information is not available mark this N/A on Data Sheet 12.1.

△1 8-14-87 FORMAT CHANGE

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8. 6. 1. QCD- Post the documented quantity lost on to Data Sheet 12.1.

8. 7. Calculate the quantity of Grease Loss by adding item 12.4 of Data Sheet 6.0 to items 8.5.1 and 8.6.1 of Data Sheet 12.1, as each might apply.

8. 7. 1. QCD- Document the TOTAL GREASE LOSS THIS TENDON on Data Sheet 12.1.

9. GENERAL DISCUSSION

9. 1. The original installation temperature of the grease was probably not less than 120 F., but was probably in excess of that and perhaps as high as 180 F. This represents the maximum expansion of the grease under maximum plant operating conditions. As the grease cools, it shrinks back into the tendon duct leaving a coating of grease on all steel within the duct 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. There is no shrink-back at the Gallery Ends of a Vertical Tendon. Very little shrink-back would be seen for the Dome Tendons at the grease cans.

9. 2. It will not be possible to view this shrink-back without mechanical aids while the tendon is in a stressed condition. The air pocket could only be seen during the Anchorage Inspection of a Detensioned Tendon. For the most part, there should be negligible Grease Loss from the Tendon Duct of a stressed tendon unless the grease is in a liquid state.

9. 3. Using dry-ice will tend to solidify the column to a greater extent and help prevent losses from the tendon duct by forming a grease plug.

9. 4. Any grease lost from the grease can or tendon end anchorage assembly does not constitute a concern except for replacement of a like quantity.

⚠1 8-14-87 FORMAT CHANGE

9. 5. If it occurs that the Total Quantity of Grease to be Replaced cannot be replaced at one end of the tendon, it shall be acceptable to replace the remaining quantity of Grease into the opposite end of the tendon, if that is possible. Each end of the tendon shall be appropriately documented on Data Sheet 12.1 to record this fact and the quantities involved. All the Grease in the Tendon Void will blend together once plant operating temperatures are reached.

9. 6. CONTROLS FOR REFILLING THE TENDON VOID

△1 9. 6. 1. The quantity being replaced into the Tendon Void shall be controlled and documented. The tolerance requirements shall be observed for the replacement of grease. The quantity that has been installed, including tolerances, shall not be less than the Grease Loss, including any estimated losses from Grease Can or Gasket Leaks and any Gross Losses that require extensive cleanup or documentation by the Owner's Maintenance or Quality Assurance Department.

△1 9. 6. 2. It shall not be necessary to monitor grease outflow as only a small quantity of grease is being pumped into each grease can and it shall not be necessary to maintain specific grease temperatures nor to monitor the exit temperature of the grease. As the grease isis being replaced on a controlled basis for quantity, the coefficient of expansion is negligible for this amount of grease and the temperature can be ignored, but it should be in the range of 120 degrees F. to 250 degrees F. It is important however, 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.

△1 9. 6. 3. Where it is not necessary to completely refill the tendon void, the Total Quantity of grease being replaced shall be compared to the Total Grease Loss (8.7.1). As a Tolerance Control, The Total Quantity Replaced shall not be less than The Total Grease Loss.

△1 8-14-87 ADD INFO.

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△1 9. 6. 4. A Complete Replacement of Grease does not require a tolerance control.

△1 9. 6. 4. 1. MISDIRECTED GREASE FLOW

Pumping shall be stopped immediately if it is suspected or known that the grease is going somewhere else besides the immediate tendon void. If this condition cannot be corrected and pumping grease continued in the required manner, it shall be necessary to document this event with a nonconformance report submitted to the Owner.

△1 9. 7. MEASUREMENT OF GREASE REPLACEMENT

△1 9. 7. 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.

△1 9. 7. 2. The grease shall be monitored for quantity by a volume gauge at the pumping mechanism or by measuring the quantity of grease remaining in the drum or by measuring the drum to determine the quantity that has been pumped out.

△1 9. 7. 3. To provide a grease volume number in gallons based on a standard 55 gallon drum, divide the 55 gallons by the usable height of the drum (31 inches). This provides a figure of 1.77 gallons per inch of drum height. Note that a typical 55 gallon drum is 34 inches high, but based on actual observations, grease shrinkage and the depressed lid take up 3 inches of height.

△1 9. 7. 3. 1. QCD- Document the method of measurement, pump gauge or dimension. If the dimension method is used; document the gallons per inch in that area of the Data Sheet. If a pump gauge is used document the identification of that device.

△1 8-14-87 ADD INFO.

△1 9. 7. 4. Take a measurement of the height of the grease in the drum with a clean measuring device before pumping any grease. It will be acceptable to take the measurement from the top of the grease in the drum to the top edge of the drum. If the measurement is taken to the top edge of the drum, remember to subtract 3 inches to stay within the established volume per inch. Show the calculations if the measurement is taken to the top edge of the drum, i.e., if the measurement to the top edge of the drum was 7 inches, subtracting 3 inches leaves 4 inches, which would be subtracted from the original 31 inch height leaving a grease height of 27 inches. The 27 inch grease height translates to a volume of 47.8 gallons.

△1 9. 7. 4. 1. QCD- Document the grease height dimension to the nearest 1/8 of an inch.

△1 9. 7. 5. Take a measurement of the height of the grease in the drum <u>after</u> pumping in the grease.

△1 9. 7. 5. 1. QCD- Document the final grease height dimension to the nearest 1/8 of an inch.

△1 9. 7. 5. 2. Calculate and document the Total Quantity of grease pumped into the can to the nearest 0.25 gallon. Also document the temperature of the hot grease being pumped in.

△1 9. 7. 5. 3. EXAMPLE: If the initial grease height was 25-1/2" and each inch of grease height or depth represents 1.77 gallons; where the final grease height was 6-1/4", this is a 19-1/4" reduction multiplied by 1.77 gallons per inch which equals 34.1 gallons pumped in.

△1 9. 8. MEASUREMENT OF GREASE WASTE

When it becomes necessary to determine the volume of grease that was pumped into the tendon void, it will be necessary to add the waste grease outflow, spillage, the grease remaining in the pump-in hose, the grease remaining in the waste line hose and subtract that from the grease volume that was pumped from the drum into that tendon.

△1 9. 8. 1. If the waste grease is pumped into a 55 gallon drum, then each inch of drum height will equal to 1.77 gallons. If the drum is filled to a height in excess of 31 inches, each inch in excess of 31 will be equal to 1.77 gallons.

△1 9. 8. 2. The standard grease filling hoses (yellow) have an internal diameter of 1-1/2 inches. The formula for volume of a cylinder measured in inches is pi(3.1416) X r^2 X L (in inches) divided by 231 cubic inches per gallon. Therefore, each 12 inches of this hose would contain 0.092 gallons per foot. The same volume formula would apply to determine the capacity of other types of cylindrical containers; buckets, cans, etc.

△1 9. 8. 3. Smaller containers should be evaluated for size to determine the capacity. These types of containers would only require a simple estimate for the waste grease contained therein.

△1 9. 8. 4. Before pumping any waste grease into a container, always verify and document the quantity within that container BEFORE pumping.

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10. METHOD OF REPLACEMENT

There are several methods of replacing the grease in a tendon void. Pumping Hot Grease, Pour-in Hot Grease and Complete Refilling. Each method is dependent on the quantity of grease that was lost or removed from the "TENDON VOID", excluding that which was removed or lost from the tendon anchorage assembly and the grease can. While all the lost or removed grease is to be replaced, the quantities for control are based on replacing only that quantity which was lost or removed from the "TENDON VOID". As the Grease Loss is known before starting the Replacement, then the correct method and the required prerequisites can be observed. It will be acceptable to partially refill the Grease Can before installing the can or by allowing uncontaminated grease to remain in the Grease Can after the Grease Can was first removed in Procedure SQ 6.0. The PSC Construction Superintendent shall be responsible for determining the most applicable method of replacing the grease in the voids based on the requirements cited within this Procedure.

10. 1. QCD- Document the ambient temperature near the tendon, and the Thermometer Identification and Recalibration Date.

10. 2. The Replacement of Grease shall not exceed 21 calendar days from date of removal to the date of replacing the grease. This is of less importance if the tendon anchorages have been lightly coated with grease and suitably protected from weather, moisture and dirt.

10. 2. 1. QCD- Document the date of removal shown on Data Sheet 6.0 of PSC Procedure SQ 6.0 for this tendon. Document the date of Replacing the Grease and calculate the Elapsed Time.

10. 3. If the Elapsed Time exceeds 21 days, a Nonconformance Report shall be drafted and submitted in accordance with PSC Procedure QA 9.0.

10. 4. Check to see if the Tendon End Anchorage Assembly was coated with grease during the preparation for the Grease Can Replacement.

⚠1 8-14-87 FORMAT CHANGE

10. 5. The Grease Losses are calculated for one end of the tendon only and independent of the opposite end. The Grease Loss shall be posted to DS 12.1 from that item at the bottom of DS 6.0.

10. 6. The terms Total Grease Loss and Total Quantity Replaced are similar except that the Total Quantity Replaced will also include that quantity that was necessary to add to the Grease Can, to bring it to a completely full condition.

11. GREASE REPLACEMENT

The Grease Replacements described in this Procedure are for one end of a tendon. The terms Tendon Void and Tendon Duct are synonymous. It will not be necessary to remove quantities of grease in excess of the Tolerance Control nor will it be necessary to draft a nonconformance report.

⚠1 11. 1. COLD PACKING

The Cold Packing shall take place before the Grease Can is installed. With the Total Grease Loss known, a like quantity shall be applied to the Tendon End Anchorage Assembly and into the Grease Can. DO NOT REUSE GREASE REMOVED FROM THE TENDONS.

11. 1. 1. The Total Quantity replaced shall be the same as the Total Grease Loss and the tolerance control cited in Section 9.8 of this Procedure. There is no plus tolerance for the replacement of grease.

11. 1. 2. The grease shall be brushed, swabbed or packed around the shims, anchorage, buttonheads, exposed wires, if any, and into the grease can. It shall not be necessary to place any grease into the tendon duct.

11. 1. 2. 1. It is important to get a good uniform coating of grease around the end of the anchorage, until such time that the plant operating mode reflows the grease, both expanding it and causing it to flow around, and through, coating all the surfaces.

⚠1 8-14-87 ADD INFO.

11. 1. 3. Apply a light coating of grease onto the bearing plate to provide corrosion protection. Avoid placing grease into that area where the grease can gasket will seat itself.

11. 1. 4 If the Total Grease Loss is relatively small and there remains enough room in the grease can to accommodate the Total Grease Loss, after allowing for the refilling of the grease can, it will be acceptable to Cold Pack the Total Grease Loss around the tendon end anchorage, as cited in Section 11.1.2 above, and into the grease can. This will eliminate the need for additional filling by Pumping Hot Grease.

11. 1. 5. QCD- Document the quantity of grease replaced through the use of Cold Packing.

11. 1. 6. QCD- If the Grease Can was partially filled with Grease before installation, document the amount of grease poured into the can onto Data Sheet 12.1.

11. 1. 7. Install the Grease Can in accordance with the requirements of PSC Procedure SQ 12.0.

11. 1. 8. There is a possibility that the quantity of grease lost may have been completely replaced by Cold Packing. In this instance, it will not be necessary to add any more grease through the process of Pumping Hot Grease, therefore Sections 11.2 and 11.3 of this Procedure will not be required. Complete the required documentation for Data Sheet 12.1. If grease must be added to meet the quantity requirement it will be added as described in Section 11.2 of this Procedure.

11. 2. <u>PUMPING HOT GREASE</u>

Pumping Hot Grease shall take place after Cold Packing the Tendon End Anchorage Assembly, if Cold Packing was applied, and after the Grease Can is installed. Whenever Hot Grease is pumped into the tendon void through the Grease Can, the Pumping Pressure shall not exceed 150 psi.

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11. 2. 1. Prior to replacing the Grease Can on a Horizontal, Dome or Bottom End of a Vertical Tendon, a valve hole may be drilled and tapped into the Grease Can tube, a short distance from the mounting flange. This hole will accept a simple valve which would be used to vent the air from the grease can while pumping in the grease. Later, the valve can be removed and replaced by a pipe plug of the same size. See Sketch 12.1, Figure 1.

11. 2. 2. With the valve in place, the grease can shall be installed in accordance with PSC Procedure SQ 12.0.

11. 2. 3. Hot grease shall be pumped into the grease can. The grease shall be pumped in until the required amount to be replaced meets the Total Grease Loss including tolerances. This maximum amount shall be the combined total of Cold Packing, if applied, and the Pumping of Hot Grease. The Total Quantity replaced shall be the same as the Total Grease Loss and the tolerance control cited in Section 9.8 of the Procedure. There is no plus tolerance for replacement of the grease.

11. 2. 4. The grease may be pumped in using the "Y-Device" shown in Sketch 8.1 or a similar device.

11. 2. 5. It may be advantageous to have heating coils wrapped around the Grease Can that the grease is being pumped into. This is an acceptable method for permitting the grease to flow faster and avoid congealing.

11. 2. 6. It should be noted that the bulk of the grease replacement may have been through Cold Packing or Prefilling the Grease Can, where that is practical. It may be more practical to replace the grease by Pumping Hot Grease rather than the Cold Packing or Prefilling previously described. In that circumstance, Section 11.2 may be used as the principle method of refilling.

△1 11. 2. 6. 1. VERTICAL TENDON

The replacement of grease for Vertical Tendons shall be performed at the Dome or Top End of the Tendon. As the Gallery or Bottom End of the Tendon has not been disturbed all the grease shrinkage will occur at the Top End of the Tendon. In all likelihood, there will probably not be any Grease Loss at this end of the Tendon except for what was taken for Grease Samples and that which will be scrapped. Detensioned tendons may lose more grease through the bottom ends. It is therefore possible to pump or pour hot grease into the filler inlet of the Grease Can until it overflows or just before overflowing.

11. 2. 7. QCD- Document the quantity of hot grease pumped into that grease can as required of Section 9.10.5.2 of this procedure, including the measurements required by Sections 9.10.3.1, 9.10.4.1 and 9.10.5.1. Also document the Thermometer Identification, Recalibration Date and the temperature of the grease pumped in.

11. 2. 8. QCD- Document the quantities of Waste Grease, if any. Deduct the Waste Grease (11.2.8) from the Amount of Pump Hot Grease (11.2.7) and enter that as the TOTAL PUMPED IN.

11. 2. 9. QCD- Calculate the TOTAL QUANTITY REPLACED by adding the grease quantities of Cold Pack (11.1.5) to Total Pumped in (11.2.8) and enter that into TOTAL QUANTITY REPLACED.

11. 2. 10. OTHER CONTROLS

11. 2. 10. 1. Verify that no grease is leaking. If there is some leakage, the deficiency shall be corrected and cleanup performed.

11. 2. 10. 1. 1. QCD- Document the acceptance of leak tightness.

△1 8-14-87 ADD INFO.

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11. 2. 10. 2. Compare the TOTAL QUANTITY REPLACED to the TOTAL GREASE LOSS. The Total Quantity Replaced shall not be less than the Total Grease Loss. If the Total Quantity Replaced is not within this Tolerance Control, it will be necessary to add grease to that tendon. If grease cannot be added in sufficient quantities to meet the tolerance, it shall be necessary to draft a nonconformance report and submit it to the Owner.

11. 2. 10. 2. 1. QCD- Document the acceptability of the refilling.

11. 2. 10. 2. 2. QCD- Document any comments of unusual occurrences or references that could assist in evaluating the refill or for future surveillances.

⚠1 11. 3. COMPLETE TENDON VOID REFILLING

These procedures are presented in the event that it becomes necessary to completely refill a number of tendon voids and the economy of the bulk storage of grease becomes apparent. These procedures are nearly identical to the method used during Installation Grease Filling. The Pumping Pressure for refilling tendon voids shall not exceed 150 psi. The grease temperature before pumping will be in a range of 140 degrees F. to 250 degrees F. at the storage facility.

11. 3. 1. SET-UP FOR REFILLING THE TENDON DUCT

Several types of hook-ups have been developed for the various configurations 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 or each system and the recirculating patterns used, to prevent hose blockages. Proper hook-up and documentation of the void filling are the responsibility of the PSC Field Personnel performing the greasing operation.

11. 3. 1. 1. Before starting the tendon filling operations, the storage facility, pump, hoses and equipment shall be set up.

⚠1 8-14-87 ADD INFO.

11. 3. 1. 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 physical make-up of the Grease Control Station may be as complex as that seen in Sketch 8.0 or as simple as the drum grease pump seen in Sketches 8-4.1 or 8-5.1.

11. 3. 1. 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.

11. 3. 1. 4. Refer to each specific system procedure for the proper selection. Then follow the Tendon Duct Refilling requirements for the actual operation.

11. 3. 2. SINGLE FILL SYSTEM - HORIZONTAL TENDON

This type does not utilize a jumper line, instead one tendon is filled at a time and Y-devices are used at each end of a horizontal wall or horizontal dome tendon. Refer to Sketch 8-4.1.

11. 3. 2. 1. Attach the pipe plugs to the operating shaft of the Y-device. The Y-device will be seen in Sketch 8-1.

11. 3. 2. 2. Connect the Y-devices to each tendon end grease can filler bushing and attach the waste line to the opposite end of the tendon.

11. 3. 2. 3. The casing filler will be pumped through the void and when it exits from the waste line and emerges clean, insert the pipe plug into the grease can bushing at the out-flow end of the tendon.

⚠1 8-14-87 FORMAT CHANGE

11. 3. 2. 4. Switch the 4 port-control valve to the recirculate position as shown in Sketch 8-4.1 or stop pumping grease and insert the pipe plug into the grease can filler bushing at the feed-in end of the tendon.

11. 3. 3. TENDON VOID FILLING - SINGLE FILL

With the type of system selected for the duct refilling and all the connections made, the tendon void is ready to be filled according to the following procedures.

11. 3. 3. 1. Casing filler in the storage facility will be in a temperature range of 140 F. to 250 F.

11. 3. 3. 2. The 4 port-control valve will be set for the small loop recirculation pattern as noted in Sketch 8-4.1 or stop pumping grease.

11. 3. 3. 3. The pump is operating to circulate the casing filler.

11. 3. 3. 4. All connections to the tendon are made.

11. 3. 3. 5. The 3 port-outflow valve or waste line is set so that the initial flow of casing filler will be into the waste container.

11. 3. 3. 6. Open the 4 port-control valve allowing the flow of casing filler into the tendon void.

11. 3. 3. 7. Where the tendon duct or sheathing has been installed with Drains and Vents, the following procedures shall be followed to prevent entrapment of air in the highest elevations of each tendon void.

11. 3. 3. 7. 1. DRAINS

11. 3. 3. 7. 1. 1. All sheathing drains shall be located and closed prior to starting the filling operations. Failure to do so may result in grease being pumped out through the drain causing a cleanup problem and possible injury to personnel in the area.

11. 3. 3. 7. 2. VENTS

11. 3. 3. 7. 2. 1. Prior to starting the grease refilling operation, all tendon duct vents for the tendon to be greased shall be opened. This will allow the air within the tendon void to escape in front of the grease column.

11. 3. 3. 7. 2. 2. As the grease is pumped into the tendon duct and is observed coming out of the vent, that vent will be closed or capped. Each succeeding vent in line will receive the same treatment until the entire sheath is filled and all the vents closed.

11. 3. 3. 7. 2. 3. To assist in closure of each vent, a valve may be installed as a simple means of capping each vent on a temporary basis. These valves may be salvaged and used on other sheath vents, once the duct is filled and the grease has solidified somewhat. As a valve is removed, it shall be replaced by a suitable cap or plug.

△1 8-14-87 FORMAT CHANGE

11. 3. 3. 7. 3. INOPERABLE DRAINS AND VENTS

In the event that some drains or vents become inoperable for any reason and it is not possible to comply with Sections 11.3.3.7.1 and 11.3.3.7.2 above, the tendon void filling operation will not be adversely affected and shall continue as noted in this procedure. The failure to locate or operate any of these devices shall be noted on Data Sheet 12.1 and a periodic check should be made to make sure these devices do not open up and spill grease during filling operations.

11. 3. 3. 8. Casing filler will flow through the 3 port-outflow valve or waste line into the waste container.

11. 3. 3. 9. Air bubbles will probably appear out of the waste line, followed by any foreign material and finally a steady stream of clean grease as delivered from storage.

11. 3. 3. 10. When the casing filler appears to be clean and free of foreign substances, allow a small quantity of this clean grease to outflow to the waste container then shift the 3 port-outflow valve so the flow is directed through the 4 port-control valve and back to the storage facility.

11. 3. 3. 10. 1. Single fill system pumping shall cease once the clean casing filler appears from the waste line, and the tendon grease can filler bushing pipe plugs shall be installed.

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11. 3. 3. 11. The temperature of the casing filler exiting 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 120 F. is not reached, it shall be necessary to recirculate the grease through the tendon duct as noted in these procedures until the minimum 120 F reading is obtained.

11. 3. 3. 12. Install the tendon grease can filler bushing pipe plugs into each grease can as required by the system. Disconnect the quick couplers and move on to the next tendon duct to be filled.

11. 3. 3. 13. While moving the hoses after uncoupling, take care not to spill any grease from the hose.

11. 3. 3. 14. Any grease spilled on concrete or other surfaces shall be removed and solvent-cleaned to remove the surface residue.

11. 3. 3. 15. A FINAL WORD OF CAUTION: 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.

11. 3. 3. 15. 1. QCD- Enter all the required data onto Data Sheet 12.1, marking N/A for nonapplicable items.

11. 3. 3. 15. 2. QCD- Document the complete refilling of the tendon, the outflow temperature of the grease, the Thermometer Identification and Recalibration Date. Comments pertinent to the Complete refilling shall be documented in the areas identified as (11.2.10.2.2.).

△1 8-14-87 FORMAT CHANGE

11. 3. 3. 15. 3. QCD- Document the opening and closing of drains and vents if the entire tendon duct was filled.

11. 3. 3. 15. 4. QCD- Document the acceptability of the refill in the area identified as (11.2.10.2.1) and Grease Leaks in the area identified as (11.2.10.1.1).

11. 3. 3. 16. It shall not be necessary to document the quantity of grease replaced when the entire duct is filled.

12. DOCUMENTATION

The items requiring documentation shall be documented on Data Sheet 12.1.

12. 1. Some information shall be posted from Data Sheet 6.0 of PSC Procedure SQ 6.0 onto Data Sheet 12.1.

12. 2. The Data Sheet references the applicable section number of the procedure for each QCD point.

13. ATTACHMENTS

13. 1. Data Sheet 12.1

13. 2. Sketch 8-0

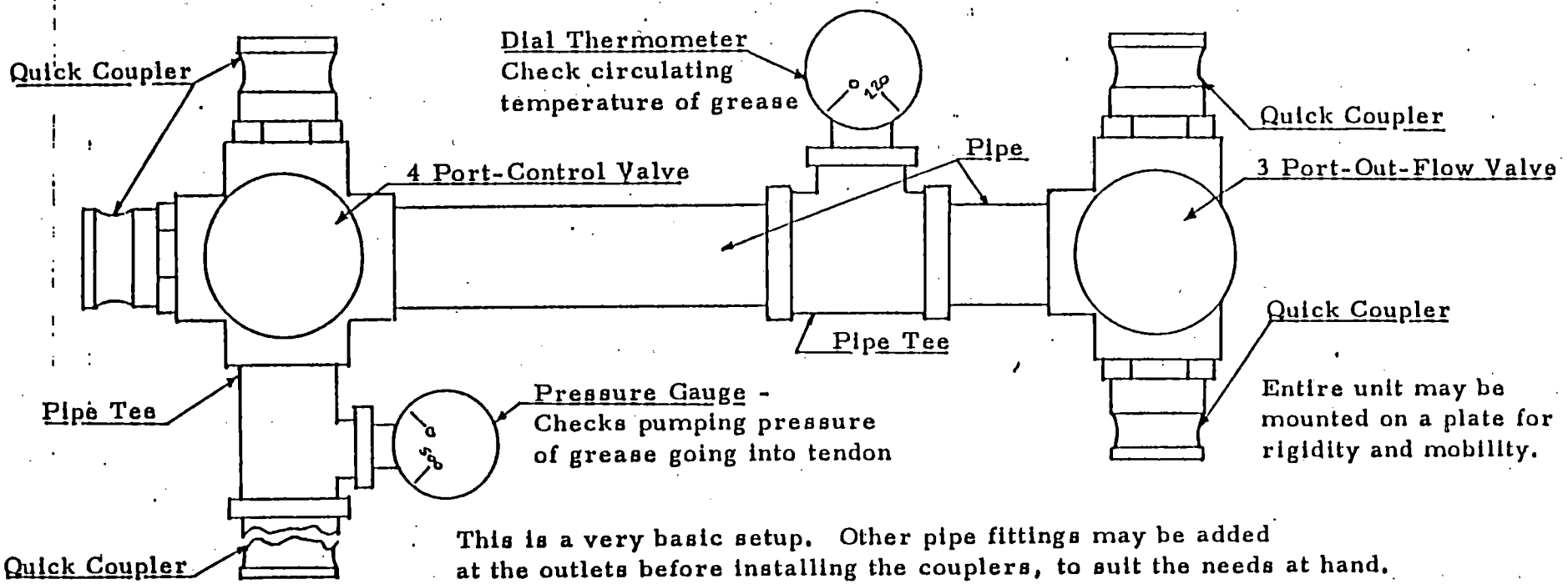
13. 3. Sketch 8-1

13. 4. Sketch 8-2

13. 5. Sketch 8-4.1

13. 6. Sketch 12.1

△1 8-14-87 FORMAT CHANGE



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.

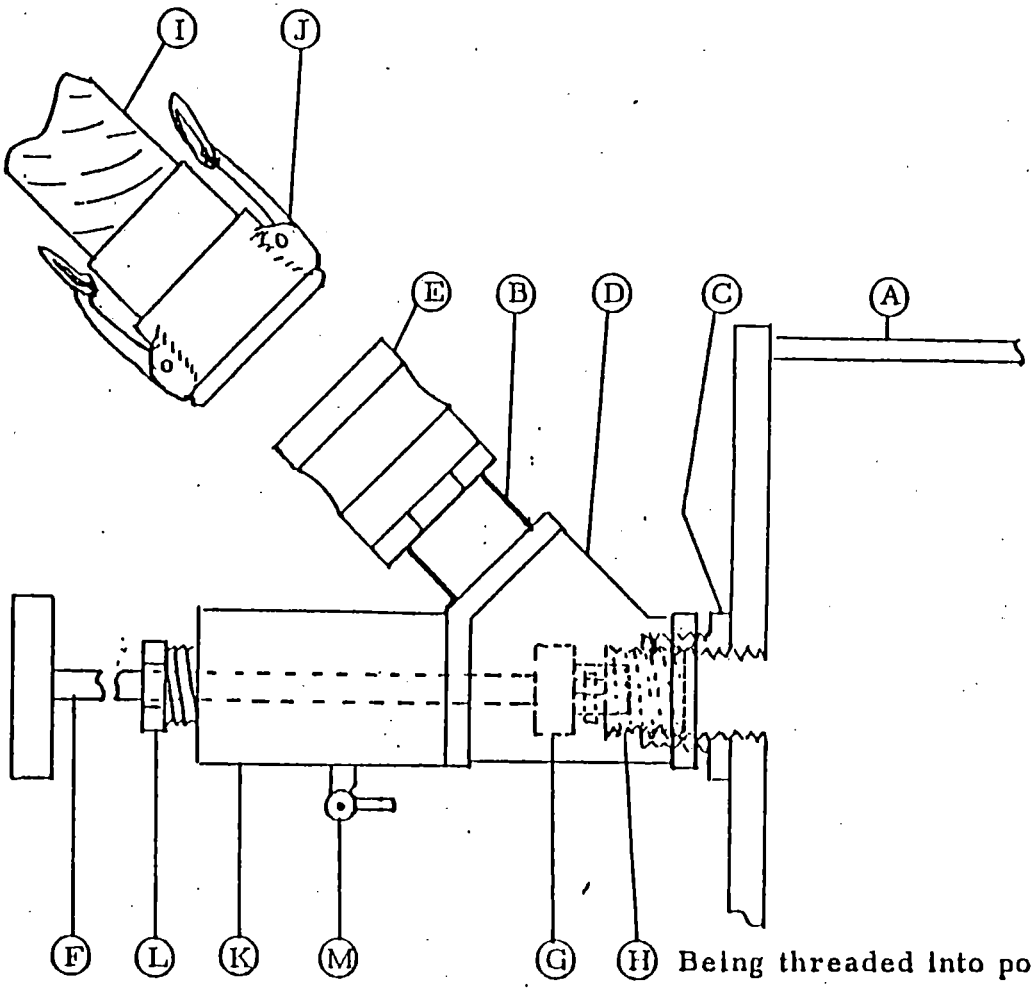
GREASE CONTROL STATION Sketch 8-0

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
SKETCH 8-0
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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



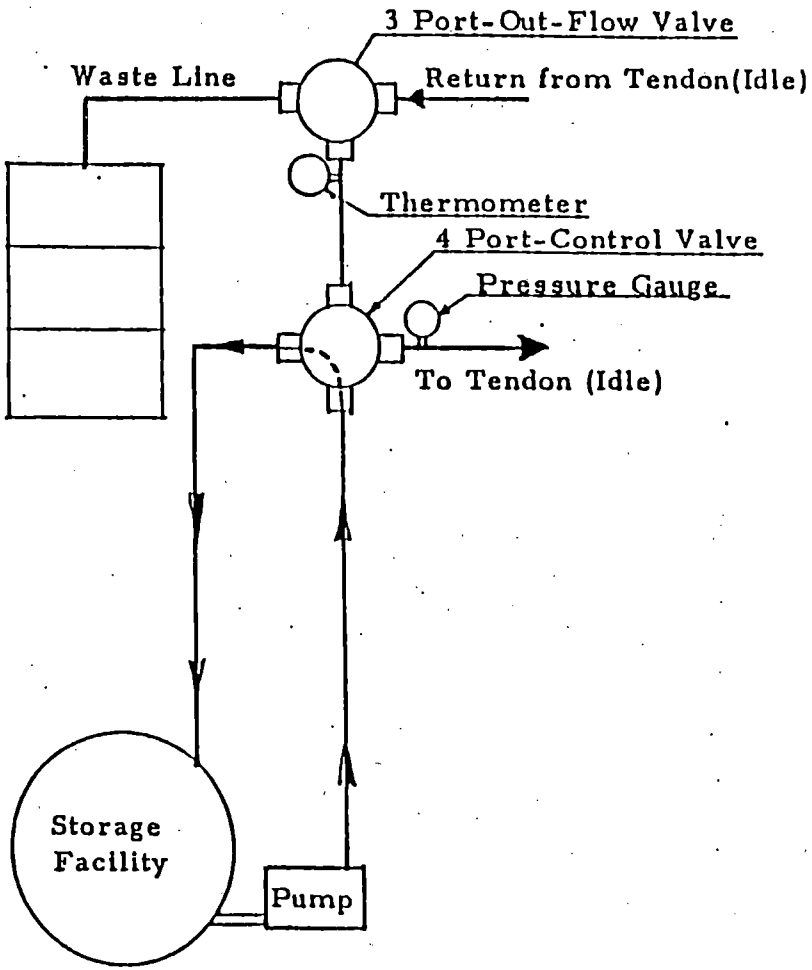
H Being threaded into position

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
SKETCH 8-1
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Special Tendon Void Filling Tool — Y-DEVICE — Sketch 8-1

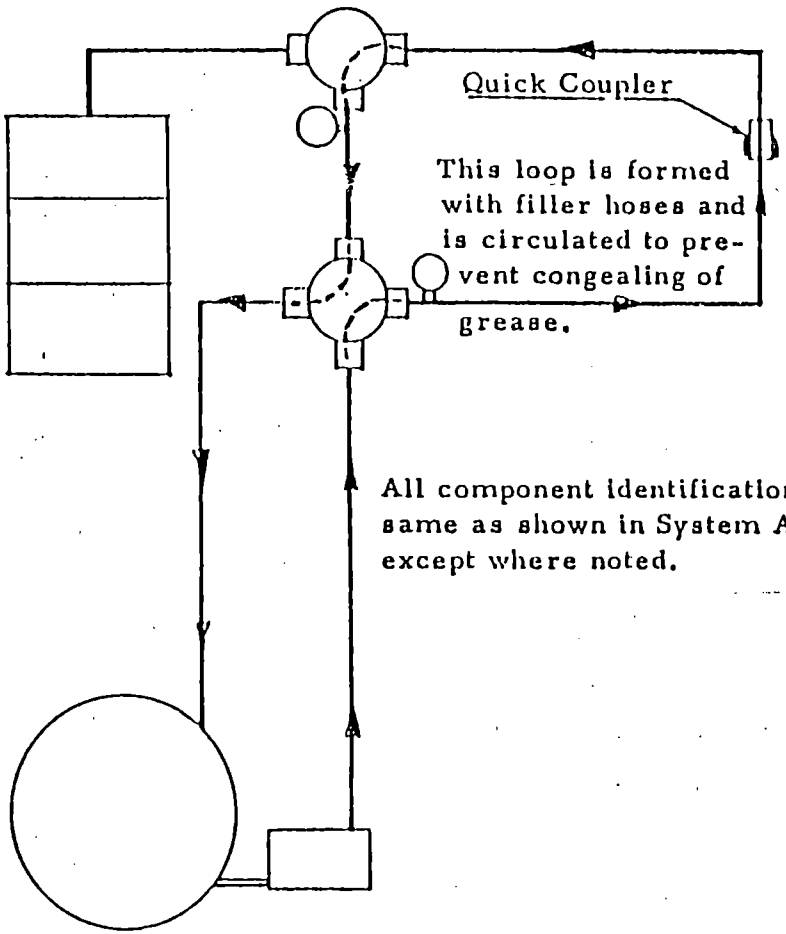
SYSTEM A



Re-circulation to storage during hook-up operations.

RECIRCULATION PATTERNS

SYSTEM B



All component identification is the same as shown in System A, except where noted.

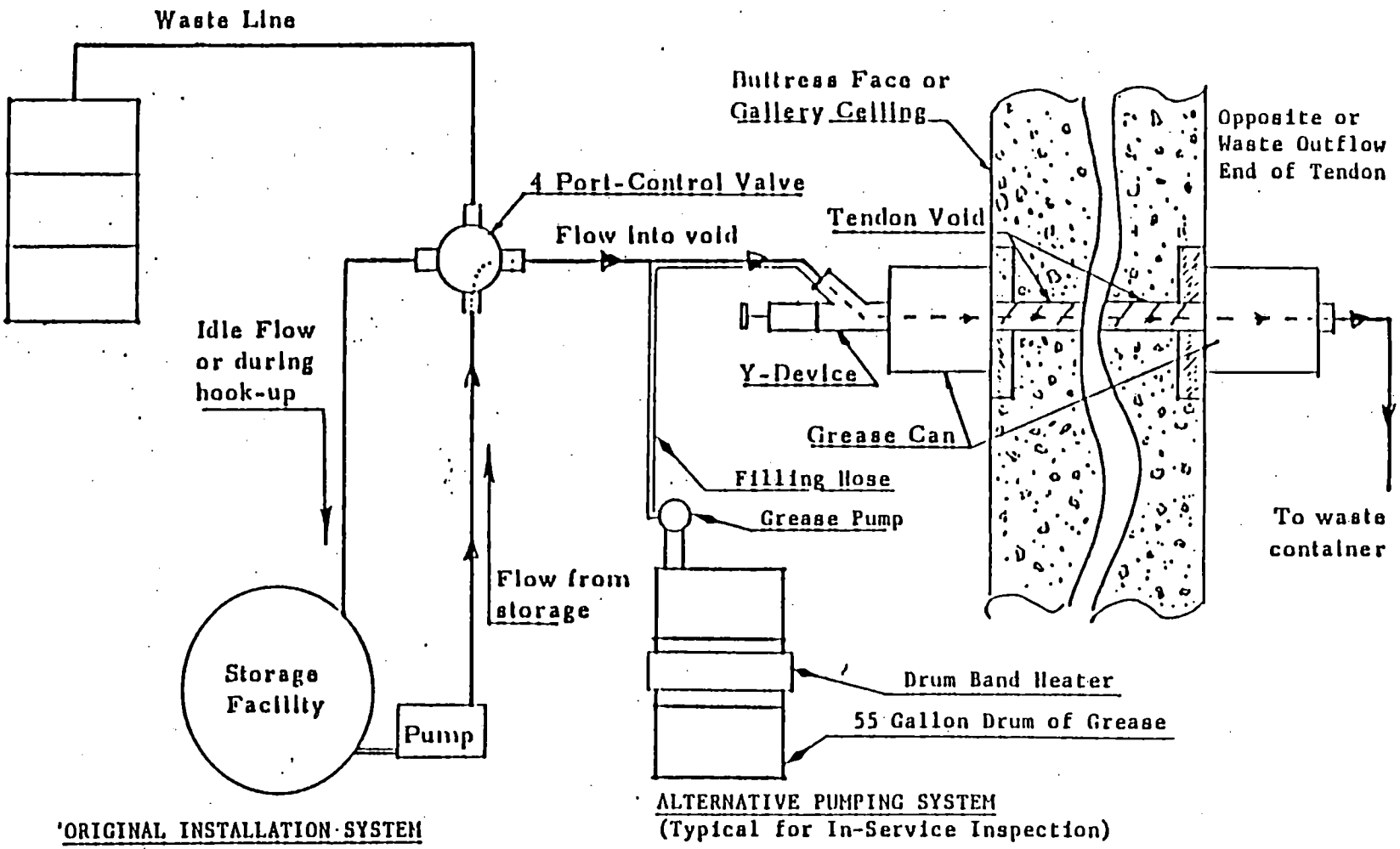
Re-circulation through filler hoses before or after filling operations.

FLOW DIAGRAM

Sketch 8-2

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
SKETCH 8-2
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SINGLE TENDON REFILL - HORIZONTAL TENDON SKETCH 8-4.1

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
SKETCH 8-4.1
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VERTICAL TENDON (Gallery - In Detail)

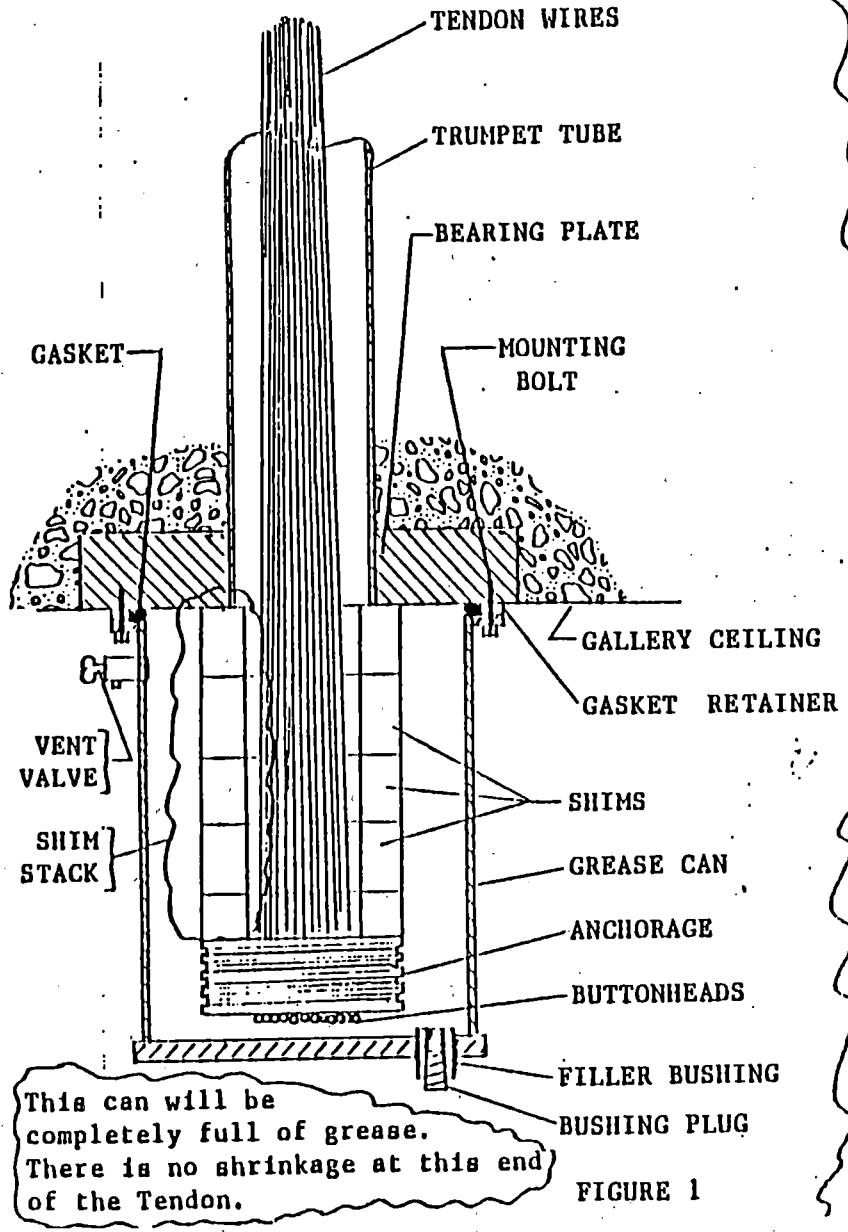


FIGURE 1

DOME TENDON (Approximate Placement Angle)

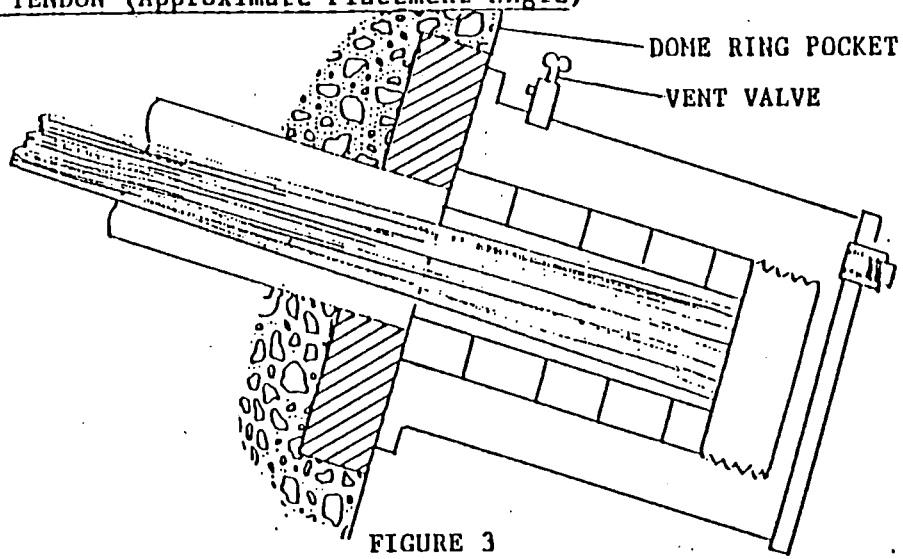
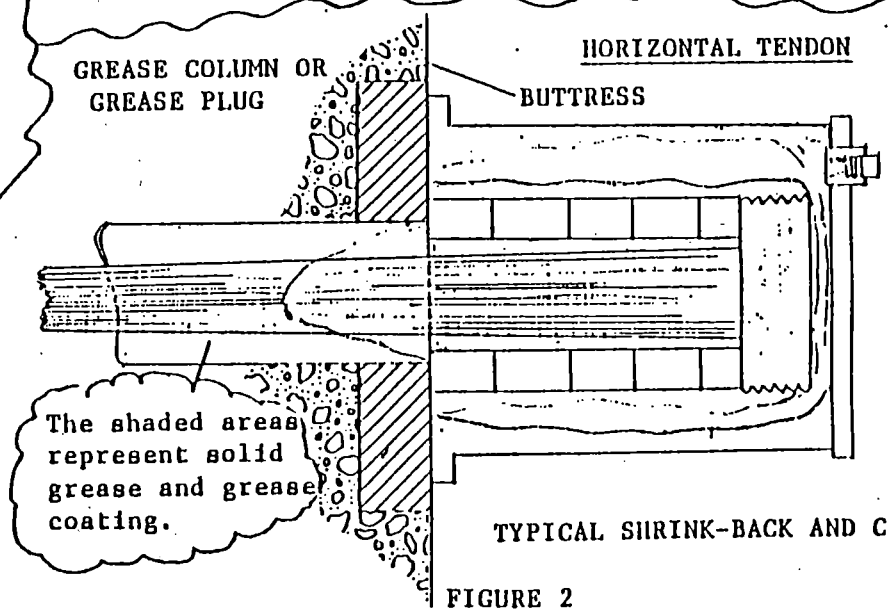


FIGURE 3

HORIZONTAL TENDON



TYPICAL SHRINK-BACK AND COATING

FIGURE 2

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
SKETCH 12.1
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PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
DATA SHEET 12.1
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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT _____ SURVEILLANCE NO._____ YEAR _____

TENDON NO. _____ TENDON END/BUTTRESS NO. _____ UNIT _____

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm._____ Gal. Q.C. Signoff _____
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only _____ Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. _____ Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS _____ Gal. _____

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks _____ Gal. _____
(8.6.1) Documented Grease Losses - NCRs or Other Reports _____ Gal. _____
(8.7.1) TOTAL GREASE LOSS THIS TENDON _____ Gal. _____

⚠1 (9.7 .3.1) Pump Gauge _____ Dimension _____ Gallons per inch _____
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE_____ (9.7 .5.1) AFTER_____ _____
Calculations: _____ _____ _____

(10.1) Ambient Temp. _____° F. Thermo.ID. _____ Recal Date _____ _____
(10.2.1) Can Removal_____ Can Replacement_____ Days Elapsed_____ _____
(11.1.5) Cold Pack Grease _____ Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☐ NO Quantity _____ Gal. _____
(11.2.7) Pump Hot Grease _____ Gal. Grease Temp._____°F
Thermo.No._____ Recal Date_____ _____

(11.2.8) Waste Grease _____ Gal. TOTAL PUMPED IN _____ Gal. _____
(11.2.9) Cold Pack ___ Gal + Partial Fill __ Gal. + Total Pumped In ___ Gal.
TOTAL QUANTITY REPLACED _____ Gal. _____

(11.2.10.1.1) Grease Leaks ☐ YES ☐ NO _____

(11.2.10.2.1) REFILL ACCEPTABLE ☐ YES ☐ NO Variation _____% _____

(11.3.3.15.2) Complete Refilling ☐ YES ☐ NO
Exit Temp. of Grease ____°F. Thermo. I.D. _____ Recal Date _____ _____

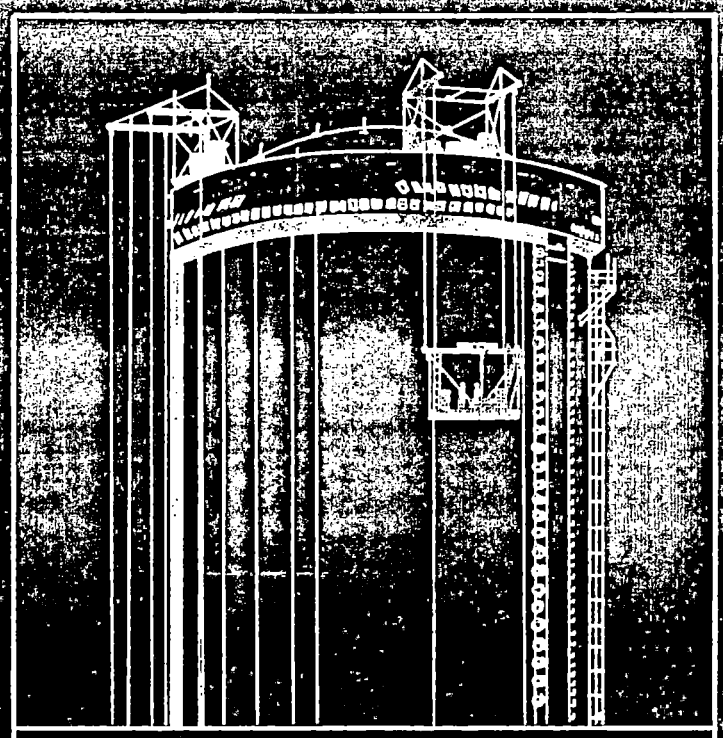
(11.3.3.15.3) Vents Open _____ Vents Closed After Filling _____
Drain Vents Closed Before Filling _____

(11.2.10.2.2) COMMENTS: _____
_____
_____

Q.C. REVIEW _____ LEVEL _____ DATE _____

TITLE _____

⚠1 8-14-87 ADD INFO.



PSC
Precision Surveillance Corporation

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

APPPENDIX E

Data Sheets

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
MAY 20, 1987
Page 1 of 1
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E1

SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

FILLER DATA — Date Removal Started 9/22/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO EB 9/22/87

(7.5) Temp. of Concrete 60 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 9/22/87
Ambient Temp. 58 F. Thermometer No. PK42 Recalib. Date 9/8/88 EB 9/22/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1/4 Gal. EB 9/22/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 9/22/87

(8.8) GREASE COATING:

Grease Can	Complete ___	Partial ✓	Uncoated 50	%	
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%	
Anchorage	Complete ✓	Partial ___	Uncoated ___	%	
Shims	Complete ✓	Partial ___	Uncoated ___	%	
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%	EB 9/22/87

(8.9) Unusual Conditions: NONE EB 9/22/87

(8.10.1) Grease Color: Match ✓ Color DARK BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ EB 9/22/87
(9.6) Amount of Grease Removed VERY SLIGHT COATING Gal. – Will this be scrapped? ☒ YES ☐ NO EB 9/22/87

△1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN EB 9/22/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 N.A. 12/15/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED EB 9/22/87

(10.3) Amount of Grease Lost NONE Gal. – Will this be scrapped? ☐ YES N/A ☒ NO EB 9/22/87

△1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

△1 (8.7) 0 + (8.7.1) 1/4 + (9.6) 0 + SQ7.0 (6.1) 1/2 + (10.3) 0 = EB 9/22/87

TOTAL GREASE LOSS 3/4 Gal. Post to DS 12.1 EB 9/22/87

Q.C. Review W. T. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0(c.1) W.T.H. 10/15/87

△1 8-14-87 ADD INFO.

KWC 11/3/87

Rel 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
MAY 20, 1987
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E2

SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 9/28/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO CB 9/28/87

(7.5) Temp. of Concrete 74 F. Thermometer No. SM-2 Recalib. Date 9/8/88 CB 9/28/87
Ambient Temp. 68 F. Thermometer No. PK 42 Recalib. Date 9/8/88 CB 9/28/87

(8.7) Amount of Grease Lost 45 Gal. (8.7.1) Amount of Grease in Can 2 Gal. CB 9/28/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A CB 9/28/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

CB 9/28/87

(8.9) Unusual Conditions: NONE CB 9/28/87

(8.10.1) Grease Color: Match ✓ Color DK. BROWN Comment NONE CB 9/28/87
(8.10.2) No Match ___ Color ___ Comment ___

(9.6) Amount of Grease Removed 1/8 Gal. - Will this be scrapped? ☒ YES ☐ NO CB 9/28/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN FILLER PLUG CB 9/28/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB REPORT DATED 11/25/87 HH 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN INSTALLED CB 9/28/87

(10.3) Amount of Grease Lost 1/2 Gal. - Will this be scrapped? ☒ YES ☐ NO CB 9/28/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 45 + (8.7.1) 2 + (9.6) 1/8 + SQ7.0 (6.1) 1/2 + (10.3) 1/2 = CB 9/28/87

TOTAL GREASE LOSS 48 1/8 Gal. Post to DS 12.1 CB 9/28/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0(C.1) H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

11/3/87

WC 11/3/87

PSC PROCEDURE SQ 6.0
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E3

[redacted]THING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 10/12/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/12/87

(7.5) Temp. of Concrete 68 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 10/12/87
Ambient Temp. 64 F. Thermometer No. PK42 Recalib. Date 9/8/88 EB 10/12/87

(8.7) Amount of Grease Lost ~~NONE~~ 42½ Gal. EB 10/12/87 (8.7.1) Amount of Grease in Can N/A Gal. EB 10/12/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 10/12/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%	
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%	
Anchorage	Complete ✓	Partial ___	Uncoated ___	%	
Shims	Complete ✓	Partial ___	Uncoated ___	%	
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%	EB 10/12/87

([redacted]) Unusual Conditions: NONE — EB 10/12/87

(8.10.1) Grease Color: Match N/A Color N/A Comment N/A
(8.10.2) No Match N/A Color N/A Comment N/A — EB 10/12/87
(9.6) Amount of Grease Removed N/A Gal. – Will this be scrapped? N/A ☐ YES ☐ NO EB 10/12/87

⚠ SQ 7.0 SAMPLES
(6.1) Grease Samples Taken N/A Quarts. (6.1) Samples Identified N/A
(6.1) Location of Sample Removal N/A — EB 10/12/87

(7) Grease Analysis: N/A ☐ Accept ☐ Unacceptable Engr. Notified N/A — EB 10/12/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection CAN REINSTALLED-ASSEMBLY STILL COATED — EB 10/12/87

(10.3) Amount of Grease Lost NONE Gal. – Will this be scrapped? N/A ☐ YES ☐ NO EB 10/12/87

⚠ (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠ (8.7) 42½ + (8.7.1) 0 + (9.6) 0 + SQ7.0 (6.1) 0 + (10.3) 0 = EB 10/12/87

TOTAL GREASE LOSS 42½ Gal. Post to DS 12.1 EB 10/12/87

[redacted]

Q.C. Review H. T. Hendrickson Level III Date 10-15-87

Title MGR., Q.A

⚠ 8-14-87 ADD INFO.

fwl 11/12/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

FILLER DATA — Date Removal Started 10/15/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/15/87

(7.5) Temp. of Concrete 68 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 10/15/87
Ambient Temp. 64 F. Thermometer No. PK42 Recalib. Date 9/8/88 EB 10/15/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1/4 Gal. EB 10/15/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 10/15/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/15/87

(8.9) Unusual Conditions: NONE

EB 10/15/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ EB 10/15/87
(9.6) Amount of Grease Removed 1/4 Gal. – Will this be scrapped? ☒ YES ☐ NO EB 10/15/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY EB 10/15/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A H.H. 12/11/87

FILLER DATA (Continue SQ 6.0) ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED
(10.2) Method of Tendon Protection TEMP. COATED AND COVERED WITH PLASTIC EB 10/15/87 — EB 10/16/87

(10.3) Amount of Grease Lost NONE Gal. – Will this be scrapped? N/A ☐ YES ☐ NO EB 10/15/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1/4 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = EB 10/15/87

TOTAL GREASE LOSS 1 Gal. Post to DS 12.1 EB 10/15/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. Reviewed except SQ7.0(6.1) H.H. 11/13/87

⚠1 8-14-87 ADD INFO.

11/3/87

11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 10/2/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO N.A. 10/15/87, Dry Ice Used Around Anchorage NO N.A. 10/15/87 — N.A. 10/15/87 EB 10/2/87

(7.5) Temp. of Concrete 68 F. (70 N.A. 10/15/87) Thermometer No. SM-2 (ST 69 N.A. 10/15/87) Recalib. Date 8/21/88 — N.A. 10/15/87 EB 10/2/87

Ambient Temp. 64 F. (70 N.A. 10/15/87) Thermometer No. PK 42 (PK 45 N.A. 10/15/87) Recalib. Date 8/8/88 — EB 10/2/87

(8.7) Amount of Grease Lost 51 (NONE ON 10-5-87 N.A.) Gal. (8.7.1) Amount of Grease in Can 2 1/2 Gal. (8/21/88) — N.A. 10/15/87 N.A. 10/15/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — N.A. 10/16/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

N.A. 10/15/87

(8.9) Unusual Conditions: NONE

N.A. 10/15/87

(8.10.1) Grease Color: Match ✓ Color DK. BROWN Comment NONE

(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/2/87

(9.6) Amount of Grease Removed 1/4 Gal. – Will this be scrapped? ☒ YES ☐ NO — N.A. 10/15/87

1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES

(6.1) Location of Sample Removal FROM FILLER PLUG — EB 10/2/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — N.A. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE COVERED W/GREASE + PLASTIC / ANCHORAGE COVERED W/GREASE, NEW GASKET + GREASE CAN — N.A. 10/15/87 N.A. 10/16/87

(10.3) Amount of Grease Lost 3/4 (1/2 + 1/4 TOTAL) Gal. – Will this be scrapped? ☒ YES ☐ NO (☒ YES) — N.A. 10/15/87 N.A. 10/16/87 N.A. 10/16/87

1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

1 (8.7) 51 + (8.7.1) 2 1/2 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 3/4 = 55 gal — N.A. 10/16/87

TOTAL GREASE LOSS 55 Gal. Post to DS 12.1 — N.A. 10/16/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. — Reviewed except SQ7.0 (6.1) N.A. 11/13/87

1 8-14-87 ADD INFO.

Rul 11/3/87

KJC 11/3/87

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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

FILLER DATA — Date Removal Started 10/1/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — CB 10/1/87

(7.5) Temp. of Concrete 40 F. Thermometer No. SM-2 Recalib. Date 9/8/88 CB 10/1/87
Ambient Temp. 40 F. Thermometer No. PK 42 Recalib. Date 9/8/88 CB 10/1/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1/4 Gal. CB 10/1/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A CB 10/1/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%	
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%	
Anchorage	Complete ✓	Partial ___	Uncoated ___	%	
Shims	Complete ✓	Partial ___	Uncoated ___	%	
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%	CB 10/1/87

(8.9) Unusual Conditions: NONE
CB 10/1/87

(8.10.1) Grease Color: Match ✓ Color DK. BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ CB 10/1/87
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO CB 10/1/87

1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN CB 10/1/87
(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB REPORT DATED 11/25/87 N.F. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED CB 10/1/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO CB 10/1/87

1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

1 (8.7) 0 + (8.7.1) 1/4 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = CB 10/1/87

TOTAL GREASE LOSS 1 Gal. Post to DS 12.1 CB 10/1/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ 7.0 (6.1) H.F.H. 10/15/87

1 8-14-87 ADD INFO.

VJC 11/3/87

RJL 11/3/87

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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 9/24/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — CB 9/24/87

(7.5) Temp. of Concrete 70 F. Thermometer No. SM-2 Recalib. Date 9/8/88 CB 9/24/87
Ambient Temp. 68 F. Thermometer No. PK42 Recalib. Date 9/8/88 CB 9/24/87

(8.7) Amount of Grease Lost 43 (20 GAL ON 9-24-87 CB; 23 GAL ON 9-28-87 CB) Gal. (8.7.1) Amount of Grease in Can 2 Gal. CB 9/28/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A CB 9/28/87

(8.8) GREASE COATING:

Grease Can	Complete √	Partial ___	Uncoated ___	%
Buttonheads	Complete √	Partial ___	Uncoated ___	%
Anchorage	Complete √	Partial ___	Uncoated ___	%
Shims	Complete √	Partial ___	Uncoated ___	%
Bearing Plate	Complete √	Partial ___	Uncoated ___	%

CB 9/28/87

(8.9) Unusual Conditions: NONE — CB 9/28/87

(8.10.1) Grease Color: Match √ Color DK BROWN Comment NONE — CB 9/24/87
(8.10.2) No Match ___ Color ___ Comment ___

(9.6) Amount of Grease Removed 1/8 Gal. – Will this be scrapped? ☒ YES ☐ NO CB 9/24/87 CB 10/15/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN FILLER PLUG — CB 9/24/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — H.T. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN INSTALLED — CB 9/28/87

(10.3) Amount of Grease Lost 1/8 (SEE 8.7) Gal. – Will this be scrapped? ☒ YES ☐ NO — CB 9/28/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 43 + (8.7.1) 2 + (9.6) 1/8 + SQ7.0 (6.1) 1/2 + (10.3) 1/8 = — CB 9/28/87

TOTAL GREASE LOSS 45 3/4 Gal. Post to DS 12.1 — CB 9/28/87

Q.C. Review H.T. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0 (6.1) H.T.H. 10/15/87

⚠1 8-14-87 ADD INFO.

Paul 11/3/87

KK 11/3/87

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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

FILLER DATA — Date Removal Started 10/5/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO EB 10/5/87

(7.5) Temp. of Concrete 44 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 10/5/87
Ambient Temp. 44 F. Thermometer No. PK 42 Recalib. Date 9/8/88 EB 10/5/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1/4 Gal. EB 10/5/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 10/5/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	___ %	
Buttonheads	Complete ✓	Partial ___	Uncoated ___	___ %	
Anchorage	Complete ✓	Partial ___	Uncoated ___	___ %	
Shims	Complete ✓	Partial ___	Uncoated ___	___ %	
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	___ %	EB 10/5/87

(8.9) Unusual Conditions: SECOND 1/8" SHIM BEHIND HEAD OVER-LAPPING EACH OTHER - SEE DATA SHEET SQ8.0 - SKETCH EB 10/5/87

(8.10.1) Grease Color: Match ___ Color ___ Comment ___
(8.10.2) No Match ✓ Color DK BROWN Comment WITH TAN MIXTURE EB 10/5/87
(9.6) Amount of Grease Removed SLIGHT COVERING Gal. - Will this be scrapped? ☒ YES ☐ NO EB 10/5/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN EB 10/5/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 W.T.H. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED EB 10/5/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO EB 10/5/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1/4 + (9.6) 0 + SQ7.0 (6.1) 1/2 + (10.3) 0 = EB 10/5/87

TOTAL GREASE LOSS 3/4 Gal. Post to DS 12.1 EB 10/5/87

Q.C. Review H. R. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0(6.1) W.T.H. 10/15/87

⚠1 8-14-87 ADD INFO.

WC 11/3/87

Rel 11/3/87

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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 9/24/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — CB 9/24/87

(7.5) Temp. of Concrete 72 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — CB 9/24/87
Ambient Temp. 70 F. Thermometer No. PK 42 Recalib. Date 9/8/88 — CB 9/24/87

(8.7) Amount of Grease Lost 40 (20 GAL ON 9-24-87 CB; 20 GAL ON 9-28-87 CB) Gal. (8.7.1) Amount of Grease in Can 2 Gal. — CB 9/28/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — CB 9/28/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

CB 9/28/87

(8.9) Unusual Conditions: NONE — CB 9/28/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — CB 9/24/87

(9.6) Amount of Grease Removed 1/8 Gal. - Will this be scrapped? ☒ YES ☐ NO — CB 9/28/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN FILLER PLUG — CB 9/24/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — J.J. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN INSTALLED — CB 9/28/87

(10.3) Amount of Grease Lost 1/8 (SEE 8.7) Gal. - Will this be scrapped? ☒ YES ☐ NO — CB 9/28/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 40 + (8.7.1) 2 + (9.6) 1/8 + SQ7.0 (6.1) 1/2 + (10.3) 1/8 = — CB 9/28/87

TOTAL GREASE LOSS 42 3/4 Gal. Post to DS 12.1 — CB 9/28/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0 (6.1) H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

WC 11/3/87 11/3/87 mal

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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. SHOP / B BUTT (NEAR) UNIT 1

FILLER DATA — Date Removal Started 9/25/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO EB 9/25/87

(7.5) Temp. of Concrete 60 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 9/25/87
Ambient Temp. 54 F. Thermometer No. PK42 Recalib. Date 9/8/88 EB 9/25/87

(8.7) Amount of Grease Lost 1/4 Gal. (8.7.1) Amount of Grease in Can 1 Gal. EB 9/25/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 9/25/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 9/25/87

(8.9) Unusual Conditions: NONE
EB 9/25/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ EB 9/25/87
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO EB 9/25/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN EB 9/25/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 HH 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED EB 9/25/87

(10.3) Amount of Grease Lost 1/2 Gal. - Will this be scrapped? ☒ YES ☐ NO EB 9/25/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 1/4 + (8.7.1) 1 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 1/2 = EB 9/25/87

TOTAL GREASE LOSS 2 1/2 Gal. Post to DS 12.1 EB 9/25/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0(6.1)
H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

KJC 11/3/87 Rel 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
MAY 20, 1987
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E11

GREASING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. FIELD/C NEAR BUTT UNIT 1

FILLER DATA — Date Removal Started 10/9/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can No, Dry Ice Used Around Anchorage NO — EB 10/9/87

(7.5) Temp. of Concrete 50 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/9/87
Ambient Temp. 46 F. Thermometer No. PK42 Recalib. Date 9/8/88 — EB 10/9/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1 Gal. — EB 10/9/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/9/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/9/87

Unusual Conditions: NONE — EB 10/9/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/9/87
(9.6) Amount of Grease Removed 1/2 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/9/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — EB 10/9/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — H.H. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED — EB 10/9/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO — EB 10/9/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1 + (9.6) 1/2 + SQ7.0 (6.1) 1/2 + (10.3) 0 = — EB 10/9/87

TOTAL GREASE LOSS 2 Gal. Post to DS 12.1 — EB 10/9/87

Q.C. Review F. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0 (6.1) H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

KWC 11/3/87 RWL 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
MAY 20, 1987
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-38 TENDON END/BUTTRESS NO. SHOP / NEAR A BUTT UNIT 1

FILLER DATA — Date Removal Started 9/29/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — CB 9/29/87

(7.5) Temp. of Concrete 62 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — CB 9/29/87
Ambient Temp. 60 F. Thermometer No. PK 42 Recalib. Date 9/8/88 — CB 9/29/87

(8.7) Amount of Grease Lost 1/2 Gal. (8.7.1) Amount of Grease in Can 1 1/2 Gal. — CB 9/29/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — CB 9/29/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	___ %	
Buttonheads	Complete ✓	Partial ___	Uncoated ___	___ %	
Anchorage	Complete ✓	Partial ___	Uncoated ___	___ %	
Shims	Complete ✓	Partial ___	Uncoated ___	___ %	
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	___ %	CB 9/29/87

(8.9) Unusual Conditions: WATER FOUND DURING CAN REMOVAL — CB 9/29/87

(8.10.1) Grease Color: Match ___ Color ___ Comment ___ — CB 9/29/87
(8.10.2) No Match ✓ Color TAN Comment HEAVY TAN COLOR DK. STREAKS
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO — CB 9/29/87

△1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — CB 9/29/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — HH. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN INSTALLED — CB 9/29/87

(10.3) Amount of Grease Lost 1/2 Gal. - Will this be scrapped? ☒ YES ☐ NO — CB 9/29/87

△1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

△1 (8.7) 1/2 + (8.7.1) 1 1/2 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 1/2 = — CB 9/29/87

TOTAL GREASE LOSS 3 1/4 Gal. Post to DS 12.1 — CB 9/29/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0(6.1)
H. F. H. 10/15/87

△1 8-14-87 ADD INFO.

KNC 11/3/87 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-38 TENDON END/BUTTRESS NO. FIELD/D NEAR BUTT UNIT 1

FILLER DATA — Date Removal Started 10/9/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/9/87

(7.5) Temp. of Concrete 48 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 10/9/87
Ambient Temp. 46 F. Thermometer No. PK42 Recalib. Date 9/8/88 EB 10/9/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 3/4 Gal. EB 10/9/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 10/9/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/9/87

(8.9) Unusual Conditions: NONE — EB 10/9/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/9/87

(9.6) Amount of Grease Removed 1/4 Gal. – Will this be scrapped? ☒ YES ☐ NO EB 10/9/87

⚠ SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — EB 10/9/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB REPORT DATED 11-5-87 H.H. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED EB 10/9/87

(10.3) Amount of Grease Lost NONE Gal. – Will this be scrapped? N/A ☐ YES ☐ NO EB 10/9/87

⚠ (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠ (8.7) 0 + (8.7.1) 3/4 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = EB 10/9/87

TOTAL GREASE LOSS 1 1/2 Gal. Post to DS 12.1 EB 10/9/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed as per SQ 7.0 (6.1) H.F.H. 10/15/87

⚠ 8-14-87 ADD INFO.

ful 11/3/87
11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. SHOP/F NEAR BUTT UNIT 1

FILLER DATA — Date Removal Started 10/17/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — CB 10/17/87

(7.5) Temp. of Concrete 44 F. Thermometer No. SM-2 Recalib. Date 9/8/88 CB 10/17/87
Ambient Temp. 44 F. Thermometer No. PK42 Recalib. Date 9/8/88 CB 10/17/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1 Gal. CB 10/17/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A CB 10/17/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

CB 10/17/87

(8.9) Unusual Conditions: NONE — CB 10/17/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE — CB 10/17/87
(8.10.2) No Match ___ Color ___ Comment ___
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO CB 10/17/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — CB 10/17/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A — H.H. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED CB 10/17/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO CB 10/17/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = CB 10/17/87

TOTAL GREASE LOSS 1 3/4 Gal. Post to DS 12.1 CB 10/17/87

Q.C. Review H.T. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Reviewed except SQ7.0(6.1) H.H. 11/13/87

⚠1 8-14-87 ADD INFO.

Rel 11/3/87

KWC 11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. FIELD / NEAR A BUTT UNIT 1

FILLER DATA — Date Removal Started 9/30/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — CB 9/30/87

(7.5) Temp. of Concrete 60 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — CB 9/30/87
Ambient Temp. 58 F. Thermometer No. PK42 Recalib. Date 9/8/88 — CB 9/30/87

(8.7) Amount of Grease Lost 1/4 Gal. (8.7.1) Amount of Grease in Can 1 Gal. — CB 9/30/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — CB 9/30/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

CB 9/30/87

(9) Unusual Conditions: NONE — CB 9/30/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE — CB 9/30/87
(8.10.2) No Match ___ Color ___ Comment ___
(9.6) Amount of Grease Removed 1/4 Gal. – Will this be scrapped? ☒ YES ☐ NO — CB 9/30/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN — CB 9/30/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — HH. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN INSTALLED — CB 9/30/87

(10.3) Amount of Grease Lost 1/4 Gal. – Will this be scrapped? ☒ YES ☐ NO — CB 9/30/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 1/4 + (8.7.1) 1 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 1/2 = — CB 9/30/87

TOTAL GREASE LOSS 2 1/2 Gal. Post to DS 12.1 — CB 9/30/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0(6.1) HFH. 10/15/87

⚠1 8-14-87 ADD INFO.

WC 11/3/87 fwl 11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP / NEAR F BUTT UNIT 1

FILLER DATA — Date Removal Started 10/20/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/20/87

(7.5) Temp. of Concrete 44 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 10/20/87
Ambient Temp. 40 F. Thermometer No. PK42 Recalib. Date 9/8/88 EB 10/20/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1½ Gal. EB 10/20/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 10/20/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/20/87

(9) Unusual Conditions: NONE
EB 10/20/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ EB 10/20/87
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO EB 10/20/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN EB 10/20/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A H.H. 12/11/87

FILLER DATA (Continue SQ 6.0) ANCHORAGE ASSEMBLY COATED + GREASE CAN REINSTALLED EB 10/26/87
(10.2) Method of Tendon Protection TEMP COVERED W/GREASE + PLASTIC EB 10/20/87 SAME 10/23/87 H.H.
(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO EB 10/26/87
NONE ON 10-20-87 EB
NONE ON 10-23-87 H.H. ☒ YES H.H. 10/23/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1½ + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = EB 10/26/87

TOTAL GREASE LOSS 2¼ Gal. Post to DS 12.1 EB 10/26/87

Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. Reviewed except SQ7.0(C.1) H.H. 11/13/87

⚠1 8-14-87 ADD INFO.

Rel 11/3/87
VAL 11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. FIELD / NEAR C BUTT UNIT 1

FILLER DATA — Date Removal Started 10/23/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — CB 10/23/87

(7.5) Temp. of Concrete 32 F. Thermometer No. SM-2 Recalib. Date 9/8/88 CB 10/23/87
Ambient Temp. 36 F. Thermometer No. PK42 Recalib. Date 9/8/88 CB 10/23/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1½ Gal. CB 10/23/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A CB 10/23/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%	
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%	
Anchorage	Complete ✓	Partial ___	Uncoated ___	%	
Shims	Complete ✓	Partial ___	Uncoated ___	%	
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%	CB 10/23/87

(8.9) Unusual Conditions: NONE — CB 10/23/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE — CB 10/23/87
(8.10.2) No Match ___ Color ___ Comment ___
(9.6) Amount of Grease Removed ¼ Gal. – Will this be scrapped? ☒ YES ☐ NO CB 10/23/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN — CB 10/23/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A — HH. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED — CB 10/23/87

(10.3) Amount of Grease Lost ½ Gal. – Will this be scrapped? ☒ YES ☐ NO CB 10/23/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1½ + (9.6) ¼ + SQ7.0 (6.1) ½ + (10.3) ½ = — CB 10/23/87

TOTAL GREASE LOSS 2¾ Gal. Post to DS 12.1 — CB 10/23/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. — Reviewed except SQ 7.0 (6.1) HH. 11/13/87

⚠1 8-14-87 ADD INFO.

KJC 11/3/87 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. SHOP / "A" BUTT UNIT 1

FILLER DATA Date Removal Started 10/12/87 Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO. Dry Ice Used Around Anchorage NO — EB 10/12/87

(7.5) Temp. of Concrete 58 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/12/87
Ambient Temp. 50 F. Thermometer No. PK42 Recalib. Date 9/8/88 — EB 10/12/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1 Gal. — EB 10/12/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/12/87

(8.8) GREASE COATING:

Grease Can	Complete ___	Partial ✓	Uncoated 25 %			
Buttonheads	Complete ✓	Partial ___	Uncoated ___ %			
Anchorage	Complete ___	Partial ✓	Uncoated 25 %			
Shims	Complete ___	Partial ✓	Uncoated 25 %			
Bearing Plate	Complete ___	Partial ✓	Uncoated 25 %			

EB 10/12/87

(8.9) Unusual Conditions: NONE
EB 10/12/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/12/87

(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/12/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — EB 10/12/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — J.H. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED — EB 10/12/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO — EB 10/12/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = — EB 10/12/87

TOTAL GREASE LOSS 1 3/4 Gal. Post to DS 12.1 — EB 10/12/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0(c.1) H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

WNC 11/3/87 pwl 11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. FIELD/E BUT UNIT 1

FILLER DATA — Date Removal Started 10/20/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/20/87

(7.5) Temp. of Concrete 44 F. Thermometer No. SM-2 Recalib. Date 4/8/88 EB 10/20/87
Ambient Temp. 36 F. Thermometer No. PK42 Recalib. Date 4/8/88 EB 10/20/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1 Gal. EB 10/20/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 10/20/87

(8.8) GREASE COATING:

Grease Can	Complete √	Partial ___	Uncoated ___	%
Buttonheads	Complete √	Partial ___	Uncoated ___	%
Anchorage	Complete √	Partial ___	Uncoated ___	%
Shims	Complete √	Partial ___	Uncoated ___	%
Bearing Plate	Complete √	Partial ___	Uncoated ___	%

EB 10/20/87

(8.9) Unusual Conditions: NONE — EB 10/20/87

(8.10.1) Grease Color: Match √ Color DK BROWN Comment NONE — EB 10/20/87
(8.10.2) No Match ___ Color ___ Comment ___

(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO EB 10/20/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN — EB 10/20/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — J.H. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED AND GREASE CAN REINSTALLED — EB 10/20/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO EB 10/20/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = EB 10/28/87

TOTAL GREASE LOSS 1 3/4 Gal. Post to DS 12.1 EB 10/28/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. — Reviewed except SQ 7.0 (6.1) H.H. 11/13/87

⚠1 8-14-87 ADD INFO.

RWL 11/3/87
KWC 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC ·· TENDON END/BUTTRESS NO. SHOP / A BUTT UNIT 1

FILLER DATA — Date Removal Started 10/8/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/8/87

(7.5) Temp. of Concrete 32 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/8/87
Ambient Temp. 32 F. Thermometer No. PK42 Recalib. Date 9/8/88 — EB 10/8/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1/2 Gal. — EB 10/8/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/8/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	___ %	
Buttonheads	Complete ✓	Partial ___	Uncoated ___	___ %	
Anchorage	Complete ✓	Partial ___	Uncoated ___	___ %	
Shims	Complete ✓	Partial ___	Uncoated ___	___ %	
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	___ %	EB 10/8/87

(8.9) Unusual Conditions: NONE — EB 10/8/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/8/87
(9.6) Amount of Grease Removed SLIGHT COVERING Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/8/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY + GREASE CAN — EB 10/8/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB REPORT DATED 11/25/87 — H.F.H. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED — EB 10/8/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO — EB 10/8/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1/2 + (9.6) 0 + SQ7.0 (6.1) 1/2 + (10.3) 0 = — EB 10/8/87

TOTAL GREASE LOSS 1 Gal. Post to DS 12.1 — EB 10/8/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Reviewed except SQ7.0(6.1) H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

Rel 11/3/87
V.T.C. 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. FIELD/C BUTT UNIT 1

FILLER DATA	Date Removal Started 10/21/87	Q.C. Signoff
(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO	40 – SM-2 – 9/8/88	EB 10/21/87 EB 10/22/87
(7.5) Temp. of Concrete 30 F. Thermometer No. SM-2 Recalib. Date 9/8/88		EB 10/21/87
Ambient Temp. 34 F. Thermometer No. PK42 Recalib. Date 9/8/88	36 – PK42 – 9/8/88	EB 10/21/87 EB 10/22/87
(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 3/4 Gal.		EB 10/22/87
(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A		EB 10/22/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/22/87

(8.9) Unusual Conditions: NONE EB 10/22/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE EB 10/22/87
(8.10.2) No Match ___ Color ___ Comment ___
(9.6) Amount of Grease Removed 1/4 Gal. – Will this be scrapped? ☒ YES ☐ NO EB 10/22/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN EB 10/22/87
(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 N.H. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED EB 10/22/87

(10.3) Amount of Grease Lost NONE Gal. – Will this be scrapped? N/A ☐ YES ☐ NO EB 10/22/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 3/4 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = EB 10/22/87

TOTAL GREASE LOSS 1 1/2 Gal. Post to DS 12.1 EB 10/22/87

Q.C. Review W.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. Reviewed except SQ7.0(6.1) W.H. 11/13/87

⚠1 8-14-87 ADD INFO.

Rel 11/3/87
KNC 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

FILLER DATA — Date Removal Started 10/14/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/14/87

(7.5) Temp. of Concrete 50 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/14/87
Ambient Temp. 52 F. Thermometer No. PK42 Recalib. Date 9/8/88 — EB 10/14/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1/2 Gal. — EB 10/14/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/14/87

(8.8) GREASE COATING:

Grease Can	Complete		Partial	✓	Uncoated	5 %
Buttonheads	Complete	✓	Partial		Uncoated	%
Anchorage	Complete		Partial	✓	Uncoated	10 %
Shims	Complete	✓	Partial		Uncoated	%
Bearing Plate	Complete	✓	Partial		Uncoated	%

EB 10/14/87

(9) Unusual Conditions: NONE — EB 10/14/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE
(8.10.2) No Match Color Comment — EB 10/14/87
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/14/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — EB 10/14/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB REPORT DATED 11/25/87 — HH 11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + GREASE CAN REINSTALLED — EB 10/14/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO — EB 10/14/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1/2 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = — EB 10/14/87

TOTAL GREASE LOSS 1 1/4 Gal. Post to DS 12.1 — EB 10/14/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Reviewed except SQ7.0(6.1) H.H. 11/13/87

⚠1 8-14-87 ADD INFO.

pwl 11/3/87
WC 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
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ATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. FIELD / D BUTT UNIT 1

FILLER DATA — Date Removal Started 10/13/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/13/87

(7.5) Temp. of Concrete 50 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/13/87
Ambient Temp. 50 F. Thermometer No. PK 42 Recalib. Date 9/8/88 — EB 10/13/87

(8.7) Amount of Grease Lost 1/4 Gal. (8.7.1) Amount of Grease in Can 1/4 Gal. — EB 10/13/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/13/87

(8.8) GREASE COATING:

Grease Can	Complete ___	Partial ✓	Uncoated 10	%	
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%	
Anchorage	Complete ✓	Partial ___	Uncoated ___	%	
Shims	Complete ✓	Partial ___	Uncoated ___	%	
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%	EB 10/13/87

(9) Unusual Conditions: NONE — EB 10/13/87

(8.10.1) Grease Color: Match ✓ Color DK. BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/13/87
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/13/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — EB 10/13/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — HH. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED — EB 10/13/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO — EB 10/13/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 1/4 + (8.7.1) 1/4 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = — EB 10/13/87

TOTAL GREASE LOSS 1 1/4 Gal. Post to DS 12.1 — EB 10/13/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Revised except SQ7.0(6.1) H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

RWL 11/3/87
EJC 11/3/8

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

FILLER DATA — Date Removal Started 10/28/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — CB 10/28/87

(7.5) Temp. of Concrete 40 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — CB 10/28/87
Ambient Temp. 40 F. Thermometer No. PK42 Recalib. Date 9/8/88 — CB 10/28/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1 Gal. — CB 10/28/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — CB 10/28/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

CB 10/28/87

(8.9) Unusual Conditions: NONE — CB 10/28/87

(8.10.1) Grease Color: Match ✓ Color DK. BROWN Comment NONE — CB 10/28/87
(8.10.2) No Match ___ Color ___ Comment ___
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO — CB 10/28/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — CB 10/28/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — JJJ 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED — CB 10/28/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO — CB 10/28/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = — CB 10/28/87

TOTAL GREASE LOSS 1 3/4 Gal. Post to DS 12.1 — CB 10/28/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. Reviewed except SQ7.0(6.1) H.H. 11/13/87

⚠1 8-14-87 ADD INFO.

Pul 11/3/87
KWC 11/3/87

PSC PROCEDURE SQ 6.0
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ATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. FIELD / "B" BUTT UNIT 1

FILLER DATA Date Removal Started 10/27/87 Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO EB 10/27/87

(7.5) Temp. of Concrete 40 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 10/27/87
Ambient Temp. 40 F. Thermometer No. PK 42 Recalib. Date 4/8/88 EB 10/27/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1 Gal. EB 10/27/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 10/27/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/27/87

(8.9) Unusual Conditions: NONE EB 10/27/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ EB 10/27/87
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO EB 10/27/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM GREASE CAN EB 10/27/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A ⚠1 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED EB 10/27/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO EB 10/27/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 0 = EB 10/27/87

TOTAL GREASE LOSS 1 3/4 Gal. Post to DS 12.1 EB 10/27/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. Reviewed except SQ7.0(6.1) HFH 11/13/87

⚠1 8-14-87 ADD INFO.

Rel 11/3/87
KWC 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

FILLER DATA — Date Removal Started 10/28/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/28/87

(7.5) Temp. of Concrete 40 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/28/87
Ambient Temp. 40 F. Thermometer No. DK42 Recalib. Date 9/8/88 — EB 10/28/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1/2 Gal. — EB 10/28/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/28/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/28/87

(8.9) Unusual Conditions: NONE EB 11/13/87 — EB 11/13/87

(8.10.1) Grease Color: Match ✓ Color DK BROWN Comment NONE — EB 10/28/87
(8.10.2) No Match ___ Color ___ Comment ___
(9.6) Amount of Grease Removed 1/2 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/28/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORAGE ASSEMBLY AND GREASE CAN — EB 10/28/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — A.H. 12/11/87

FILLER DATA (Continue SQ 6.0) ANCHORAGE ASSEMBLY COATED + GREASE CAN REINSTALLED
(10.2) Method of Tendon Protection TEMP COATED + COVERED W/PLASTIC EB 10/28/87 — EB 10/29/87
NONE ON 10-28-87 EB

(10.3) Amount of Grease Lost ~~1/4~~ 1 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/29/87
EB 10/29/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1/2 + (9.6) 1/2 + SQ7.0 (6.1) 1/2 + (10.3) 1/4 = — EB 10/29/87

TOTAL GREASE LOSS 1 3/4 Gal. Post to DS 12.1 — EB 10/29/87

Review H. T. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Revised as per SQ 7.0 (6.1) A.H. 11/13/87

⚠1 8-14-87 ADD INFO.

RWL 11/3/87
WC 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
DATA SHEET 6.0
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ATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. FIELD / B BUTT UNIT 1

FILLER DATA — Date Removal Started 10-28-87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — 10/28/87

(7.5) Temp. of Concrete 54 F. Thermometer No. ST69 Recalib. Date 8/21/88 — 10/28/87
Ambient Temp. 48 F. Thermometer No. PK45 Recalib. Date 8/21/88 — 10/28/87

(8.7) Amount of Grease Lost NONE Gal. (8.7.1) Amount of Grease in Can 1 Gal. — 10/28/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — 10/28/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial N/A	Uncoated N/A	%	
Buttonheads	Complete ✓	Partial N/A	Uncoated N/A	%	
Anchorage	Complete ✓	Partial N/A	Uncoated N/A	%	
Shims	Complete ✓	Partial N/A	Uncoated N/A	%	
Bearing Plate	Complete ✓	Partial N/A	Uncoated N/A	%	10/28/87

(8.9) Unusual Conditions: NONE — 10/28/87

(8.10.1) Grease Color: Match ✓ Color N/A Comment N/A
(8.10.2) No Match N/A Color N/A Comment N/A
(9.6) Amount of Grease Removed ¼ Gal. – Will this be scrapped? ☒ YES ☐ NO — 10/28/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM ANCHORHEAD & GREASE CAN — 10/28/87

(7) Grease Analysis: ☐ Accept ☒ Unacceptable Engr. Notified VIA LAB. REPORT DATED 11/25/87 — 12/1/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection GREASED ANCHORAGE & WRAPPED IN PLASTIC 10/28/87
GREASED ANCHORAGE & GREASE CAN APPLIED — 10/29/87

(10.3) Amount of Grease Lost 0 Gal. – Will this be scrapped? N/A YES N/A NO — 10/28/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 0 + (8.7.1) 1 + (9.6) ¼ + SQ7.0 (6.1) ½ + (10.3) 0 = 1¾ — 10/29/87

TOTAL GREASE LOSS 1¾ Gal. Post to DS 12.1 — 10/29/87

Q.C. Review [signature] Level III Date 11/23/87
Title MGR, Q.C./PSC
reviewed except SQ7.0(6.1) CB 11/23/87

⚠1 8-14-87 ADD INFO.

11/3/87
EWC 11/3/87

PSC PROCEDURE SQ 6.0
GREASE CAN REMOVAL
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V36 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 10/2/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/2/87

(7.5) Temp. of Concrete 70 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/2/87
Ambient Temp. 68 F. Thermometer No. PK42 Recalib. Date 9/8/88 — EB 10/2/87

(8.7) Amount of Grease Lost TOTAL 35 on 10/5/87 EB Gal. (8.7.1) Amount of Grease in Can 2 Gal. — EB 10/6/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/6/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/6/87

(9) Unusual Conditions: NONE — EB 10/6/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/2/87
(9.6) Amount of Grease Removed 1/2 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/6/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM FILLER PLUG — EB 10/2/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A — HH 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED - SEE SECTION 8.7 — EB 10/6/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO — EB 10/6/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 35 + (8.7.1) 2 + (9.6) 1/2 + SQ7.0 (6.1) 1/2 + (10.3) 0 = — EB 10/6/87

TOTAL GREASE LOSS 38 Gal. Post to DS 12.1 — EB 10/6/87

Q.C. Review H.T. Hendrickson Level III Date 10-15-87 — Rel 11/3/87

Title MGR., Q.A.

Reviewed except SQ7.0 (6.1) H.T.H. 10/15/87

⚠1 8-14-87 ADD INFO.

KNC 11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V62 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 10/2/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO CB 10/2/87

(7.5) Temp. of Concrete 68 F. Thermometer No. SM-2 Recalib. Date 9/8/88 CB 10/2/87
Ambient Temp. 64 F. Thermometer No. PK42 Recalib. Date 9/8/88 CB 10/2/87

(8.7) Amount of Grease Lost TOTAL 28½ on 10/5/87 CB Gal. (8.7.1) Amount of Grease in Can 2 Gal. CB 10/6/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A CB 10/6/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

CB 10/6/87

(8.9) Unusual Conditions: YES - FOUND MISSING BUTTONHEAD CB 10/6/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ CB 10/2/87
(9.6) Amount of Grease Removed ½ Gal. - Will this be scrapped? ☒ YES ☐ NO CB 10/6/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM FILLER PLUG CB 10/2/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A N.H. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED CB 10/6/87
(10.3) Amount of Grease Lost NONE - SEE SECTION 8.7 Gal. - Will this be scrapped? N/A ☐ YES ☐ NO CB 10/6/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 28½ + (8.7.1) 2 + (9.6) ½ + SQ7.0 (6.1) ½ + (10.3) 0 = CB 10/6/87

TOTAL GREASE LOSS 31½ Gal. Post to DS 12.1 CB 10/6/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87 Rel. 11/3/87

Title MGR., Q.A.

reviewed except SQ7.0 (6.1) H.F.H 10/15/87

⚠1 8-14-87 ADD INFO.

GWC 11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V86 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 10/2/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO (No H.H. 10/15/87), Dry Ice Used Around Anchorage NO (NO H.H. 10/15/87) H.H. 10/15/87 EB 10/2/87

(7.5) Temp. of Concrete 68 F. (70 H.H. 10/15/87) Thermometer No. SM-2 (STC9 H.H. 10/15/87) Recalib. Date 9/8/88 EB 10/2/87 H.H. 10/15/87

Ambient Temp. 64 F. (72 H.H. 10/15/87) Thermometer No. PK42 (PK45 H.H. 10/15/87) Recalib. Date 9/8/88 EB 10/2/87 H.H. 10/15/87

(8.7) Amount of Grease Lost 4½ (2 on 10/15/87 H.H.) Gal. (8.7.1) Amount of Grease in Can 3 Gal. H.H. 10/15/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A H.H. 10/15/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

H.H. 10/15/87

(9) Unusual Conditions: NONE H.H. 10/15/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE

(8.10.2) No Match ___ Color ___ Comment ___ EB 10/2/87

(9.6) Amount of Grease Removed ¼ Gal. – Will this be scrapped? ☒ YES ☐ NO H.H. 10/15/87

⚠1 SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES

(6.1) Location of Sample Removal FROM FILLER PLUG EB 10/2/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A H.H. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE COATED WITH GREASE, NEW GASKET + GREASE CAN INSTALLED H.H. 10/15/87

(10.3) Amount of Grease Lost 8 Gal. – Will this be scrapped? ☐ YES ☐ NO H.H. 10/15/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 41 + (8.7.1) 3 + (9.6) ¼ + SQ7.0 (6.1) ½ + (10.3) 8 = 52¾ H.H. 10/15/87

TOTAL GREASE LOSS 52¾ Gal. Post to DS 12.1 H.H. 10/15/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87 fwl 11/13/87

Title MGR., Q.A. reviewed except SQ7.0(6.1) H.H. 11/13/87

⚠1 8-14-87 ADD INFO.

KJC 11/13/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V176 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 10/2/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO EB 10/2/87

(7.5) Temp. of Concrete 68 F. Thermometer No. SM-2 Recalib. Date 9/8/88 EB 10/2/87
Ambient Temp. 64 F. Thermometer No. PK42 Recalib. Date 9/8/88 EB 10/2/87

(8.7) Amount of Grease Lost 35½ Gal. (8.7.1) Amount of Grease in Can 1½ Gal. EB 10/2/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A EB 10/2/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/2/87

(9) Unusual Conditions: NONE
EB 10/2/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ EB 10/2/87
(9.6) Amount of Grease Removed ½ Gal. - Will this be scrapped? ☒ YES ☐ NO EB 10/2/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM FILLER PLUG EB 10/2/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A HH 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN INSTALLED EB 10/2/87
(10.3) Amount of Grease Lost NONE - SEE 8.7 Gal. - Will this be scrapped? N/A ☐ YES ☐ NO EB 10/2/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 35½ + (8.7.1) 1½ + (9.6) ½ + SQ7.0 (6.1) ½ + (10.3) 0 = EB 10/2/87

TOTAL GREASE LOSS 38 Gal. Post to DS 12.1 EB 10/2/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87 Rvd 11/3/87

Title MGR., Q.A.

Reviewed except SQ7.0(6.1) H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

LGC 11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V202 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 10/2/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/2/87

(7.5) Temp. of Concrete 68 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/2/87
Ambient Temp. 64 F. Thermometer No. PK42 Recalib. Date 4/8/88 — EB 10/2/87

(8.7) Amount of Grease Lost 35 Gal. (8.7.1) Amount of Grease in Can 2 Gal. — EB 10/5/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/5/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/5/87

(8.9) Unusual Conditions: NONE — EB 10/5/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/2/87
(9.6) Amount of Grease Removed 1/4 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/5/87

⚠1 SQ 7.0 SAMPLES
(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM FILLER PLUG — EB 10/2/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A — H.H. 12/11/87

FILLER DATA (Continue SQ 6.0)
(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + GREASE CAN RE-INSTALLED (SEE SECTION 8.7) — EB 10/5/87

(10.3) Amount of Grease Lost 1/2 Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/5/87

⚠1 (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠1 (8.7) 35 + (8.7.1) 2 + (9.6) 1/4 + SQ7.0 (6.1) 1/2 + (10.3) 1/2 = — EB 10/5/87

TOTAL GREASE LOSS 38 1/4 Gal. Post to DS 12.1 — EB 10/5/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87 — Rvd 11/3/87

Title MGR., Q.A.

Reviewed except SQ7.0 (C.1) H.F.H. 10/15/87

⚠1 8-14-87 ADD INFO.

KWC 11/3/87

PSC PROCEDURE SQ 6.0
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SHEATHING FILLER DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V306 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

FILLER DATA — Date Removal Started 10/2/87 — Q.C. Signoff

(7.4) Dry Ice Used on Grease Can NO, Dry Ice Used Around Anchorage NO — EB 10/2/87

(7.5) Temp. of Concrete 68 F. Thermometer No. SM-2 Recalib. Date 9/8/88 — EB 10/2/87
Ambient Temp. 64 F. Thermometer No. PK42 Recalib. Date 9/8/88 — EB 10/2/87

(8.7) Amount of Grease Lost 19½ Gal. ON 10-2-87 EB 5 ON 10-6-87 EB = 24½ TOTAL (8.7.1) Amount of Grease in Can 2½ Gal. — EB 10/6/87

(8.7.2) Grease to be Reused ☐ YES ☒ NO (8.7.2) Grease in Can Protected N/A — EB 10/6/87

(8.8) GREASE COATING:

Grease Can	Complete ✓	Partial ___	Uncoated ___	%
Buttonheads	Complete ✓	Partial ___	Uncoated ___	%
Anchorage	Complete ✓	Partial ___	Uncoated ___	%
Shims	Complete ✓	Partial ___	Uncoated ___	%
Bearing Plate	Complete ✓	Partial ___	Uncoated ___	%

EB 10/6/87

(8.9) Unusual Conditions: NONE — EB 10/6/87

(8.10.1) Grease Color: Match ✓ Color BROWN Comment NONE
(8.10.2) No Match ___ Color ___ Comment ___ — EB 10/2/87

(9.6) Amount of Grease Removed ½ Gal. - Will this be scrapped? ☒ YES ☐ NO — EB 10/6/87

⚠ SQ 7.0 SAMPLES

(6.1) Grease Samples Taken 2 Quarts. (6.1) Samples Identified YES
(6.1) Location of Sample Removal FROM FILLER PLUG — EB 10/2/87

(7) Grease Analysis: ☒ Accept ☐ Unacceptable Engr. Notified N/A — H.H. 12/11/87

FILLER DATA (Continue SQ 6.0)

(10.2) Method of Tendon Protection ANCHORAGE ASSEMBLY COATED + CAN REINSTALLED SEE SECTION 8.7 — EB 10/6/87

(10.3) Amount of Grease Lost NONE Gal. - Will this be scrapped? N/A ☐ YES ☐ NO — EB 10/6/87

⚠ (11.2) Add quantities of lost grease as each applies; Post total on Data Sheet 12.1

⚠ (8.7) 24½ + (8.7.1) 2½ + (9.6) ½ + SQ7.0 (6.1) ½ + (10.3) 0 = — EB 10/6/87

TOTAL GREASE LOSS 28 Gal. Post to DS 12.1 — EB 10/6/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87 — Jwl 11/3/87

Title MGR., Q.A.

Reviewed except SQ 7.0 (6.1)
H.F.H. 10/15/87

⚠ 8-14-87 ADD INFO.

KWC 11/3/87

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PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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PROJECT: PALISADES DATE: 9/22/87

TENDON NO.: V14 TENDON END/BUTTRESS NO.: SHOP/TOP SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff Abrooks Level III Date 9/22/87

QC Review H.F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

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PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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PROJECT: PALISADES DATE: 9/28/87

TENDON NO.: V14 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NONE FOUND WHEN FILLER PLUG REMOVED CB 9/28/87

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff CBrooke Level III Date 9/28/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

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PSC PROCEDURE SQ 6.1
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PROJECT: PALISADES DATE: 10/15/87

TENDON NO.: V124 TENDON END/BUTTRESS NO.: SHOP/TOP SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/15/87

QC Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWC 11/3/87

RWC 11/3/87

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PSC PROCEDURE SQ 6.1
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PROJECT: PALISADES DATE: 10/2/87

TENDON NO.: V124 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments YES - DROPS FROM FILLER PLUG EB 10/2/87

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING

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

Comments _____

(11.) OWNER/AGENT NOTIFIED ~~N/A~~ [Yes] No DATE 10-5-87 EB 10/16/87

CONDITION: OBSERVABLE X SIGNIFICANT ____

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

(12.2) SAMPLES STORED AT N/A

QC Signoff H. F. Hendrickson Level III Date 10-15-87

QC Review _____ Level III Date 11/23/87

Title MGR, Q.C./PSC

KWC 11/3/87

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PSC PROCEDURE SQ 6.1
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PROJECT: PALISADES DATE: 10/1/87

TENDON NO.: V230 TENDON END/BUTTRESS NO.: SHOP/TOP SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE _____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/1/87

QC Review H.F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

KWC 11/3/87 11/3/87

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PROJECT: PALISADES DATE: 9-24-87

TENDON NO.: V230 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NONE FOUND FROM FILLER PLUG REMOVAL CB 9/24/87

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 9/28/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

E40

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
MAY 20, 1987

Revision 0

PROJECT: PALISADES DATE: 10/5/87

TENDON NO.: V250 TENDON END/BUTTRESS NO.: SHOP/TOP SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/5/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87
WNC 11/3/87

E41

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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MAY 20, 1987
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Revision 0

PROJECT: PALISADES DATE: 9-24-87

TENDON NO.: V250 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NONE FOUND FROM FILLER PLUG REMOVAL @B 9/24/87

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 9-28-87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

E42

PSC PROCEDURE SQ 6.1
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Revision 0

PROJECT: PALISADES DATE: 9/25/87

TENDON NO.: D1-9 TENDON END/BUTTRESS NO.: SHOP / 8 NEAR BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 9/25/87

QC Review H.T. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

11/3/87

WC 11/3/87

E43

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
MAY 20, 1987

Revision 0

PROJECT: PALISADES DATE: 10/9/87

TENDON NO.: D1-9 TENDON END/BUTTRESS NO.: FIELD/C NEAR BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/9/87

QC Review H.F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

E44

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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Revision 0

PROJECT: PALISADES DATE: 9/29/87

TENDON NO.: D1-38 TENDON END/BUTTRESS NO.: SHOP / NEAR A BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected [Yes] No Quantity 1/2 PINT Sample Taken [Yes] No

Comments WATER CAME FROM STUD HOLES AND GASKET AREA WHEN CAN REMOVED

(9.7) IN GREASE CAN

(9.7.1) Water Detected [Yes] No Quantity DROPS Sample Taken Yes [No]

Comments DROPS MIXED IN WITH GREASE IN CAN

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected [Yes] No Quantity DROPS Sample Taken Yes [No]

Comments DROPS FOUND ON TOP OF GREASE AROUND HEAD.

(9.10) DURING DETENSIONING N/A

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

Comments _____

(11.) OWNER/AGENT NOTIFIED [Yes] No DATE 9-29-87

CONDITION: OBSERVABLE ____ SIGNIFICANT X

(12.1) SAMPLES ADEQUATELY IDENTIFIED [Yes] No

(12.2) SAMPLES STORED AT PSC TRAILER

QC Signoff _____ Level III Date 9/29/87

QC Review H. T. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

LWC 11/3/87

E45

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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Revision 0

PROJECT: PALISADES DATE: 10/9/87

TENDON NO.: D1-38 TENDON END/BUTTRESS NO.: FIELD / NEAR D BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/9/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

KWZ 11/3/87

E46

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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Revision 0

PROJECT: PALISADES DATE: 10/17/87

TENDON NO.: D2-3 TENDON END/BUTTRESS NO.: SHOP/F NEAR BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/17/87

QC Review H.E. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

E47

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
MAY 20, 1987

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PROJECT: PALISADES DATE: 9-30-87

TENDON NO.: D2-3 TENDON END/BUTTRESS NO.: FIELD / A NEAR BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE _____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff [signature] Level III Date 9/30/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MCR., Q.A.

[signature] 11/3/87

BWC 11/3/87

E48

PSC PROCEDURE SQ 6.1
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EB 11/3/87

PROJECT: PALISADES DATE: 10/20/87

TENDON NO.: D3-18 TENDON END/BUTTRESS NO.: SHOP/F BUTT NEAR SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING DID NOT DETENSION 10-20-87

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/20/87

QC Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rvd. 11/3/87

KJC 11/3/87

E49

PSC PROCEDURE SQ 6.1
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eb 11/3/87

PROJECT: PALISADES DATE: 10-23-87

TENDON NO.: D3-18 TENDON END/BUTTRESS NO.: SHOP/F NEAR BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN - N/A

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

Comments _____

(9.7) IN GREASE CAN - N/A

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes [No] Quantity N/A Sample Taken Yes No

Comments _____

(9.10) DURING DETENSIONING

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

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

(12.2) SAMPLES STORED AT N/A

QC Signoff H.F. Hendrickson Level III Date 10-23-87

QC Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

Rul 11/3/87

KWC 11/3/87

E50

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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PROJECT: PALISADES DATE: 10/23/87

TENDON NO.: D3-18 TENDON END/BUTTRESS NO.: FIELD / NEAR C BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/23/87

QC Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RJL 11/3/87

BJC 11/3/87

E51

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
MAY 20, 1987

Revision 0

PROJECT: PALISADES DATE: 10/12/87

TENDON NO.: 59AC TENDON END/BUTTRESS NO.: SHOP/A BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff C Brooks Level III Date 10/12/87

QC Review W. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

KWC 11/3/87

E52

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
MAY 20, 1987

Revision 0

PROJECT: PALISADES DATE: 10/20/87

TENDON NO.: 59AC TENDON END/BUTTRESS NO.: FIELD/C BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/20/87

QC Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

KJC 11/3/87

11/3/87

E53

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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Revision 0

PROJECT: PALISADES DATE: 10/8/87

TENDON NO.: 77AC TENDON END/BUTTRESS NO.: S40D / A BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/8/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWC 11/3/87

RWC 11/3/87

E54

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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MAY 20, 1987

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PROJECT: PALISADES DATE: 10/21/87

TENDON NO.: 77AC TENDON END/BUTTRESS NO.: FIELD/BUTT C SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NO WATER DETECTED – STOPPED OPERATION DUE TO WEATHER – EB 10/21/87 CAN NOT REMOVED ON 10-21-87 EB 11/3/87.

(9.7) IN GREASE CAN

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

Comments EB 10/22/87

(9.8) AROUND TENDON ANCHORAGE

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

Comments EB 10/22/87

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/22/87

QC Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

KWC 11/3/87 RWL 11/3/87

E55

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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Revision 0

PROJECT: PALISADES DATE: 10/14/87

TENDON NO.: 42DF TENDON END/BUTTRESS NO.: SHOP/F BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/14/87

QC Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWC 11/3/87 11/3/87

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PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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Revision 0

PROJECT: PALISADES DATE: 10/13/87

TENDON NO.: 42DF TENDON END/BUTTRESS NO.: FIELD/D BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE _____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/13/87

QC Review H.T. Henderson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

WJC 11/3/87

E57

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PROJECT: PALISADES DATE: 10/28/87

TENDON NO.: 653F TENDON END/BUTTRESS NO.: SHOP/F BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/28/87

QC Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

KWC 11/3/87 Rel 11/3/87

ESB

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
MAY 20, 1987

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PROJECT: PALISADES DATE: 10/27/87

TENDON NO.: 65BF TENDON END/BUTTRESS NO.: FIELD/B BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff [signature] Level III Date 10/27/87

QC Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/3/87

WC 11/3/87

E59

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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MAY 20, 1987
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PROJECT: PALISADES DATE: 10/28/87

TENDON NO.: 74BF TENDON END/BUTTRESS NO.: SHOP / F BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments _____

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff C Brooks Level III Date 10/28/87

QC Review H. F. Henderson Level III Date 11-13-87

Title MGR., Q.A.

RWC 11/3/87

RWC 11/3/87

E60

PSC PROCEDURE SQ 6.1
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MAY 20, 1987
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PROJECT: PALISADES DATE: 10/28/87

TENDON NO.: 74BF TENDON END/BUTTRESS NO.: FIELD / B BUTT SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

(9.4.1) Water Detected Yes [No] Quantity N/A Sample Taken Yes [No]

Comments NONE

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes [No] Quantity N/A Sample Taken Yes [No]

Comments NONE

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes [No] Quantity N/A Sample Taken Yes [No]

Comments NONE

(9.10) DURING DETENSIONING

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

Comments NONE

(11.) OWNER/AGENT NOTIFIED ~~N/A~~ Yes [No] DATE N/A

CONDITION: OBSERVABLE N/A SIGNIFICANT N/A

(12.1) SAMPLES ADEQUATELY IDENTIFIED ~~N/A~~ Yes [No]

(12.2) SAMPLES STORED AT N/A

QC Signoff W. F. Henderson Level III Date 10-28-87

QC Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

BWC 11/3/87 Pul 11/3/87

PSC PROCEDURE SQ 6.1
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E61

PROJECT: PALISADES DATE: 10/2/87

TENDON NO.: V36 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NONE FROM FILLER PLUG REMOVAL EB 10/2/87

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE _____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/6/87

QC Review H.F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

pwl 11/3/87

WNC 11/3/87

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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E62

PROJECT: PALISADES DATE: 10/2/87

TENDON NO.: V62 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NONE FOUND FROM FILLER PLUG EB 10/2/87

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/6/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

WC 11/3/87

PSC PROCEDURE SQ 6.1 E63
INSPECT FOR WATER
DATA SHEET 6.1
MAY 20, 1987

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PROJECT: PALISADES DATE: 10/2/87

TENDON NO.: V86 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NONE FROM FILLER PLUG CB 10/2/87

(9.7) IN GREASE CAN

(9.7.1) Water Detected Yes [No] N.A. 10/15/87 Quantity _____ Sample Taken Yes [No]

Comments _____

(9.8) AROUND TENDON ANCHORAGE

(9.8.1) Water Detected Yes [No] N.A. 10/15/87 Quantity _____ Sample Taken Yes [No]

Comments _____

(9.10) DURING DETENSIONING - N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

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

(12.2) SAMPLES STORED AT N/A

QC Signoff H. F. Hendrickson Level III Date 10-15-87

QC Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

Rwl 11/3/87

lewc 11/3/87

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
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MAY 20, 1987
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E64

PROJECT: PALISADES DATE: 10/2/87

TENDON NO.: V176 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NONE FOUND FROM FILLER PLUG REMOVAL

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE _____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/2/87

QC Review H. T. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

EWC 11/3/87

PSC PROCEDURE SQ 6.1 E65
INSPECT FOR WATER
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PROJECT: PALISADES DATE: 10/2/87

TENDON NO.: V202 TENDON END/BUTTRESS NO.: FIELD/GALLERY SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments YES - DROPS FROM FILLER PLUG @ 3 10/2/87

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

(11.) OWNER/AGENT NOTIFIED [Yes] No DATE 10/5/87

CONDITION: OBSERVABLE X SIGNIFICANT ___

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff [signature] Level III Date 10/5/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul [illegible] #1 [illegible] 11/3/87

KWC 11/3/87

E66

PSC PROCEDURE SQ 6.1
INSPECT FOR WATER
DATA SHEET 6.1
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PROJECT: PALISADES DATE: 10/2/87

TENDON NO.: V306 TENDON END/BUTTRESS NO.: FIELD/GALLERY/SURVEILLANCE 5

OTHER TENDON END LOCATION INFO _____

(9.4) DURING LOOSENING OF GREASE CAN

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

Comments NONE FROM FILLER PLUG REMOVAL EB 10/2/87

(9.7) IN GREASE CAN

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

Comments _____

(9.8) AROUND TENDON ANCHORAGE

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

Comments _____

(9.10) DURING DETENSIONING N/A

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

Comments _____

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

CONDITION: OBSERVABLE ____ SIGNIFICANT ____

(12.1) SAMPLES ADEQUATELY IDENTIFIED N/A Yes No

(12.2) SAMPLES STORED AT N/A

QC Signoff _____ Level III Date 10/6/87

QC Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rel 11/3/87

KJC 11/3/87

PSC PROCEDURE SQ 8.0
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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

(8.3.5) ANCHORHEAD I.D. BP161 BUSHING I.D. BZ823 Q.C. Signoff

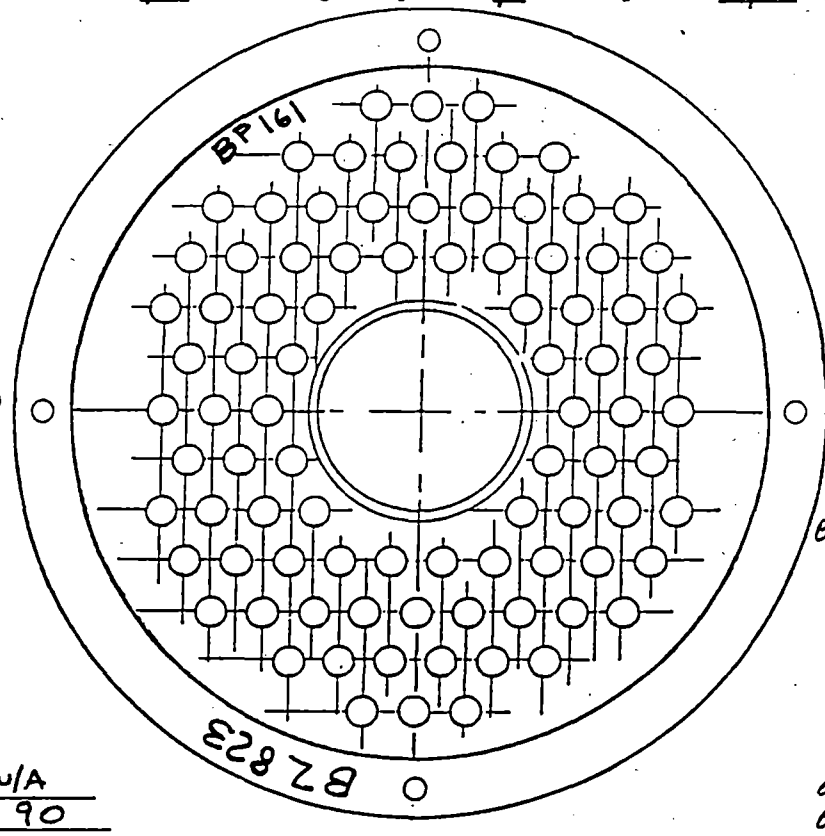
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition A CB 9/22/87
(8.1.2) Anchorage Head Level 1 (8.2) Cracks NONE
(8.1.2) Bushing Level 1 (8.2) Cracks NONE
(8.1.2) Shims Level 2 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE CB 9/22/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A CB 9/22/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A CB 9/22/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
◐ = Protruding
▣ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 9/22/87
CB 9/22/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 9/22/87
(8.3.7.3) Total Effective BH 90 CB 9/22/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 9/22/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A CB 9/22/87
Bushing Thread Joint Line CB 9/22/87

(9.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A CB 9/22/87

Q.C. Review F. T. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

WC 11/3/87

PSC PROCEDURE SQ 8.0
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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

Q.C. Signoff

(8.3.5) ANCHORHEAD I.D. BV370 BUSHING I.D. N/A

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			CB 9/28/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	CB 9/28/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A CB 9/28/87

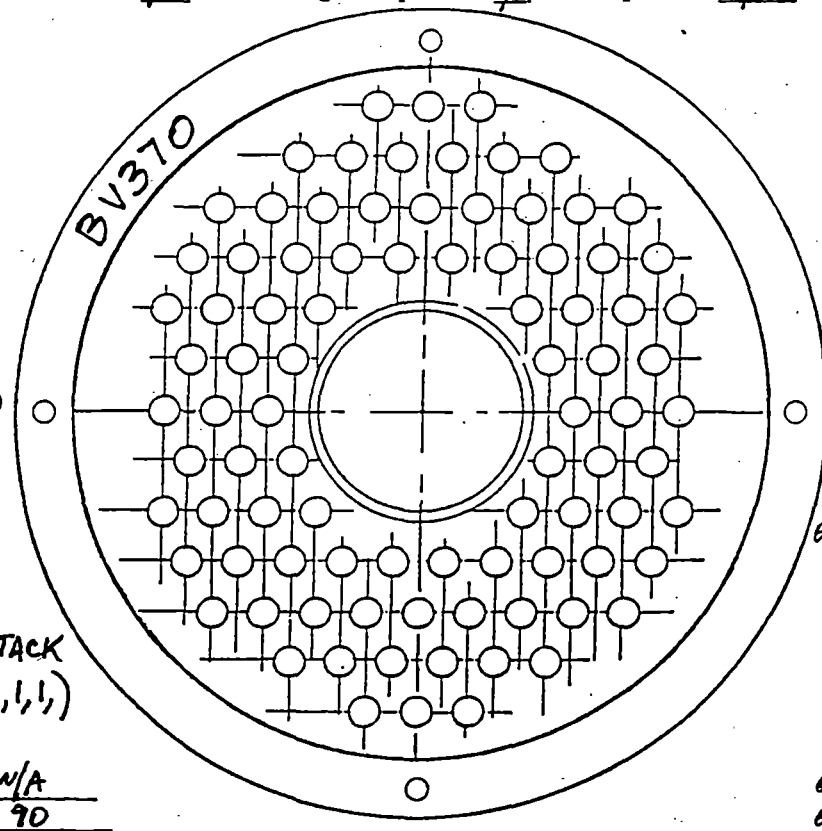
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A CB 9/29/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ☒ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- ▨ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 9/28/87

CB 9/28/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK 3.5" (½,1,1,1)

(8.3.7.2) Buttonheads Found N/A CB 9/28/87

(8.3.7.3) Total Effective BH 90 CB 9/28/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 9/28/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A CB 9/28/87

Bushing Thread Joint Line CB 9/28/87

(9.0) Reporting: [Accept] Unacceptable Engineer Notified NCR NO. N/A CB 9/28/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

KNC 11/3/87

PSC PROCEDURE SQ 8.0
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AS-FOUND + DETENSIONED INSPECTION CB 11/23/87

ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

(8.3.5) ANCHORHEAD I.D. CR 216 BUSHING I.D. BZ 766 Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

*SHIMS #1 INSIDE

(8.1.1) Buttonheads Condition B CB 10/15/87

(8.1.2) Anchorage Head Level 1 *DET #1 (8.2) Cracks NONE

(8.1.2) Bushing Level 2 +DET #2 (8.2) Cracks NONE

(8.1.2) Shims Level 2*DET = 1 (8.2) Cracks NONE

(8.1.2) Bearing Plate Level 2 +DET #2 (8.2) Cracks NONE CB 10/15/87

SQ 10.1.(8.1.2) Coating - Complete ✓ Incomplete ___ Lgth. of Air Pocket N/A* CB 10/15/87

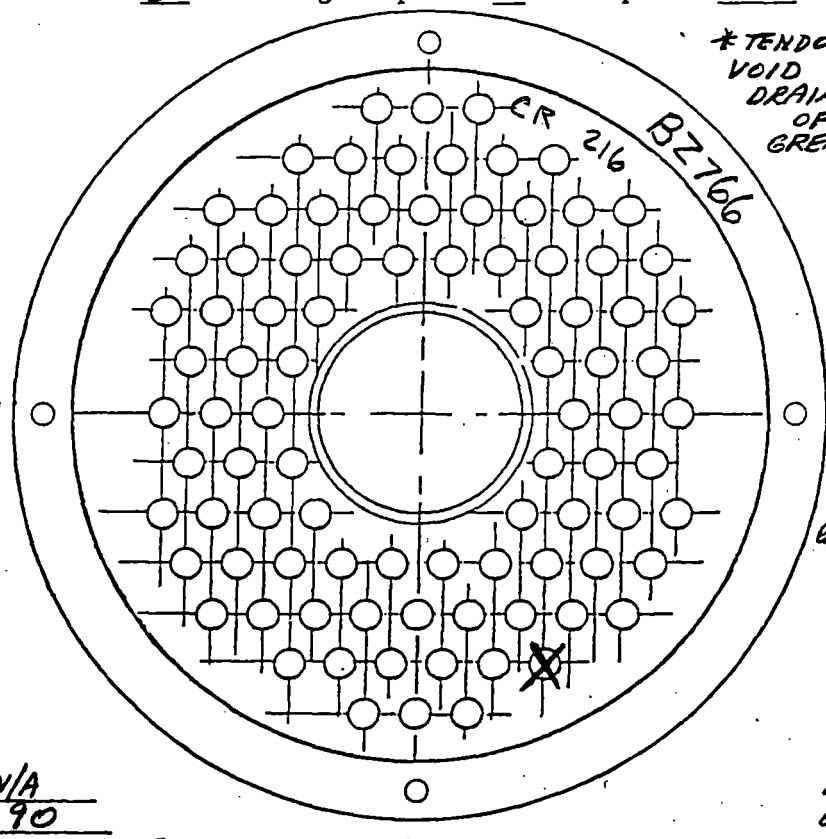
SQ 10.1 (8.2.1) Wire - Condition B Coating Complete ✓ Incomplete ___ CB 10/15/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ☒ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- ▢ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



*TENDON VOID DRAINED OF GREASE

CB 10/15/87

CB 10/15/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 10/15/87

(8.3.7.3) Total Effective BH 90 CB 10/15/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 10/15/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A CB 10/15/87

CONTINUITY TEST BEING PERFORMED PER SCHEDULE

Bushing Thread Joint Line CB 10/15/87

(8.0) Reporting: [Accept] Unacceptable Engineer Notified NCR NO. N/A CB 10/15/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rul 11/3/87

GNC 11/3/87

PSC PROCEDURE SQ 8.0
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AS-FOUND + DETENSIONED INSPECTION EB 11/23/87

ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV323 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			JH 10/15/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	JH 10/15/87

SQ 10.1.(8.1.2) Coating - Complete ✓ Incomplete N/A Lgth. of Air Pocket N/A JH 10/15/87

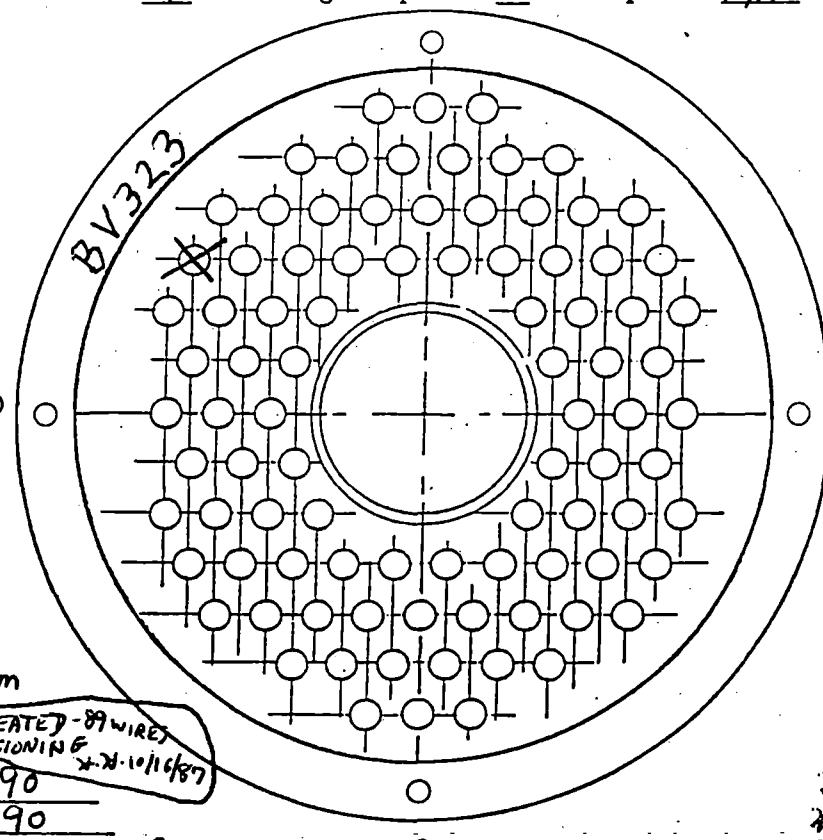
SQ 10.1 (8.2.1) Wire - Condition A Coating Complete ✓ Incomplete N/A JH 10/15/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

☒ = Discontinuous-Removed
⊗ = Removed for Testing
■ = Previously Missing
● = Protruding
□ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



JH 10/15/87

JH 10/15/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

0.5" SHIM
ALL HEADS SEATED - 89 WIRES AFTER RETENSIONING JH 10/16/87

(8.3.7.2) Buttonheads Found 90 JH 10/15/87

(8.3.7.3) Total Effective BH 90 JH 10/15/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 JH 10/15/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A JH 10/15/87

Bushing Thread Joint Line N/A JH 10/15/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A JH 10/15/87

Q.C. Review [signature] Level III Date 11/23/87

Title MGR. Q.C./PSC

11/3/87

WC 11/3/87

PSC PROCEDURE SQ 8.0
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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

Q.C. Signoff

(8.3.5) ANCHORHEAD I.D. BP 879 BUSHING I.D. BZ605

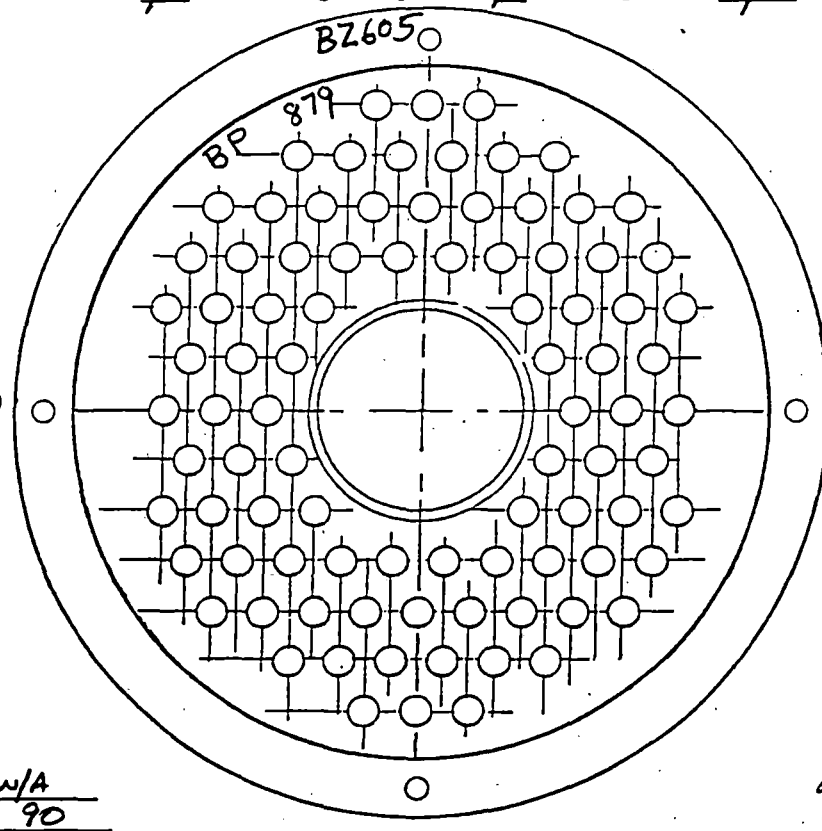
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition A EB 10/1/87
(8.1.2) Anchorage Head Level 1 (8.2) Cracks NONE
(8.1.2) Bushing Level 1 (8.2) Cracks NONE
(8.1.2) Shims Level 1 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 1 (8.2) Cracks NONE EB 10/1/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/1/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/1/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
◉ = Protruding
□ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/1/87
EB 10/1/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/1/87
(8.3.7.3) Total Effective BH 90 EB 10/1/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/1/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/1/87
Bushing Thread Joint Line EB 10/1/87

0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/1/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

WJC 11/3/87

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ANCHORAGE INSPECTION
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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV5 BUSHING I.D. N/A Q.C. Signoff

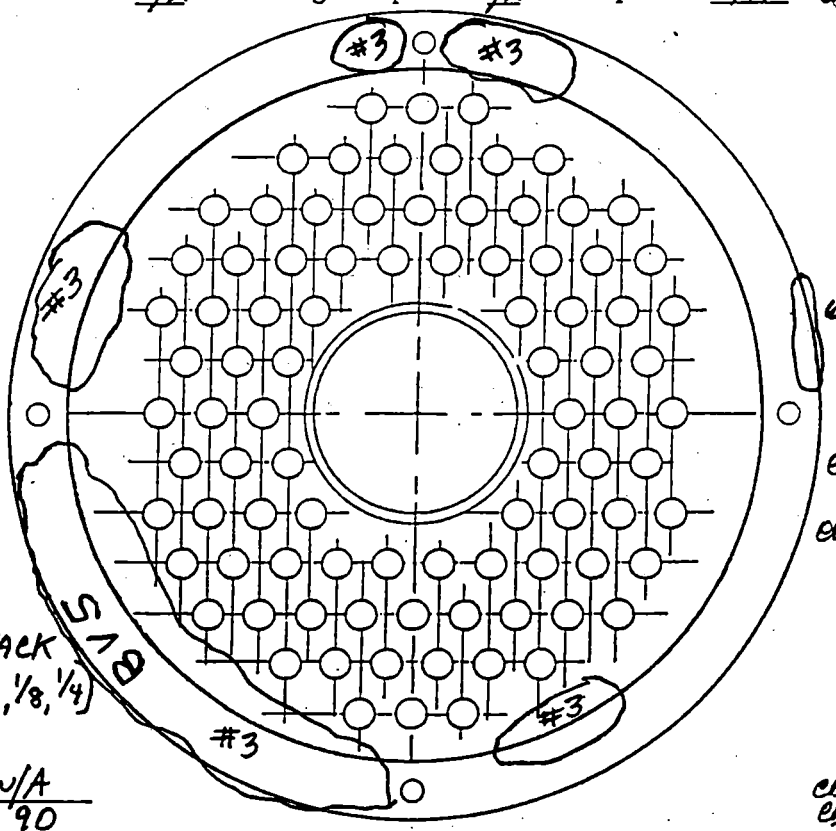
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition B (OTHER AREAS #1 AND #2) EB 9/28/87
(8.1.2) Anchorage Head Level #3 AS NOTED (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level 1 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE EB 9/28/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 9/28/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 9/28/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
☒ = Discontinuous-Removed
⊗ = Removed for Testing
◯ = Previously Missing
● = Protruding
▢ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 9/28/87
EB 9/28/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 9/28/87
(8.3.7.3) Total Effective BH 90 EB 9/28/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 9/28/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 9/28/87
Bushing Thread Joint Line EB 9/28/87

(8.0) Reporting: Accept [Unacceptable] Engineer Notified NCR NO. F7N314-001 EB 9/29/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87.

Title MGR., Q.A.

RL 11/3/87

WC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

(8.3.5) ANCHORHEAD I.D. BP597 BUSHING I.D. BZ434 Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition B EB 10/5/87

(8.1.2) Anchorage Head Level 1 EB 10/5/87 (8.2) Cracks NONE

(8.1.2) Bushing Level 2 (8.2) Cracks NONE

(8.1.2) Shims Level 1 (8.2) Cracks NONE

(8.1.2) Bearing Plate Level 1 (8.2) Cracks NONE EB 10/5/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/5/87

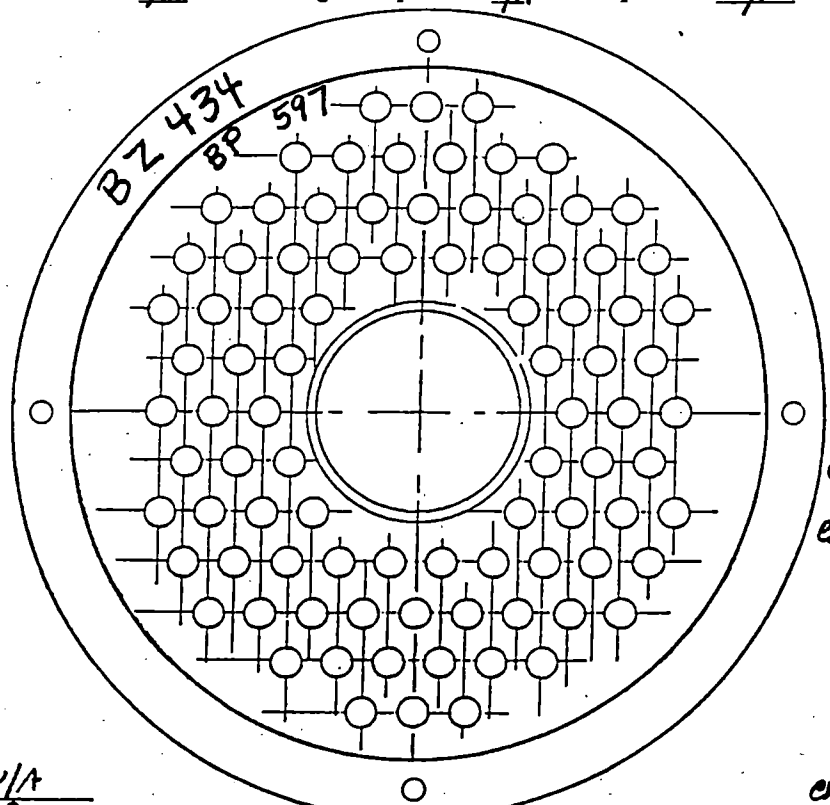
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/5/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊘ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◉ = Protruding
- ▣ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/5/87

EB 10/5/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/5/87

(8.3.7.3) Total Effective BH 90 EB 10/5/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/5/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/5/87

Bushing Thread Joint Line EB 10/5/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/5/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rel 11/3/87

KWC 11/3/87

E 74

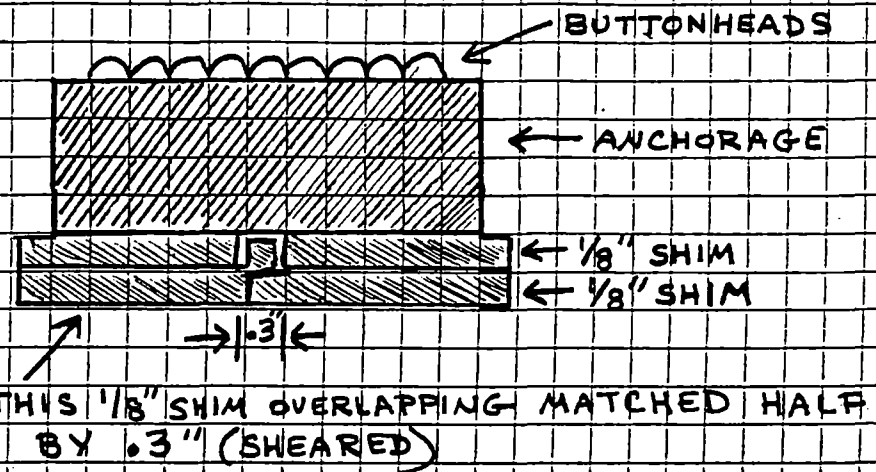
PSC PROCEDURE SQ 8.0
ANCHORAGE INSPECTION
SKETCH SHEET 8.0
MAY 20, 1987

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

Sketch each crack as it appears in the Anchorage, Shims or Bearing Plate. Identify each unit by name; apply the heat code identification if available and locate that identification on the sketch. Use as many Sketch Sheets as necessary being sure to list the page number below and to apply a Sketch Number to each unit with cracks.

Q.C. Signoff [signature] Title MGR, Q.C/PSC Date 10/5/87



Q.C. Review W. F. Hardrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87
WC 11/3/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. CP96 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition B			EB 9/28/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 1	(8.2) Cracks	NONE	EB 9/28/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 9/28/87

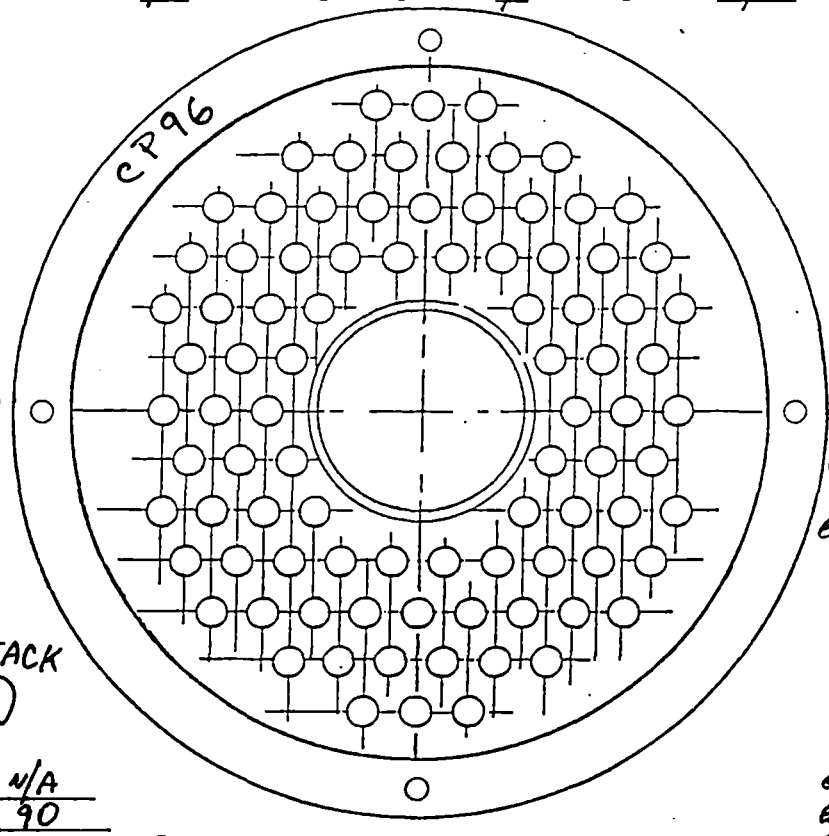
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 9/28/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ☒ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ◯ = Previously Missing
- ● = Protruding
- □ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 9/28/87

EB 9/28/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK .5" (1/2)

(8.3.7.2) Buttonheads Found N/A EB 9/28/87

(8.3.7.3) Total Effective BH 90 EB 9/28/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 9/28/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 9/28/87

Bushing Thread Joint Line EB 9/28/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 9/28/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87.

Title MGR., Q.A.

Rul 11/3/87

WSC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. SHOP / NEAR B BUTT UNIT 1

Q.C. Signoff

(8.3.5) ANCHORHEAD I.D. BP158 BUSHING I.D. BZ812

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			CB 9/25/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level 1	(8.2) Cracks	NONE	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	CB 9/25/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A CB 9/25/87

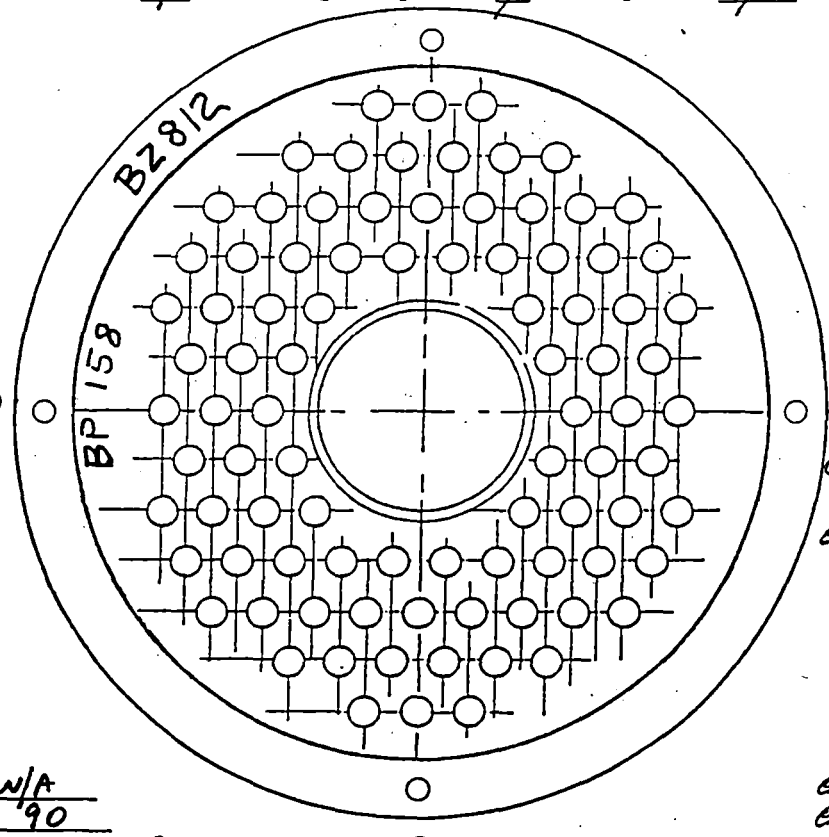
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A CB 9/25/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊘ = Discontinuous-Removed
- ⊗ = Removed for Testing
- = Previously Missing
- = Protruding
- = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 9/25/87

CB 9/25/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 9/25/87

(8.3.7.3) Total Effective BH 90 CB 9/25/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 9/25/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A CB 9/25/87

Bushing Thread Joint Line CB 9/25/87

(8.5.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A CB 9/25/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

WC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. FIELD / C NEAR BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV 465 BUSHING I.D. N/A Q.C. Signoff

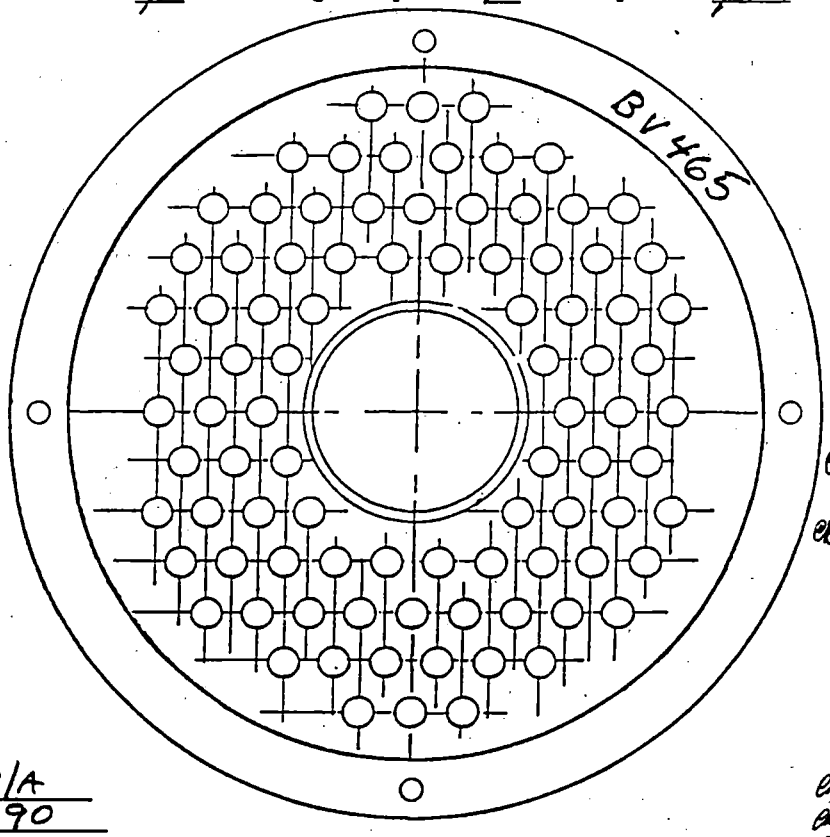
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition A CB 10/9/87
(8.1.2) Anchorage Head Level 1 (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level 1 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE CB 10/9/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A CB 10/9/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A CB 10/9/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊠ = Removed for Testing
● = Previously Missing
○ = Protruding
▣ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 10/9/87
CB 10/9/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 10/9/87
(8.3.7.3) Total Effective BH 90 CB 10/9/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 10/9/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A CB 10/9/87
Bushing Thread Joint Line CB 10/9/87

(8.0) Reporting: (Accept) Unacceptable Engineer Notified NCR NO. N/A CB 10/9/87

Q.C. Review H. B. Hendrickson Level III Date 10-15-87.

Title MGR., Q.A.

RWC 11/3/87

RWC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-38 TENDON END/BUTTRESS NO. SHOP/A NEAR BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BP160 BUSHING I.D. BZ48 Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			CB 9/29/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level 2	(8.2) Cracks	NONE	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	CB 9/29/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A CB 9/29/87

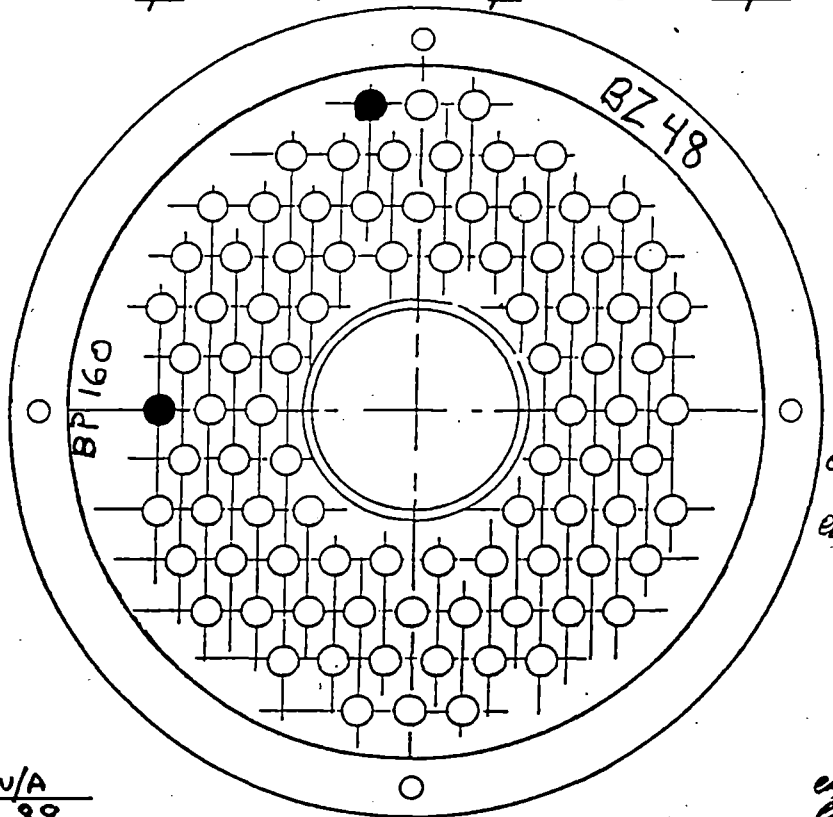
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A CB 9/29/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ☒ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- ■ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 9/29/87

CB 9/29/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 9/29/87

(8.3.7.3) Total Effective BH 88 CB 9/29/87

(8.4.1) Protruding BH 0 Missing BH 2 Total BH 2 CB 9/29/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked YES CB 9/29/87

Bushing Thread Joint Line CB 9/29/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A CB 9/29/87

Q.C. Review H. F. Hendrickson Level III Date 10.15.87.

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-38 TENDON END/BUTTRESS NO. FIELD / D NEAR BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV56 BUSHING I.D. N/A Q.C. Signoff

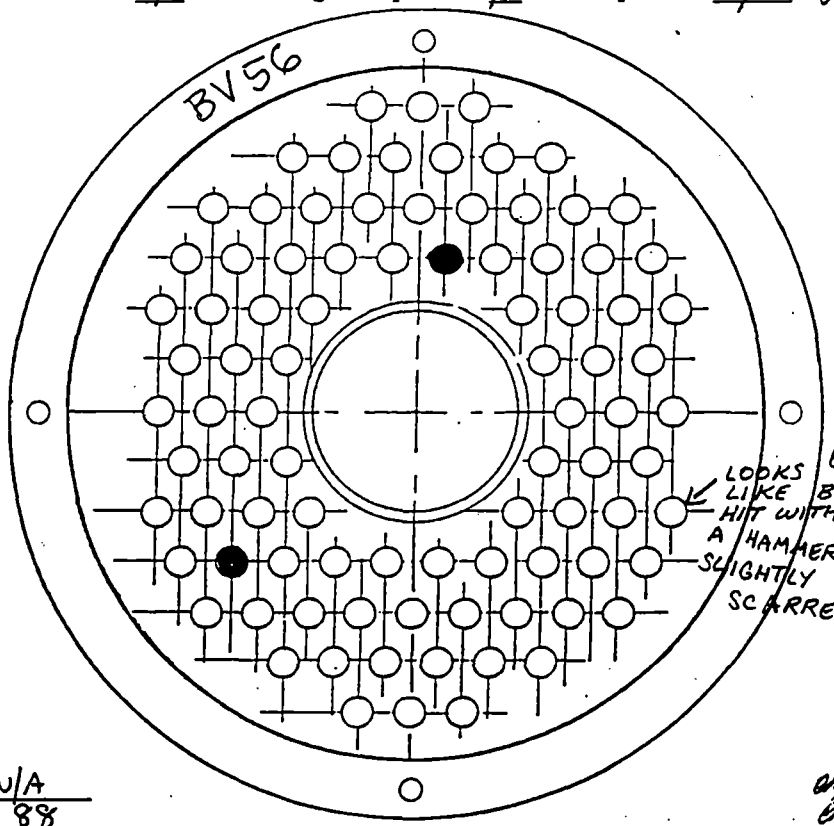
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition A EB 10/9/87
(8.1.2) Anchorage Head Level 2 (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level 1 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE EB 10/9/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/9/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/9/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
◐ = Protruding
▣ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/9/87 BUTTONHEAD EB 10/9/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/9/87
(8.3.7.3) Total Effective BH 88 EB 10/9/87
(8.4.1) Protruding BH 0 Missing BH 2 Total BH 2 EB 10/9/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked YES EB 10/9/87
Bushing Thread Joint Line EB 10/9/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/9/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

WJC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. SHOP/F NEAR BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BP480 BUSHING I.D. BZ658 Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			EB 10/17/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level 1	(8.2) Cracks	NONE	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	EB 10/17/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/17/87

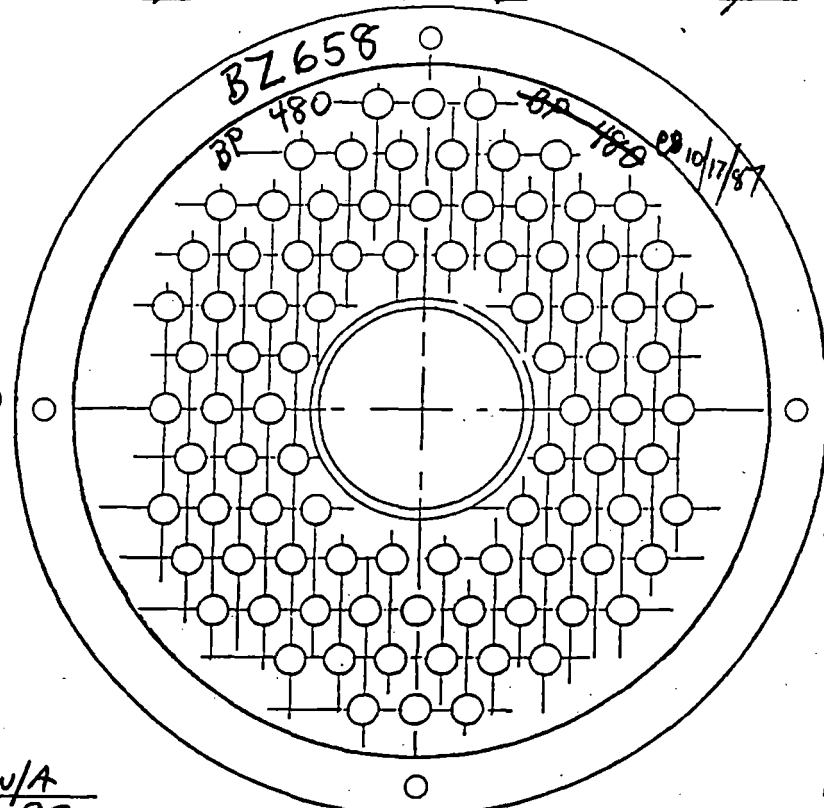
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/17/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- ▢ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/17/87

EB 10/17/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/17/87

(8.3.7.3) Total Effective BH 90 EB 10/17/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/17/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/17/87

Bushing Thread Joint Line EB 10/17/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/17/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/13/87

KWC 11/13/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. FIELD / A NEAR BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV216 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

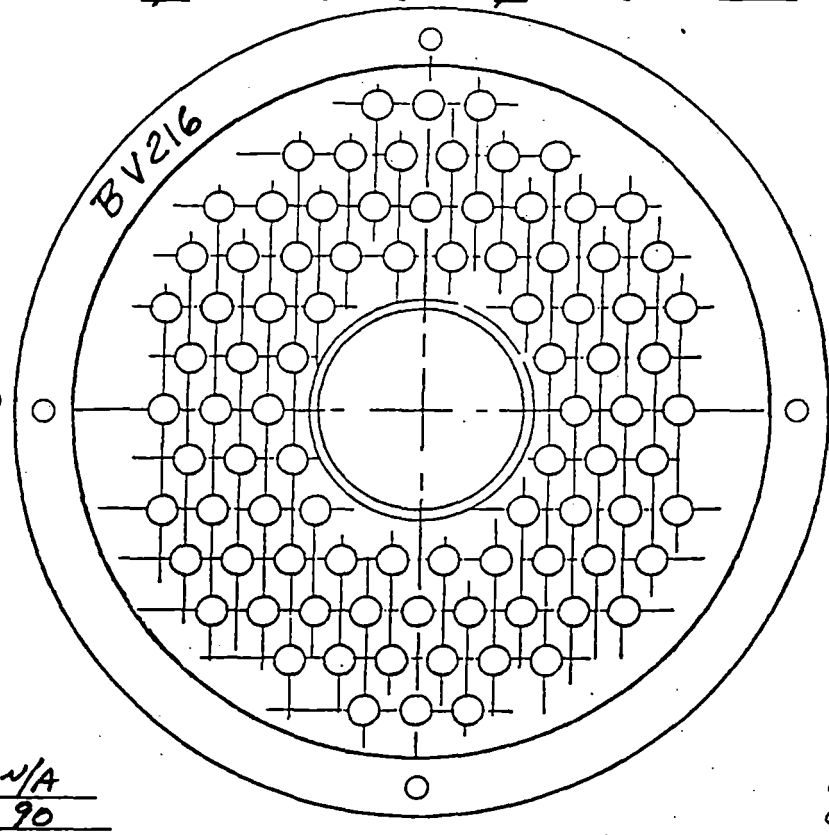
* OUTSIDE GASKET AREA

(8.1.1) Buttonheads Condition A CB 9/30/87
(8.1.2) Anchorage Head Level 1 (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level 1 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 1 -#2* (8.2) Cracks NONE CB 9/30/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A CB 9/30/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A CB 9/30/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
◉ = Protruding
▣ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 9/30/87
CB 9/30/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 9/30/87
(8.3.7.3) Total Effective BH 90 CB 9/30/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 9/30/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A CB 9/30/87
Bushing Thread Joint Line CB 9/30/87

(8.4.0) Reporting: [Accept] Unacceptable Engineer Notified NCR NO. N/A CB 9/30/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87.

Title MGR., Q.A.

Rul 11/3/87

GWC 11/3/87

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AS-FOUND INSPECTION

ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP/F NEAR BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BP508 BUSHING I.D. BZ359 Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition B			CB 10/20/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level 1	(8.2) Cracks	NONE	
(8.1.2) Shims	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	CB 10/20/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A CB 10/20/87

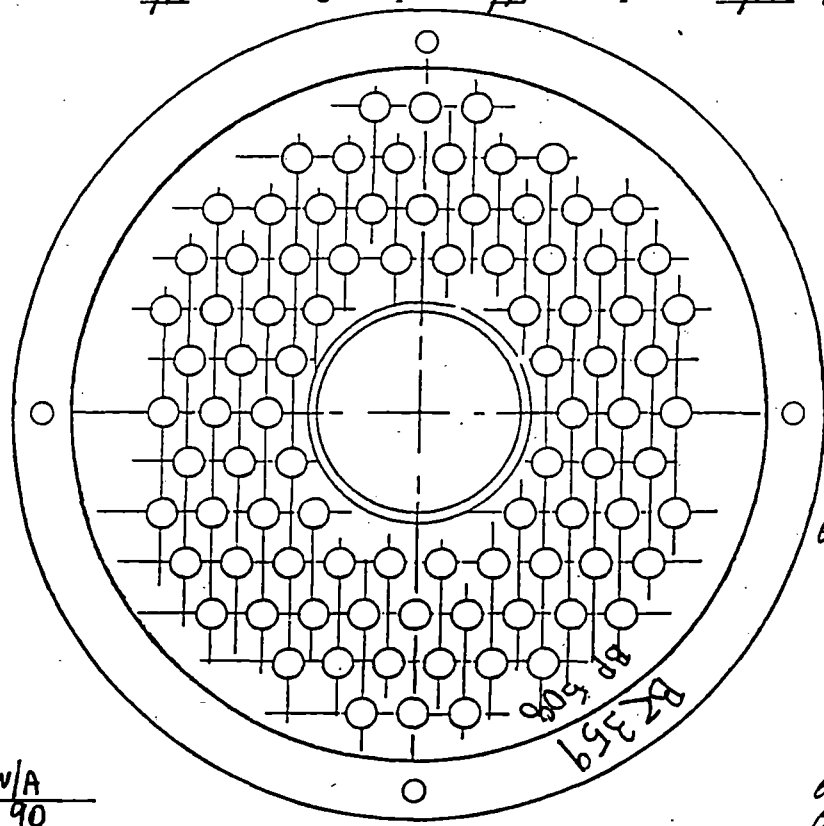
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A CB 10/20/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ☒ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ▬ = Protruding
- ▬ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 10/20/87

CB 10/20/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 10/20/87

(8.3.7.3) Total Effective BH 90 CB 10/20/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 10/20/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A CB 10/20/87

Bushing Thread Joint Line CB 10/20/87

(8.5.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A CB 10/20/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWC 11/3/87

WC 11/3/87

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DETENSIONED TENDON

ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP / NEAR E BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BP508 BUSHING I.D. BZ359 Q.C. Signoff

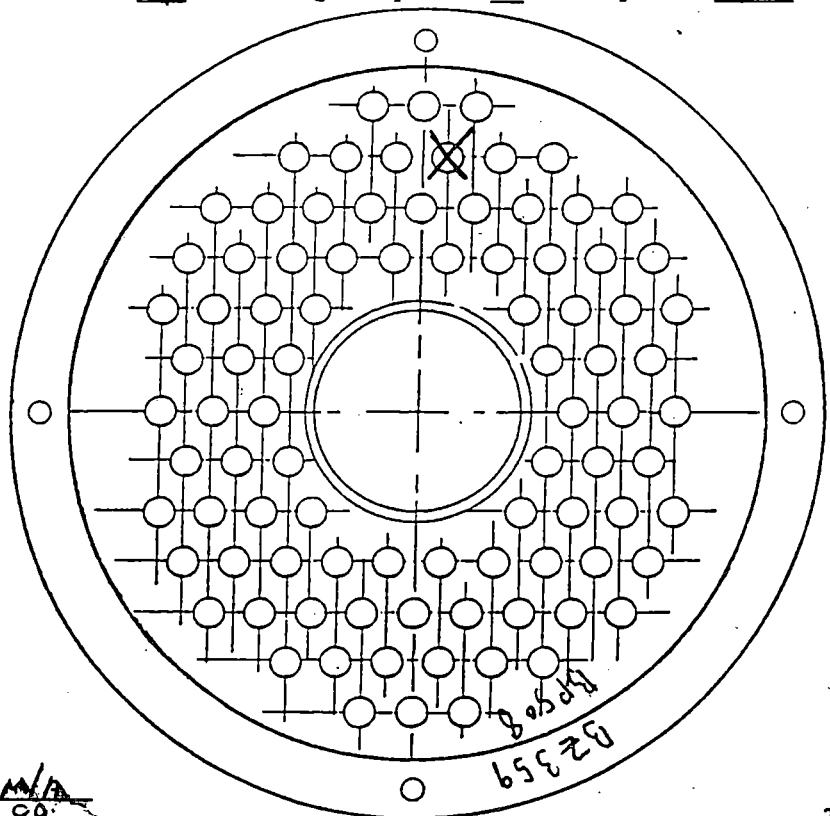
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition N/A N.N. 10/23/87
(8.1.2) Anchorage Head Level N/A (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks NONE
(8.1.2) Shims Level N/A (8.2) Cracks NONE
(8.1.2) Bearing Plate Level N/A (8.2) Cracks NONE N.N. 10/23/87
SQ 10.1.(8.1.2) Coating - Complete ✓ Incomplete N/A Lgth. of Air Pocket N/A N.N. 10/23/87
SQ 10.1 (8.2.1) Wire - Condition A Coating Complete ✓ Incomplete N/A N.N. 10/23/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
◉ = Protruding
▣ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



N.N. 10/23/87
N.N. 10/23/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A N.N. 10/23/87
(8.3.7.3) Total Effective BH 89 N.N. 10/23/87
(8.4.1) Protruding BH 0 Missing BH 1 Total BH 1 N.N. 10/23/87
(8.4.1.2.1) Continuity Test Required YES * Wires Identified/Marked YES N.N. 10/23/87
* PER SCHEDULE Bushing Thread Joint Line N.N. 10/23/87

(9.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A N.N. 10/23/87

Q.C. Review [signature] Level III Date 11/23/87.

Title MGR, Q.C./PSC

11/3/87

WNC 11/3/87

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AS-FOUND + DETENSIONED INSPECTION

ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. FIELD / NEAR C BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV190 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			CB 10/23/87
(8.1.2) Anchorage Head	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	CB 10/23/87

SQ 10.1.(8.1.2) Coating - Complete ✓ Incomplete ___ Lgth. of Air Pocket NONE CB 10/23/87

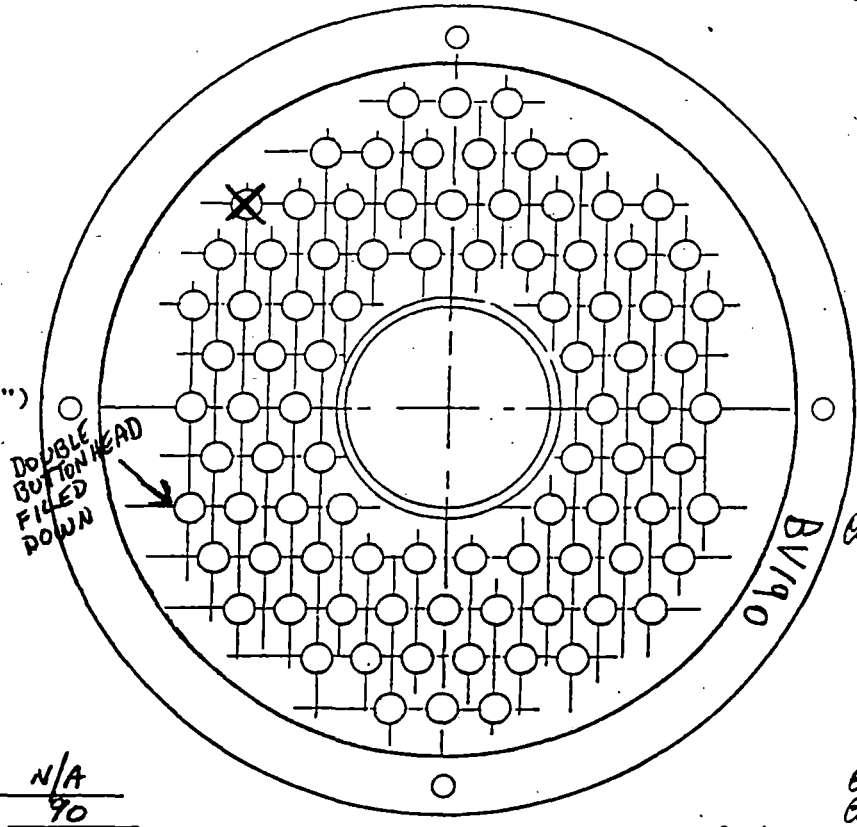
SQ 10.1 (8.2.1) Wire - Condition A Coating Complete ✓ Incomplete ___ CB 10/23/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- □ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 10/23/87
CB 10/23/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 10/23/87
(8.3.7.3) Total Effective BH 90 CB 10/23/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 10/23/87
(8.4.1.2.1) Continuity Test Required *YES Wires Identified/Marked N/A YES CB 10/23/87
*PER SCHEDULE Bushing Thread Joint Line CB 10/23/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A CB 10/23/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rel 11/3/87

GNC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. SHOP / A BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BP18 BUSHING I.D. BZ588 Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition B			EB 10/12/87
(8.1.2) Anchorage Head	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level 2	(8.2) Cracks	NONE	
(8.1.2) Shims	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	EB 10/12/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/12/87

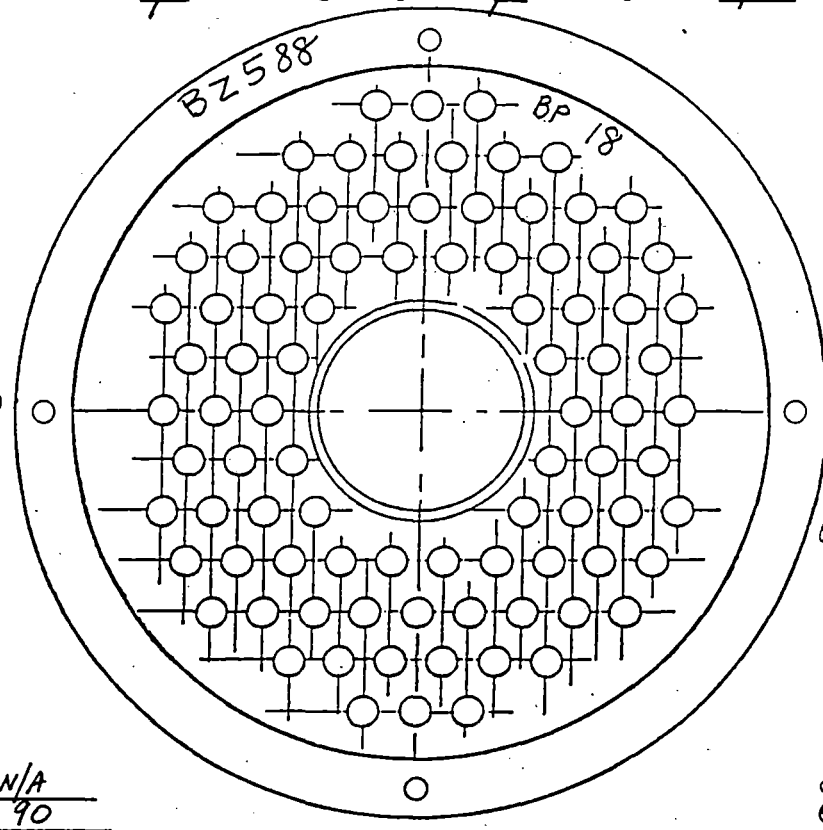
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/12/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊘ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ● = Protruding
- ■ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/12/87

EB 10/12/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/12/87

(8.3.7.3) Total Effective BH 90 EB 10/12/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/12/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/12/87

Bushing Thread Joint Line EB 10/12/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/12/87

Q.C. Review H. F. Henderson Level III Date 10-15-87

Title MGR., Q.A.

RL 11/3/87

WC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. FIELD/C BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV161 BUSHING I.D. N/A Q.C. Signoff

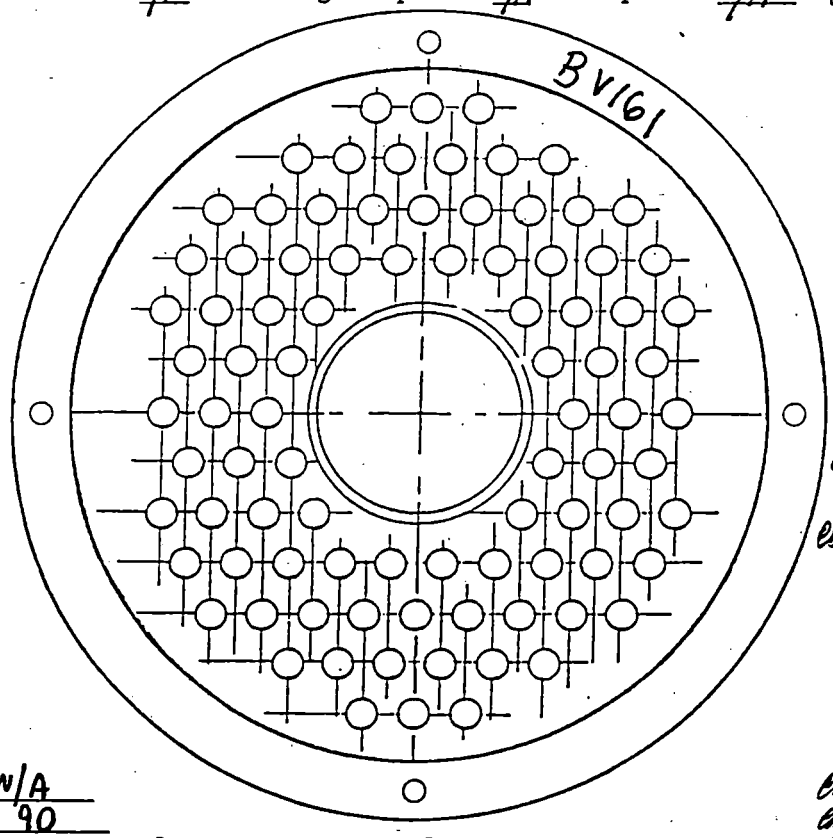
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition A EB 10/20/87
(8.1.2) Anchorage Head Level 2 (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks NONE
(8.1.2) Shims Level 1 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE EB 10/20/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/20/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/20/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊘ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
◐ = Protruding
□ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/20/87
EB 10/20/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/20/87
(8.3.7.3) Total Effective BH 90 EB 10/20/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/20/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/20/87
Bushing Thread Joint Line EB 10/20/87

(10) Reporting: [Accept] Unacceptable Engineer Notified NCR NO. N/A EB 10/20/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RHL 11/3/87

WC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. SHOP / A BUTT UNIT 1

(3.3.5) ANCHORHEAD I.D. BP376 BUSHING I.D. BZ525 Q.C. Signoff

(3.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			EB 10/8/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level 1	(8.2) Cracks	NONE	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	EB 10/8/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/8/87

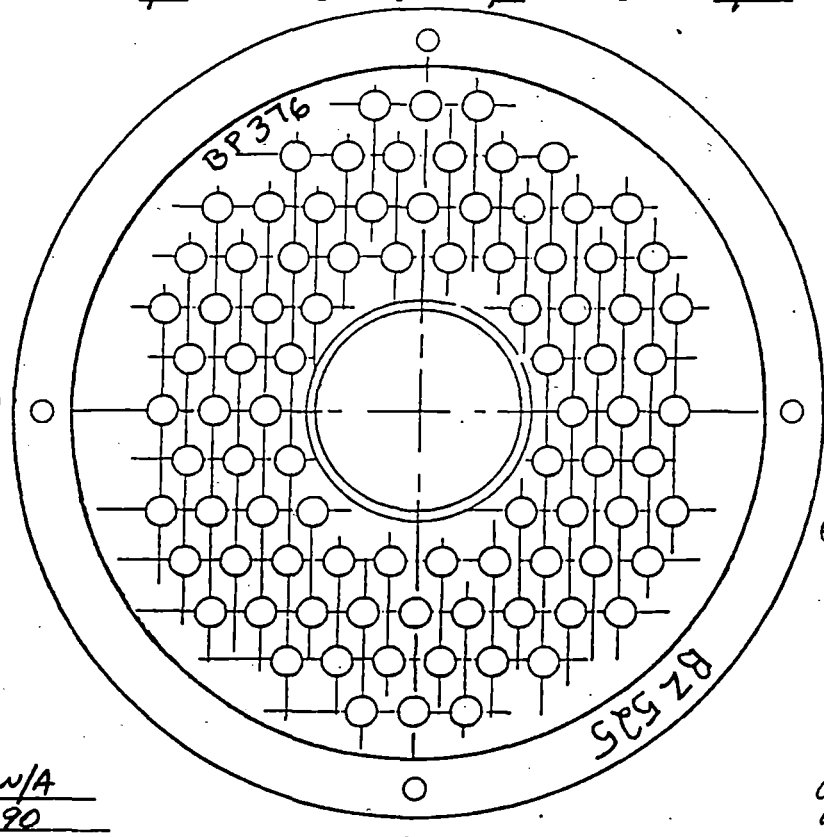
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/8/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- □ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/8/87

EB 10/8/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/8/87

(8.3.7.3) Total Effective BH 90 EB 10/8/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/8/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/8/87

Bushing Thread Joint Line EB 10/8/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/8/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

WNC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. FIELD/C BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV239 BUSHING I.D. N/A Q.C. Signoff

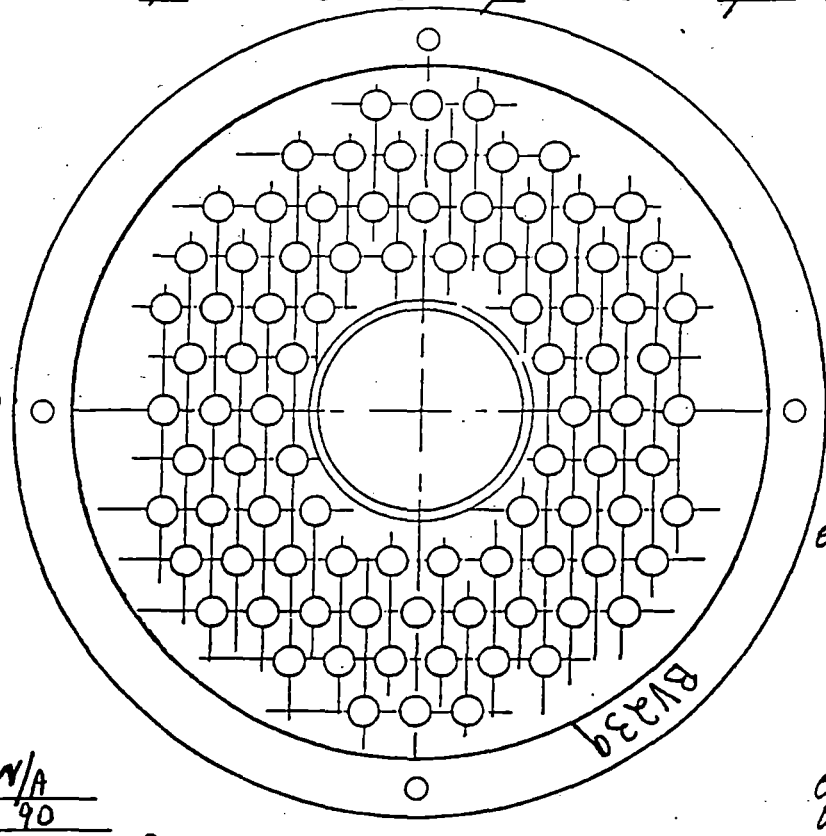
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition B EB 10/22/87
(8.1.2) Anchorage Head Level 2 (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level 1 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE EB 10/22/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/22/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/22/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
= Previously Missing
= Protruding
= Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/22/87
EB 10/22/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/22/87
(8.3.7.3) Total Effective BH 90 EB 10/22/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/22/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/22/87
Bushing Thread Joint Line EB 10/22/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/22/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

11/3/87
WC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BP 723 BUSHING I.D. B2868 Q.C. Signoff

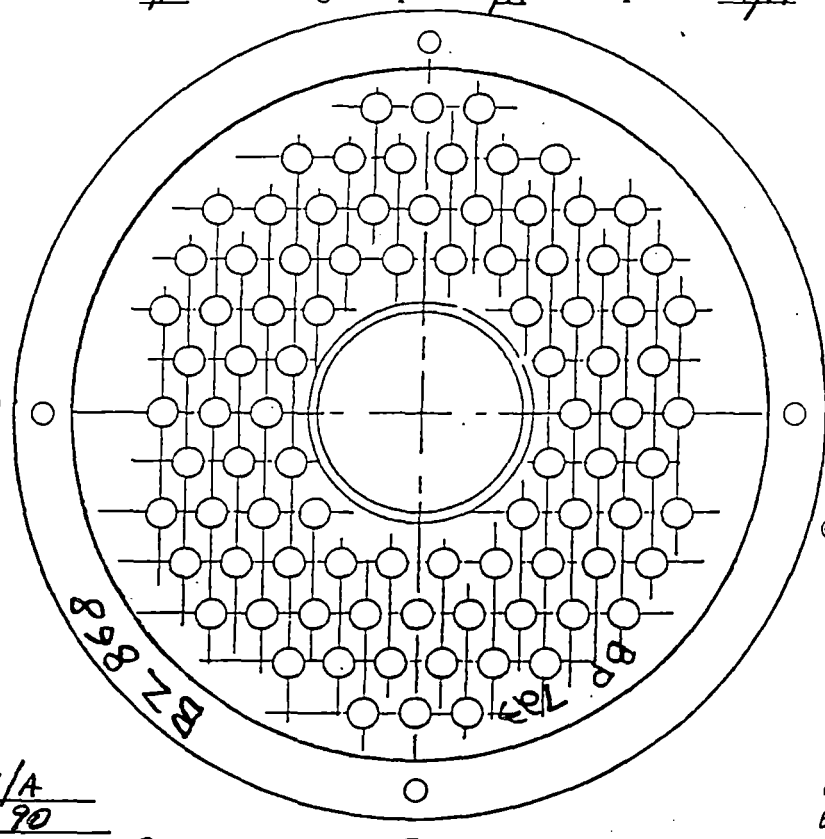
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition B CB 10/14/87
(8.1.2) Anchorage Head Level ~~1~~ 2 CB 10/14/87 (8.2) Cracks NONE
(8.1.2) Bushing Level 2 (8.2) Cracks NONE
(8.1.2) Shims Level 2 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE CB 10/14/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A CB 10/14/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A CB 10/14/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
▲ = Protruding
■ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



CB 10/14/87
CB 10/14/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A CB 10/14/87
(8.3.7.3) Total Effective BH 90 CB 10/14/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 CB 10/14/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A CB 10/14/87
Bushing Thread Joint Line CB 10/14/87

(9.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A CB 10/14/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/3/87

WC 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. FIELD / D BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV330 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			EB 10/13/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	EB 10/13/87

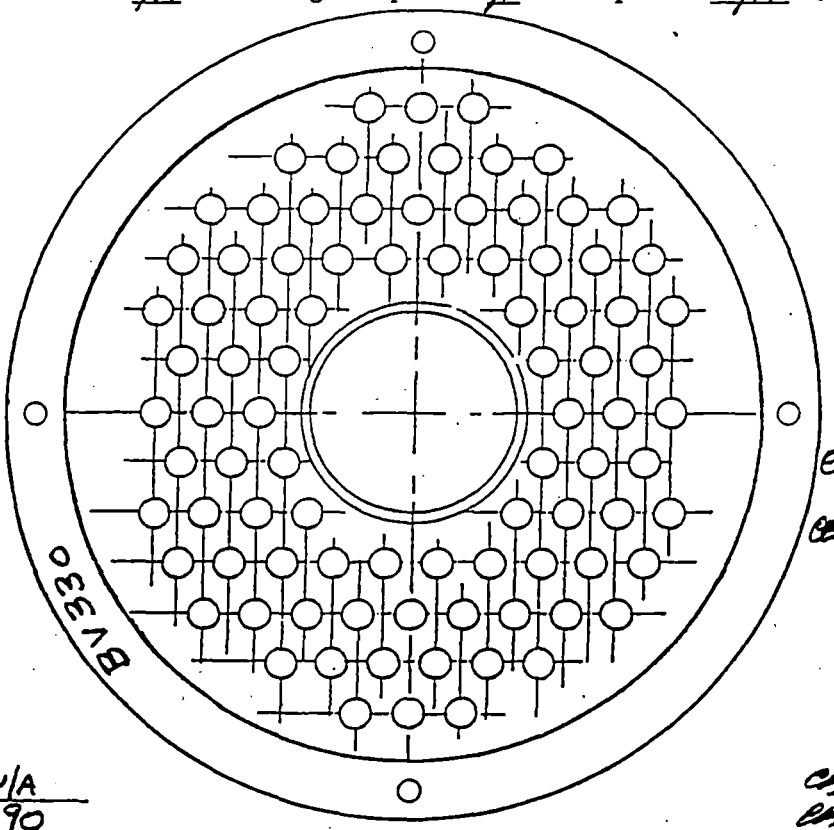
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/13/87

SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/13/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
- ⊘ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◉ = Protruding
- ▣ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/13/87

EB 10/13/87

(8.3.6) Offsize Totals
- B = 0
- A = 0
- K = 0
- S = 0
- X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/13/87

(8.3.7.3) Total Effective BH 90 EB 10/13/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/13/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/13/87

Bushing Thread Joint Line EB 10/13/87

(8.5.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/13/87

Q.C. Review H. T. Hendrickson Level III Date 10-15-87.

Title MGR., Q.A.

KNC 11/3/87 Rul 11/3/87

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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BP650 BUSHING I.D. BZ248 Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition B		
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE
(8.1.2) Bushing	Level 1	(8.2) Cracks	NONE
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE

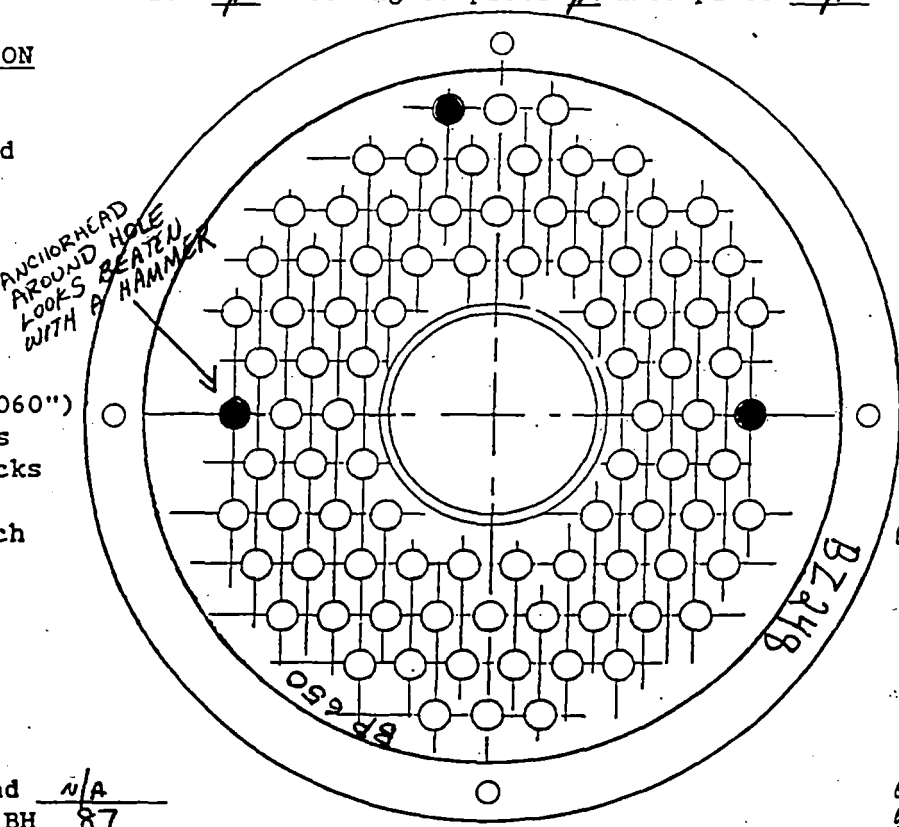
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A

SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
- ☒ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ● = Protruding
- ▣ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



(8.3.6) Offsize Totals
- B = 0
- A = 0
- K = 0
- S = 0
- X = 0

(8.3.7.2) Buttonheads Found N/A

(8.3.7.3) Total Effective BH 87

(8.4.1) Protruding BH 0 Missing BH 3 Total BH 3

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked YES

Bushing Thread Joint Line

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A

Q.C. Review H.T. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RL 11/3/87

KWC 11/3/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. FIELD/B BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV268 BUSHING I.D. N/A Q.C. Signoff

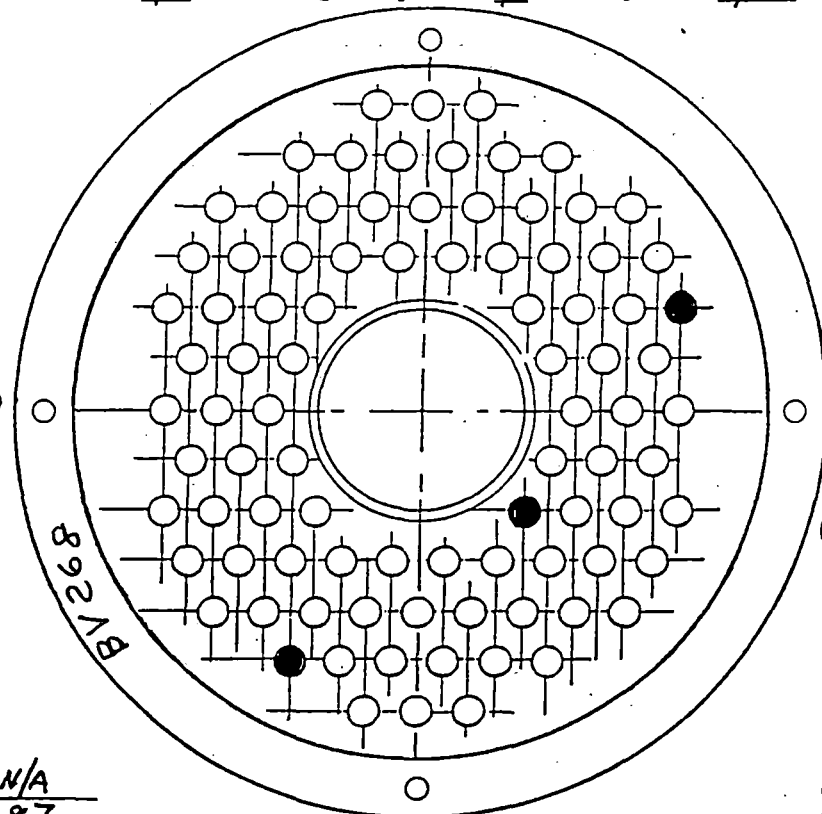
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition A EB 10/27/87
(8.1.2) Anchorage Head Level B 2 EB 10/27/87 (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level B 2 EB 10/27/87 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE EB 10/27/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/27/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/27/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
◐ = Protruding
▣ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/27/87
EB 10/27/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A EB 10/27/87
(8.3.7.3) Total Effective BH 87 EB 10/27/87
(8.4.1) Protruding BH 0 Missing BH 3 Total BH 3 EB 10/27/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked YES EB 10/27/87
Bushing Thread Joint Line EB 10/27/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/27/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/13/87

EWC 11/3/87

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AS-FOUND + DETENSIONED INSPECTION

ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BP 645 BUSHING I.D. BZ 412 Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition B	#2 BEHIND HEAD EB 10/28/87	EB 10/28/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks NONE	
(8.1.2) Bushing	Level 1 ✓	(8.2) Cracks NONE	
(8.1.2) Shims	Level 1	(8.2) Cracks NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks NONE	EB 10/28/87

SQ 10.1.(8.1.2) Coating - Complete ✓ Incomplete ___ Lgth. of Air Pocket NONE EB 10/28/87

SQ 10.1 (8.2.1) Wire - Condition B Coating Complete ✓ Incomplete ___ EB 10/28/87

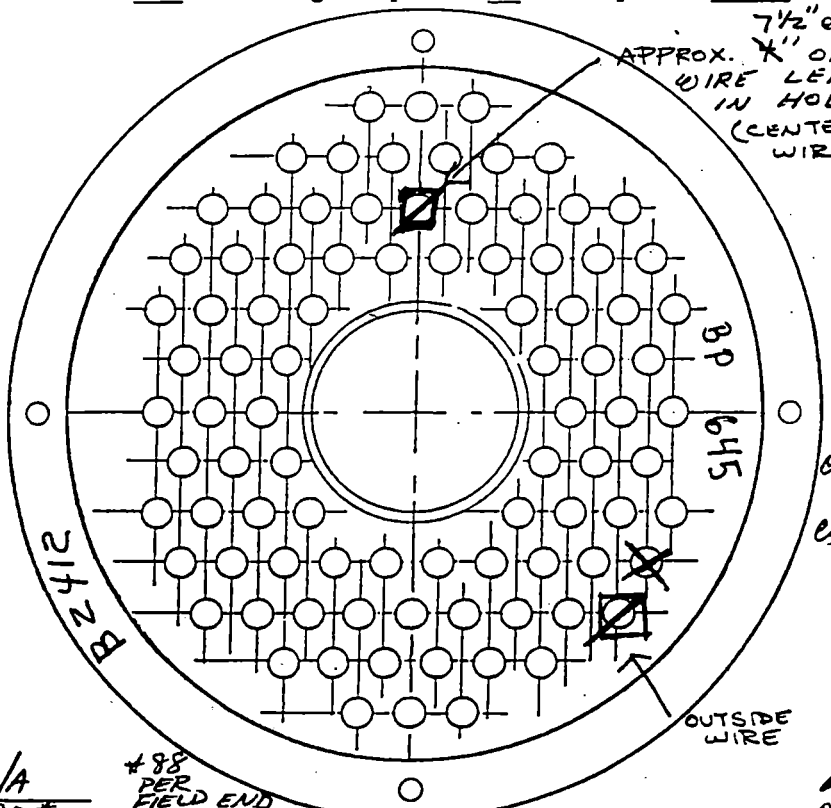
7½" EB 10/28/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ☒ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- ☐ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/28/87
EB 10/28/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

(8.3.7.2) Buttonheads Found N/A #88 PER FIELD END EB 10/28/87

(8.3.7.3) Total Effective BH 90* EB 10/28/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/28/87

(8.4.1.2.1) Continuity Test Required YES** Wires Identified/Marked YES EB 10/29/87

** PER SCHEDULE Bushing Thread Joint Line EB 10/29/87

0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/29/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

KWC 11/3/87

KWC 11/3/87

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AS-FOUND + DETENSIONED INSPECTION

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. FIELD / B BUTT UNIT 1

(8.3.5) ANCHORHEAD I.D. BV71 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			N.N. 10/28/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	N.N. 10/28/87

SQ 10.1.(8.1.2) Coating - Complete ✓ Incomplete N/A Lgth. of Air Pocket N/A N.N. 10/28/87

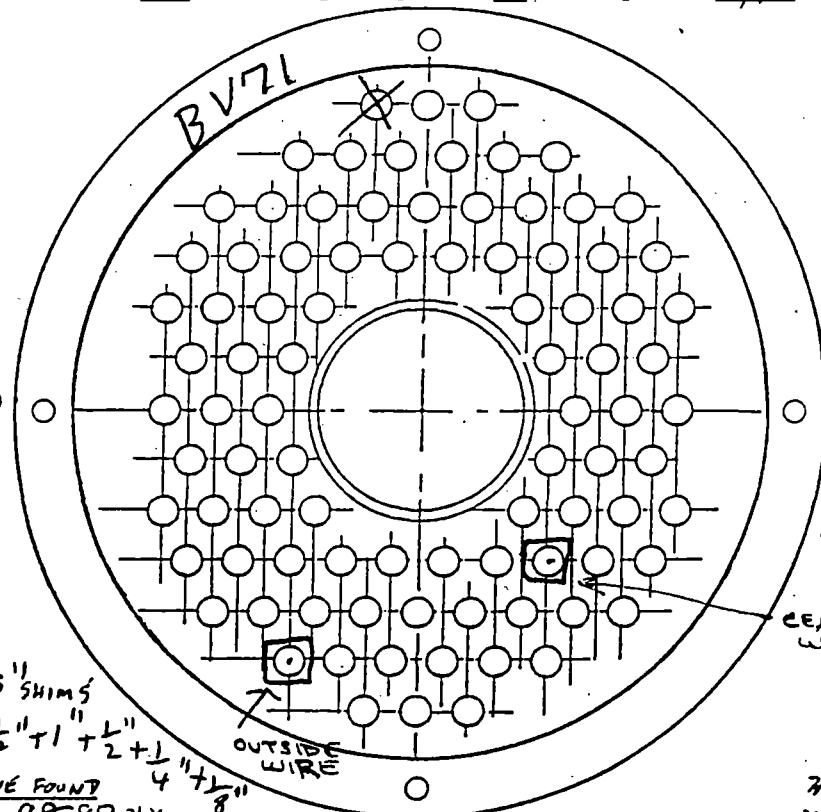
SQ 10.1 (8.2.1) Wire - Condition A Coating Complete ✓ Incomplete N/A N.N. 10/28/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ☒ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- ▣ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



N.N. 10/28/87

N.N. 10/28/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

6.45" shims
4½" + 1" + ½" + ¼" + ⅛"

(8.3.7.2) Buttonheads Found NONE FOUND N.N. 10/28/87

(8.3.7.3) Total Effective BH 88 87 N.N. 10/29/87 N.N. 10/28/87

(8.4.1) Protruding BH 0 Missing BH 2 Total BH 2 N.N. 10/28/87

(8.4.1.2.1) Continuity Test Required YES * Wires Identified/Marked YES N.N. 10/28/87

*SCHEDULED FOR CONTINUITY Bushing Thread Joint Line N/A N.N. 10/28/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. F-7N314-005 N.N. 10/28/87

Q.C. Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

11/3/87

KWC 11/3/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V36 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV237 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition B			EB 10/6/87
(8.1.2) Anchorage Head	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	EB 10/6/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/6/87

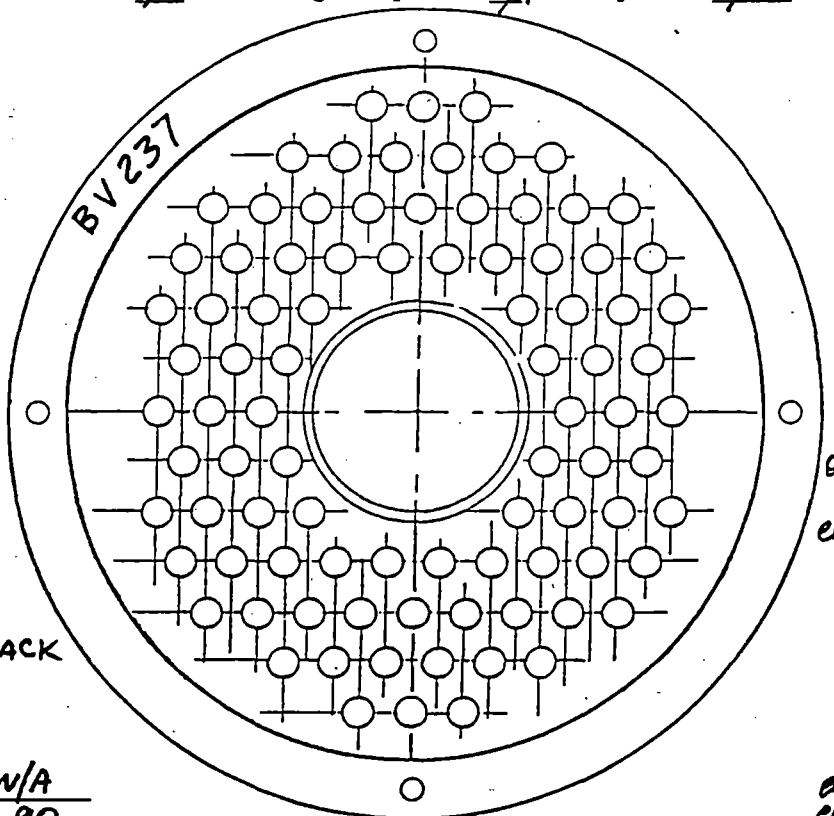
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/6/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ● = Protruding
- ▣ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/6/87

EB 10/6/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK .5" (½)

(8.3.7.2) Buttonheads Found N/A EB 10/6/87

(8.3.7.3) Total Effective BH 90 EB 10/6/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/6/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/6/87

Bushing Thread Joint Line EB 10/6/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/6/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

KNC 11/3/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V62 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV812 BUSHING I.D. N/A Q.C. Signoff

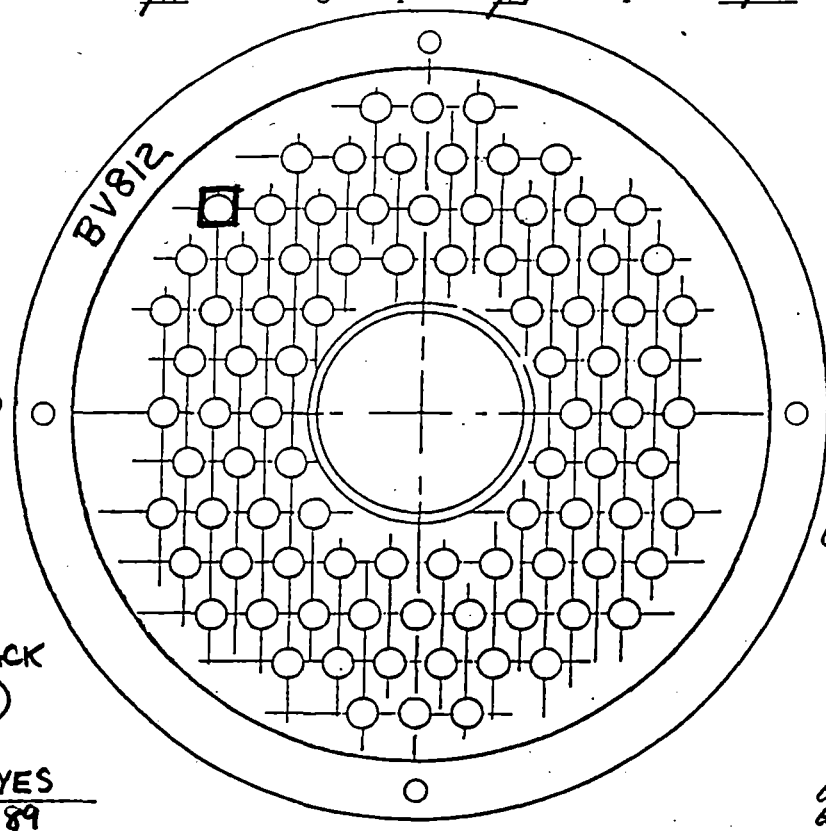
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition B EB 10/6/87
(8.1.2) Anchorage Head Level 2 (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level 2 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE EB 10/6/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/6/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/6/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
▲ = Protruding
■ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/6/87
EB 10/6/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK .5" (½)

(8.3.7.2) Buttonheads Found YES EB 10/6/87
(8.3.7.3) Total Effective BH 89 EB 10/6/87
(8.4.1) Protruding BH 0 Missing BH 1 Total BH 1 EB 10/6/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked YES EB 10/6/87
Bushing Thread Joint Line EB 10/6/87

(9.0) Reporting: Accept [Unacceptable] Engineer Notified NCR NO. F-7N314-003 EB 10/7/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rel 11/3/87

WC 11/3/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V86 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV485 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			ZZ 10/15/87
(8.1.2) Anchorage Head	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	NONE	
(8.1.2) Shims	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	ZZ 10/15/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A ZZ 10/15/87

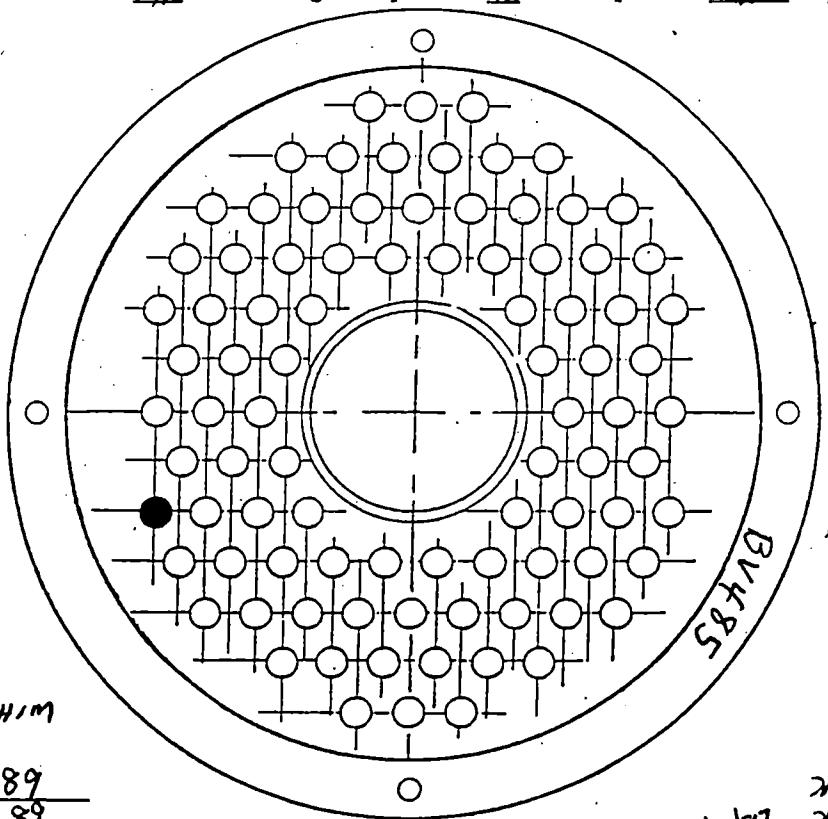
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A ZZ 10/15/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- ▣ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



ZZ 10/15/87
ZZ 10/15/87

(8.3.6) Offsize Totals

B = N/A
A = N/A
K = N/A
S = N/A
X = N/A

0.5" SHIM

(8.3.7.2) Buttonheads Found 89 ZZ 10/15/87
(8.3.7.3) Total Effective BH 89 ZZ 10/15/87
(8.4.1) Protruding BH 0 Missing BH 1 Total BH 1 ZZ 10/15/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked NO YES EB 10/21/87 ZZ 10/15/87
Bushing Thread Joint Line ZZ 10/15/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A ZZ 10/15/87

Q.C. Review [signature] Level III Date 11/23/87. Rwl 11/23/87

Title MGR, Q.C./PSC

BWC 11/3/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V176 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV621 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			EB 10/2/87
(8.1.2) Anchorage Head	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	EB 10/2/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/2/87

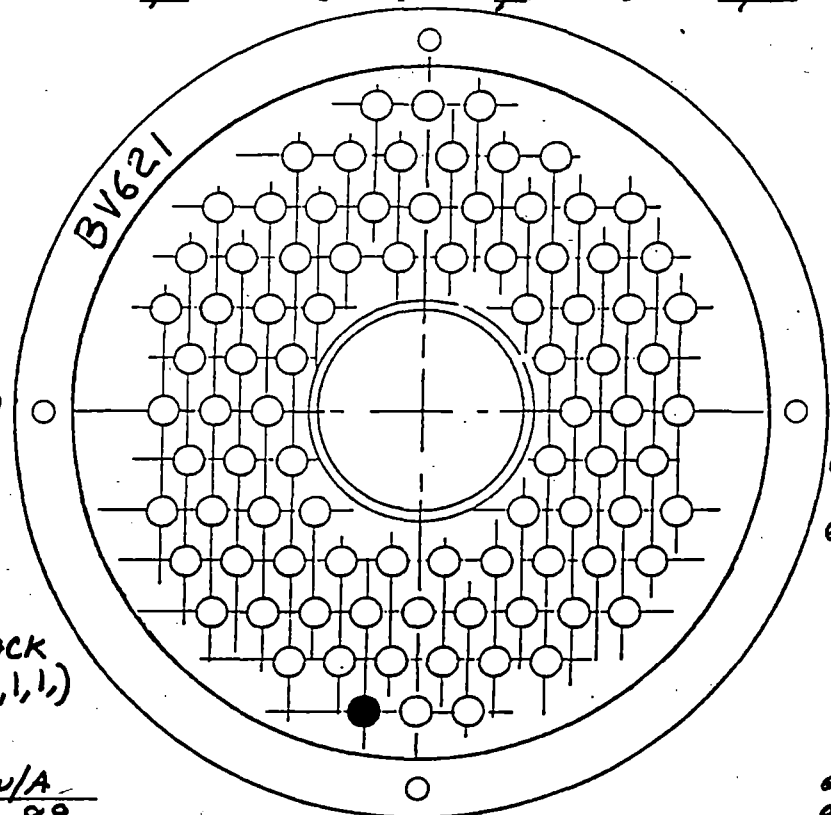
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/2/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◐ = Protruding
- ▣ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/2/87

EB 10/2/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK 2.5" (½, 1, 1)

(8.3.7.2) Buttonheads Found N/A EB 10/2/87

(8.3.7.3) Total Effective BH 89 EB 10/2/87

(8.4.1) Protruding BH 0 Missing BH 1 Total BH 1 EB 10/2/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked YES EB 10/2/87

Bushing Thread Joint Line EB 10/2/87

(8.0) Reporting: Accept Unacceptable Engineer Notified NCR NO. N/A EB 10/2/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87.

Title MGR., Q.A.

Rul 11/3/87

KWL 11/3/87

PSC PROCEDURE SQ 8.0
ANCHORAGE INSPECTION
DATA SHEET 8.0
MAY 20, 1987
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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V202 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV15 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A			EB 10/5/87
(8.1.2) Anchorage Head	Level #2/#3 AS NOTED	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	EB 10/5/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/5/87

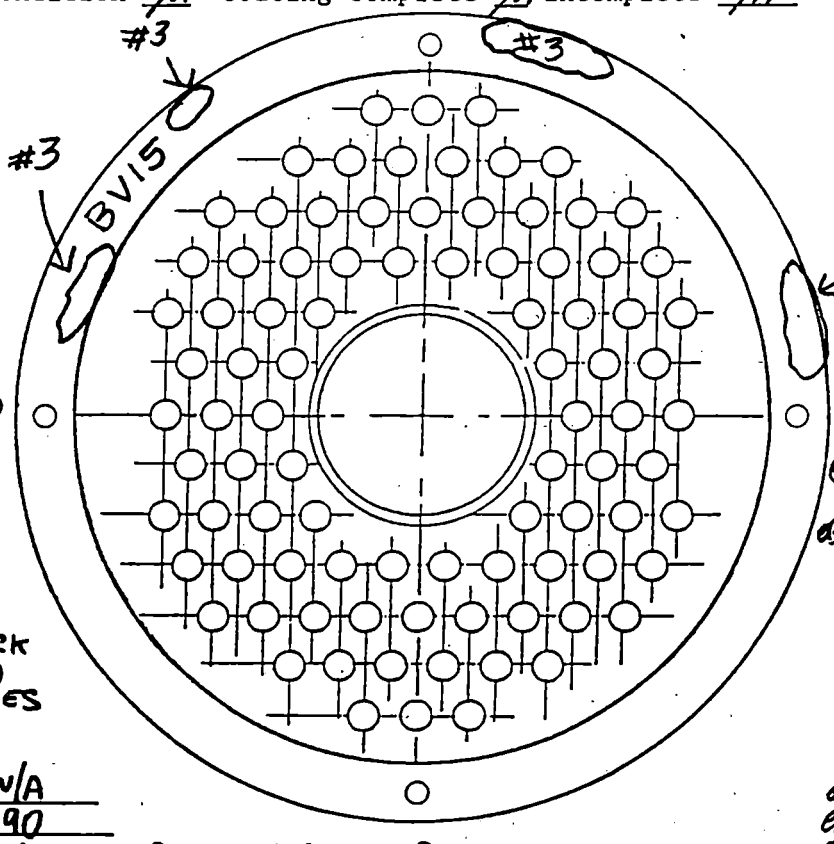
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/5/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing
- ◒ = Protruding
- ▨ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/5/87

EB 10/5/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK .5" (1/2) BOTH SIDES

(8.3.7.2) Buttonheads Found N/A EB 10/5/87

(8.3.7.3) Total Effective BH 90 EB 10/5/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/5/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/5/87

Bushing Thread Joint Line EB 10/5/87

(9.0) Reporting: Accept [Unacceptable] Engineer Notified NCR NO. F7N314-002 EB 10/5/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rel 11/3/87

GNC 11/3/87

PSC PROCEDURE SQ 8.0
ANCHORAGE INSPECTION
DATA SHEET 8.0
MAY 20, 1987
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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V306 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. CP8 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition B			EB 10/6/87
(8.1.2) Anchorage Head	Level 2	(8.2) Cracks	NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks	N/A	
(8.1.2) Shims	Level 1	(8.2) Cracks	NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks	NONE	EB 10/6/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/6/87

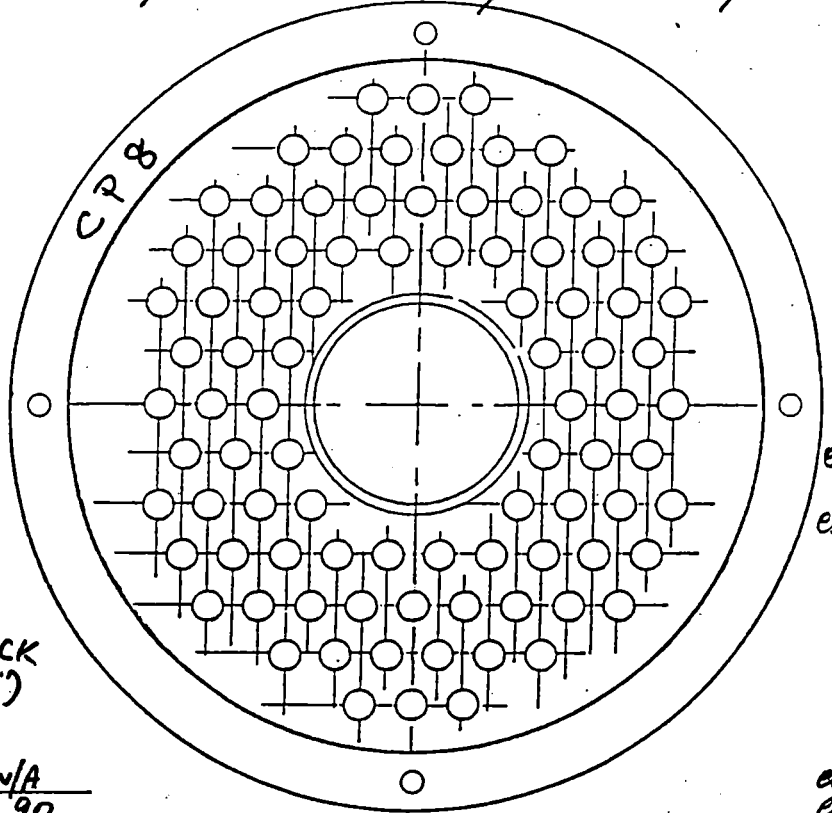
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/6/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

☒ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
◐ = Protruding
☐ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/6/87

EB 10/6/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK 2.0" (1",1")

(8.3.7.2) Buttonheads Found N/A EB 10/6/87

(8.3.7.3) Total Effective BH 90 EB 10/6/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/6/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/6/87

Bushing Thread Joint Line EB 10/6/87

(8.0) Reporting: [Accept] Unacceptable Engineer Notified NCR NO. N/A EB 10/6/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rel 11/3/87

KNC 11/3/87

E101

PAGE 1 of 2
@ 10/29/87

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

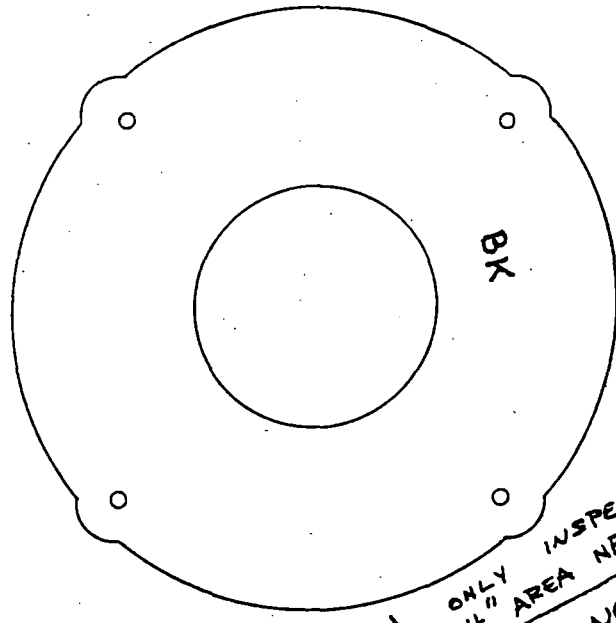
BEARING PLATE I.D. NO. BK

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND IN INSPECTED AREAS

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



Q.C. Signoff [signature] Date 9/22/87

Title MGR, Q.C. / PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rel 11/3/87

WC 11/3/87

E102

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CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

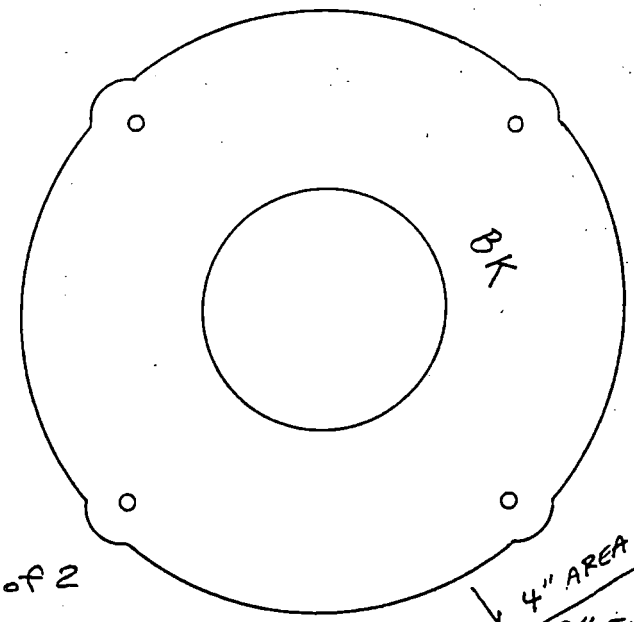
TENDON NO. V14 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

BEARING PLATE I.D. NO. BK

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



PREVIOUSLY INSPECTED AREAS SEE PAGE 1 of 2

4" AREA NEXT TO BEARING PLATE

8" FURTHER AREA INSPECTED NO CRACKS FOUND

BEARING PLATE

Q.C. Signoff [signature] Date 10/20/87

Title MGR, Q.C. / PSC

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/3/87

WJC 11/3/87

E103

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

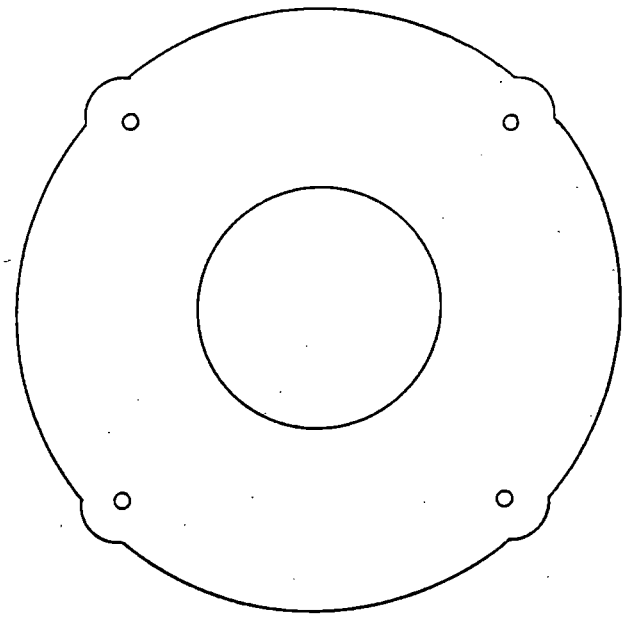
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 9/28/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul. 11/3/87

KNC 11/3/87

E104

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

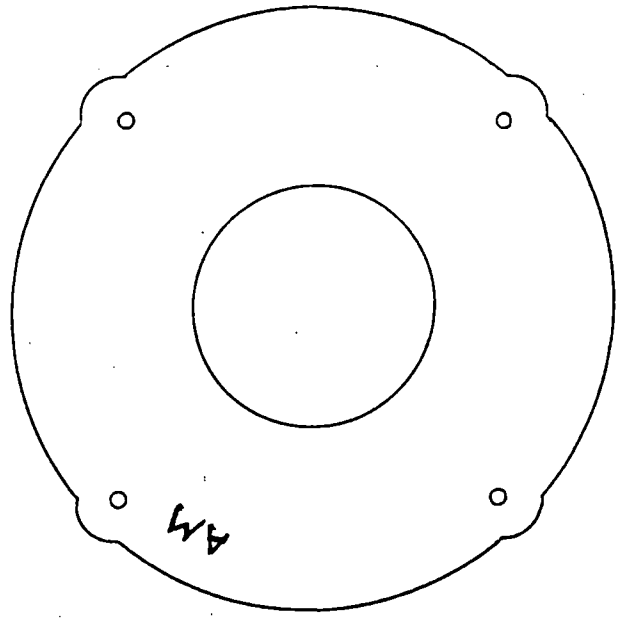
BEARING PLATE I.D. NO. AM

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/15/87

Title MGR, Q.C./PSC

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rul 11/3/87

WNC 11/3/87

E105

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

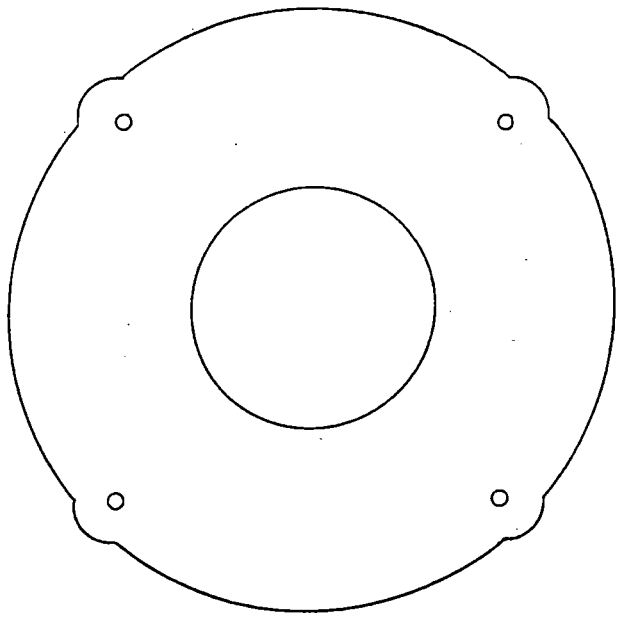
BEARING PLATE I.D. NO. NONE FOUND

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NO CRACK FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff W.T. Hendrickson Date 10-15-87

Title MGR., Q.A./PSC

Q.C. Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

RWL 11/3/87

WC 11/3/87

E106

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

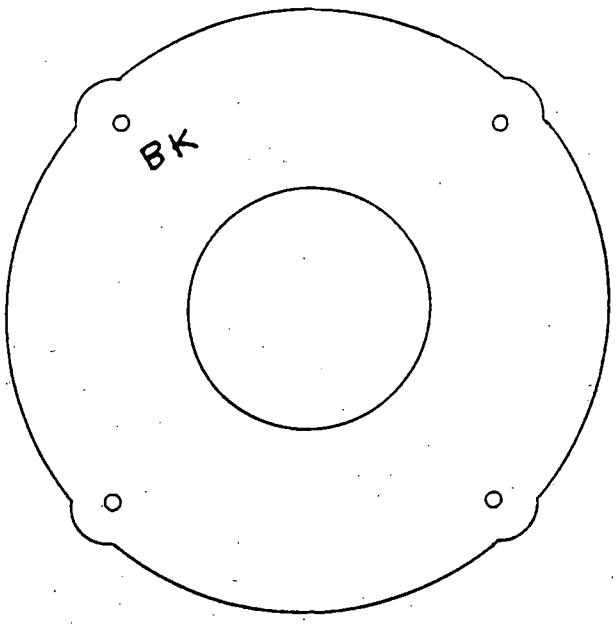
BEARING PLATE I.D. NO. BK

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/1/87

Title MGR, Q.C./PSC

Q.C. Review H.F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

GWC 11/3/87

E107

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

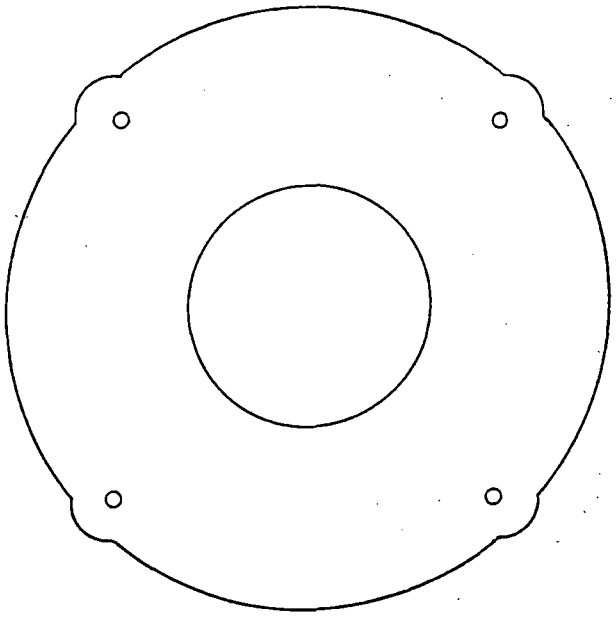
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 9/28/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

fhl 10 11/3/87 mf

BNC 11/3/87

E108

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

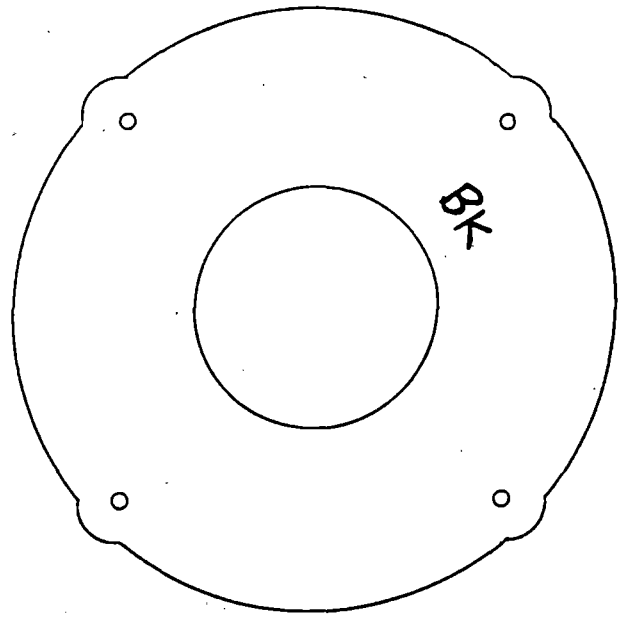
BEARING PLATE I.D. NO. BK

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/5/87

Title MGR, Q.C./PSC

Q.C. Review H.F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

fwl 11/3/87

WJC 11/3/87

E109

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

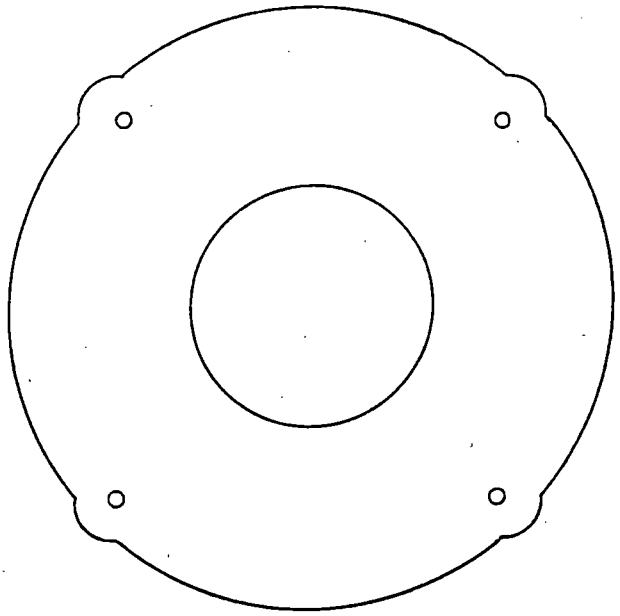
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 9/28/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

RWL 11/3/87

E110

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-09 TENDON END/BUTTRESS NO. SHOP/B NEAR BUTT UNIT 1

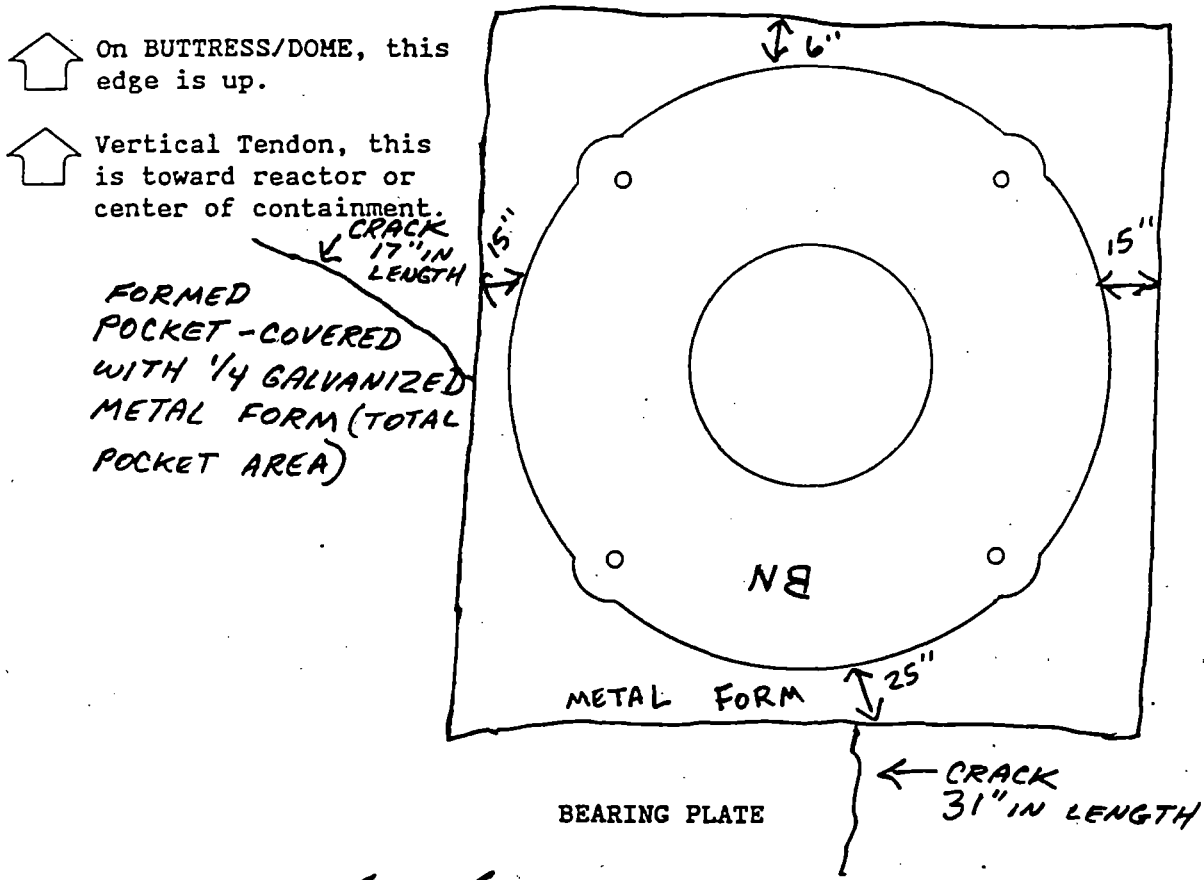
BEARING PLATE I.D. NO. BN

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

BOTH CRACKS LESS THAN .010" IN WIDTH AT WIDEST POINT

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



Q.C. Signoff [signature] Date 9/25/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

WJC 11/3/87

E111

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. FIELD/C NEAR BUTT UNIT 1

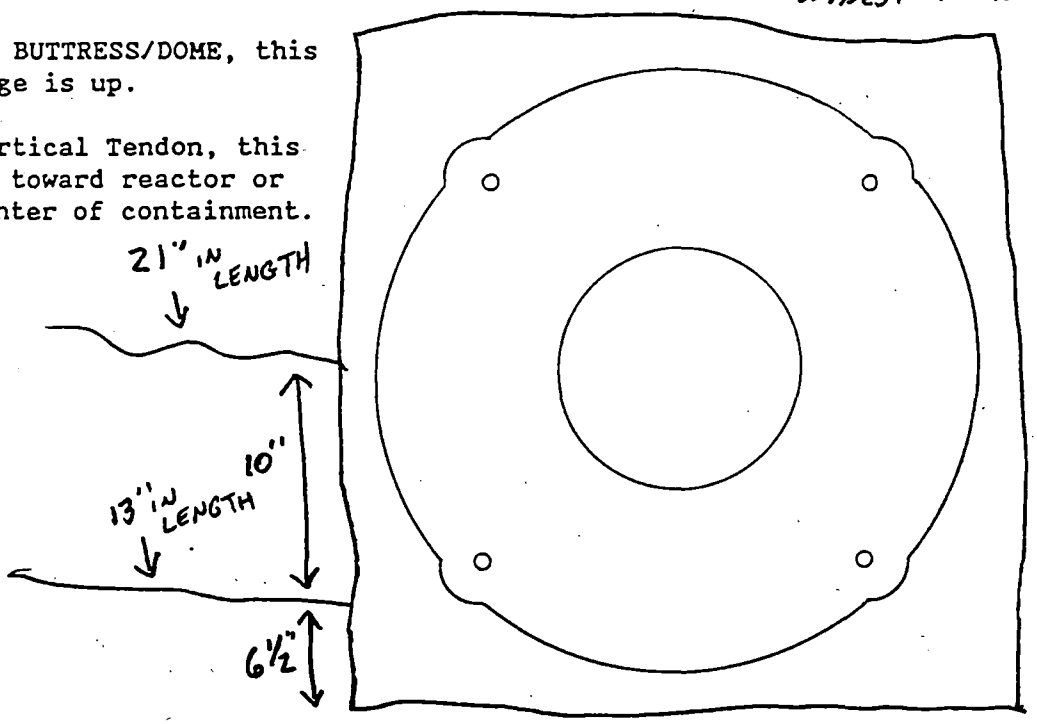
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

BOTH CRACKS LESS .010" IN WIDTH AT WIDEST POINT

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff _____ Date 10/9/87

Title MGR, Q.C. / PSC

Q.C. Review W. B. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

RK 11/3/87

E112

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

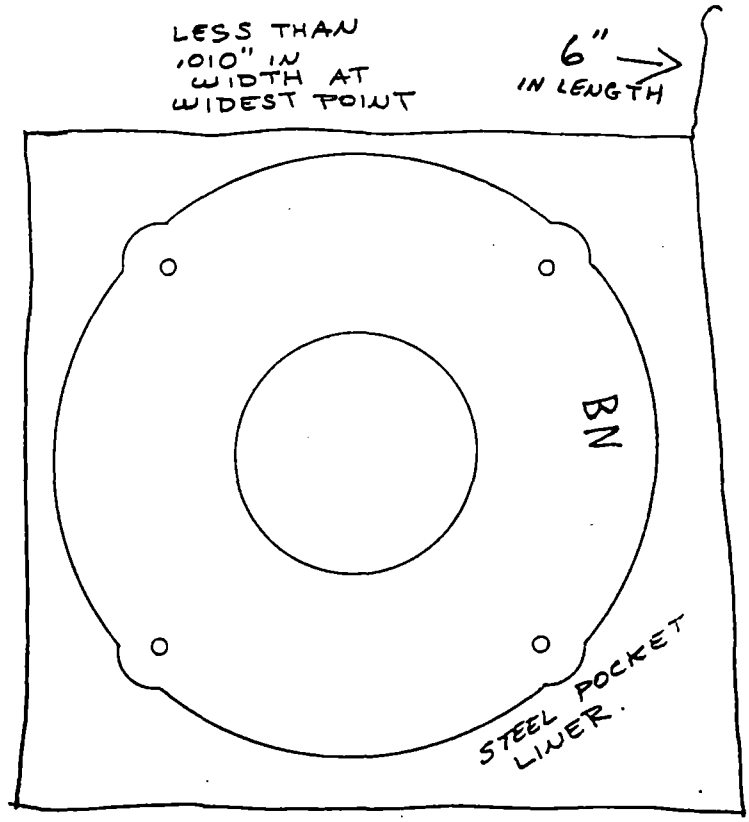
TENDON NO. D1-38 TENDON END/BUTTRESS NO. SHOP / NEAR A BUTT UNIT 1

BEARING PLATE I.D. NO. BN

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff Mbrooks Date 9/29/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

KWC 11/3/87

E113

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

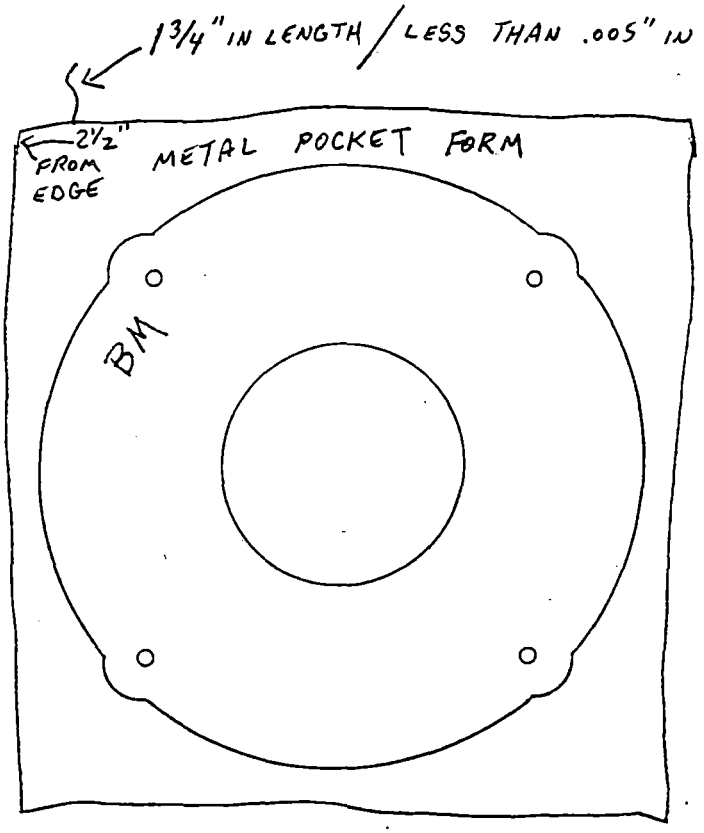
TENDON NO. D1-38 TENDON END/BUTTRESS NO. FIELD / D NEAR BUTT UNIT 1

BEARING PLATE I.D. NO. BM

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/9/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

VNC 11/3/87

E 114

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CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. SHOP/F NEAR BUTT UNIT 1

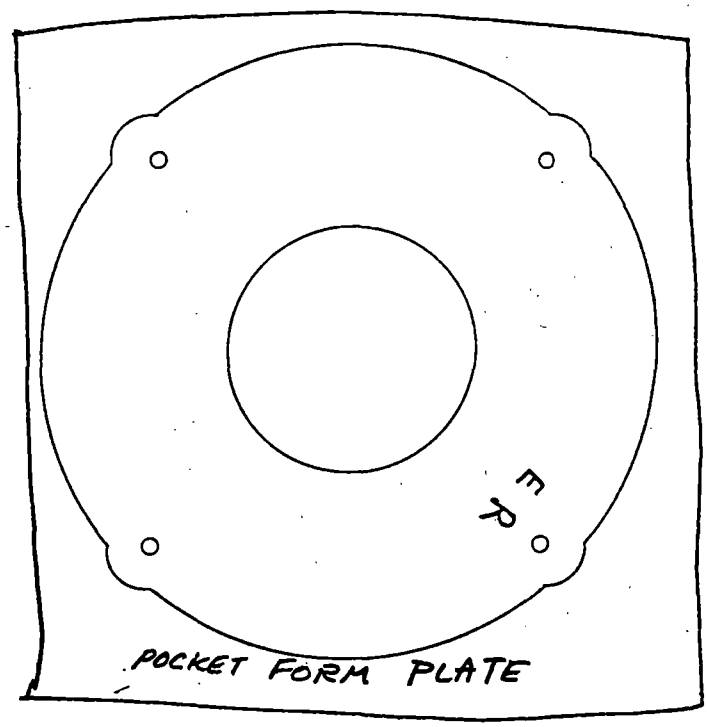
BEARING PLATE I.D. NO. ER

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.

NONE FOUND



BEARING PLATE

Q.C. Signoff [signature] Date 10/17/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rel 11/3/87

KWC 11/3/87

E 115

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

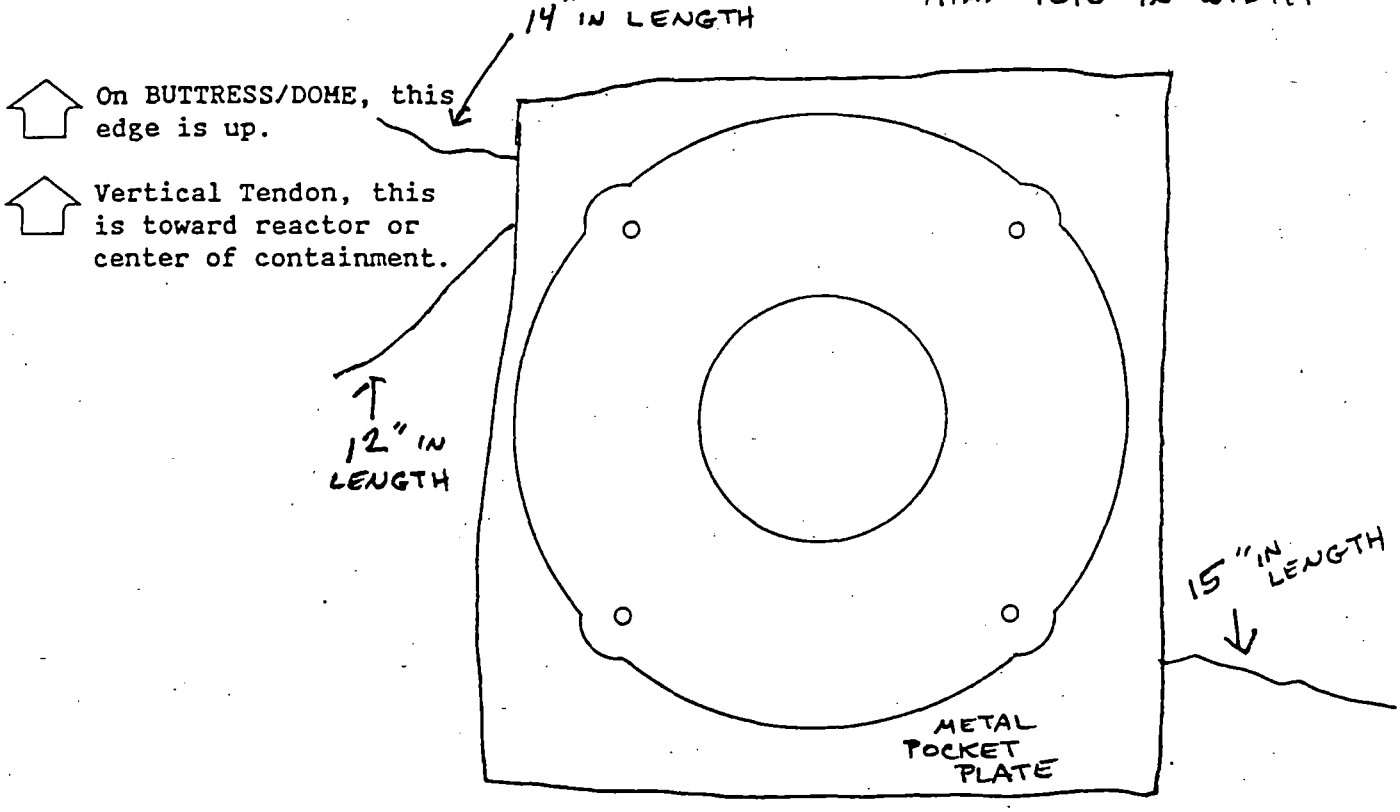
PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. FIELD/NEAR A BUTT UNIT 1

BEARING PLATE I.D. NO. UNKNOWN-COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

ALL CRACKS LESS THAN .010" IN WIDTH



BEARING PLATE

Q.C. Signoff [signature] Date 9/30/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

fwd 11/3/87

KWC 11/3/87

E116

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP / NEAR F BUTT UNIT 1

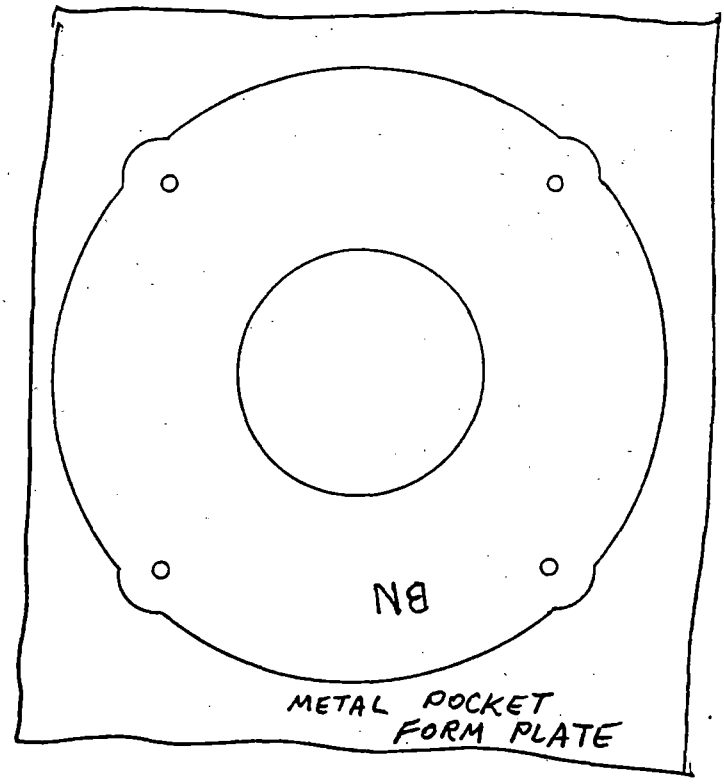
BEARING PLATE I.D. NO. BN

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/20/87

Title MGR, Q.C/PSC

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

E117

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. FIELD / NEAR C BUTT UNIT 1

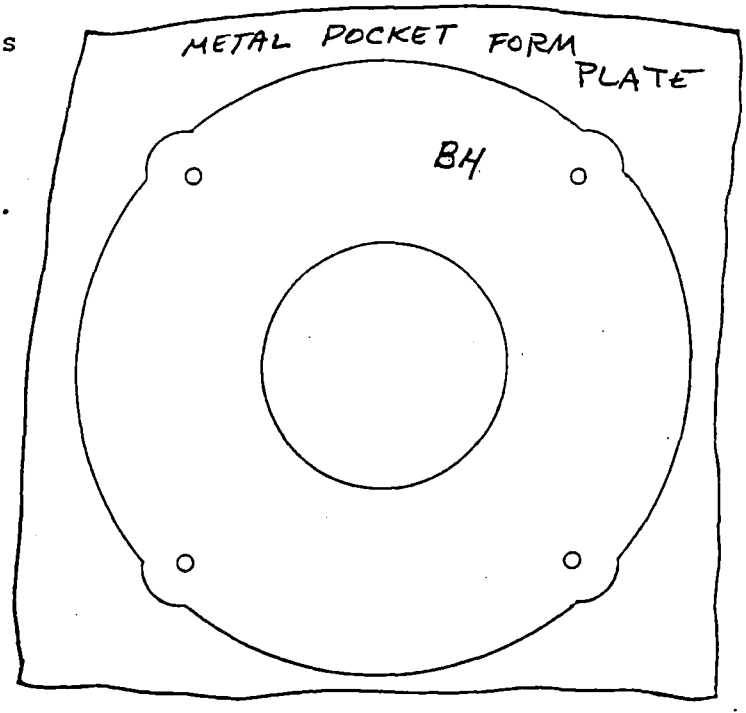
BEARING PLATE I.D. NO. BH

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/23/87

Title MGR, Q.C./PSC

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rul 11/3/87

WNC 11/3/87

E118

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. SHOP/A BUTT UNIT 1

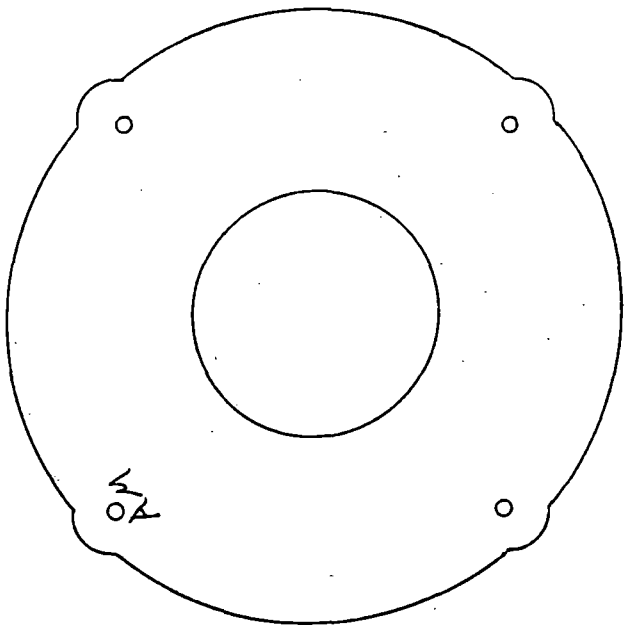
BEARING PLATE I.D. NO. AM

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff _____ Date 10/12/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rel 11/3/87

KWC 11/3/87

E119

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. FIELD/C BUTT UNIT 1

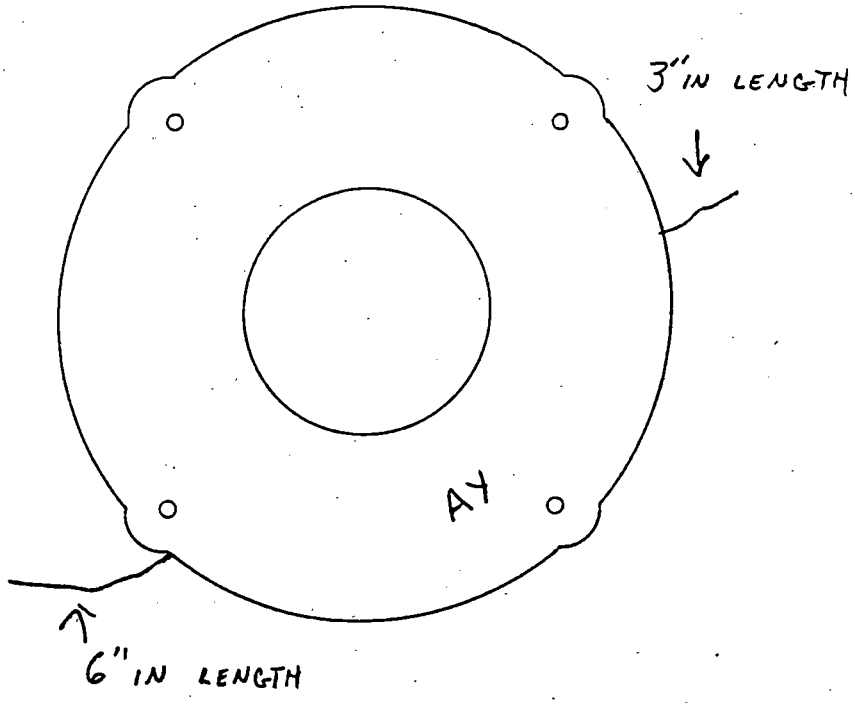
BEARING PLATE I.D. NO. AY

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

BOTH CRACKS
HAIRLINES
BOTH LESS THAN .005" IN WIDTH

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/20/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rul 11/3/87

WK 11/3/87

E120

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. SHOP / A BUTT UNIT 1

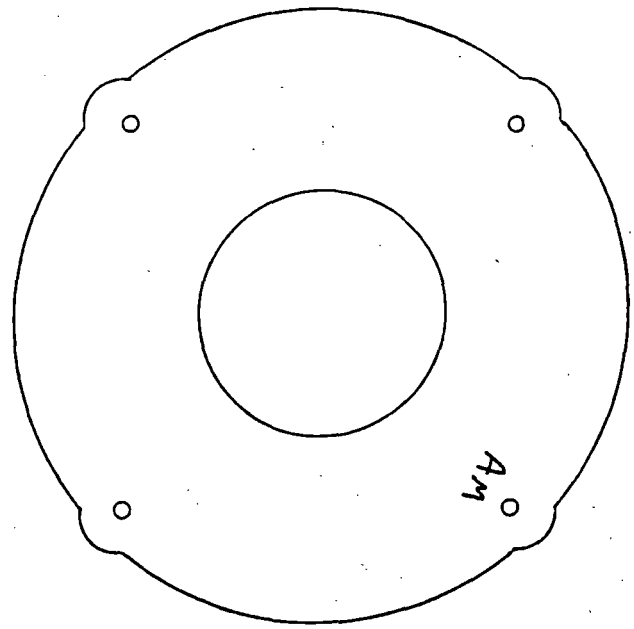
BEARING PLATE I.D. NO. AM

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/8/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RJL 11/3/87

WC 11/3/87

PSC PROCEDURE SQ 8.3
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CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. FIELD/C BUTT UNIT 1

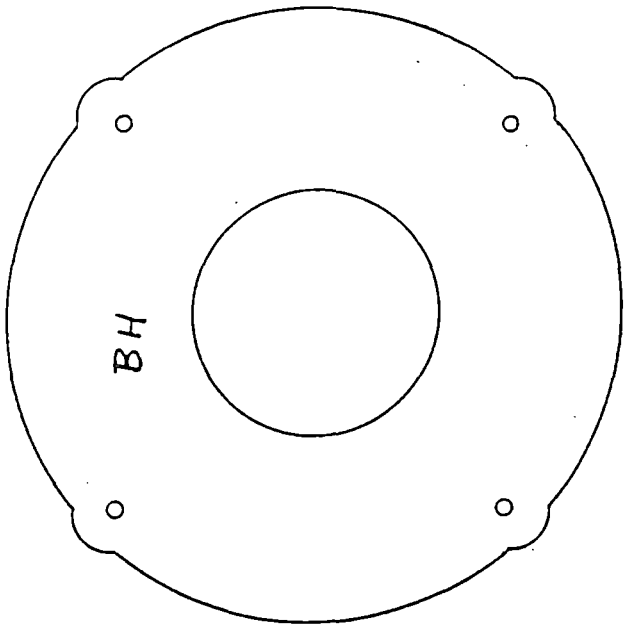
BEARING PLATE I.D. NO. BH

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/22/87

Title MGR, Q.C. /PSC

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rul 11/3/87

KNC 11/3/87

E122

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

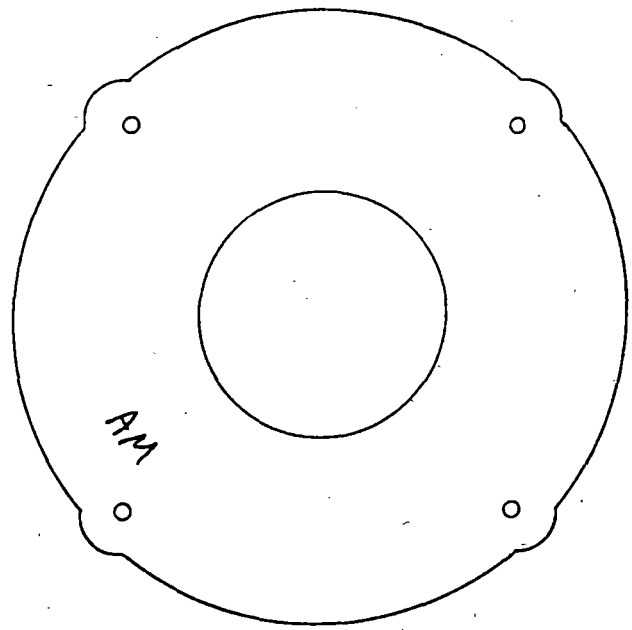
BEARING PLATE I.D. NO. AM

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/14/87

Title MGR, Q.C./PSC

Q.C. Review H. B. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/3/87

KNC 11/3/87

E123

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. FIELD / DBUTT UNIT 1

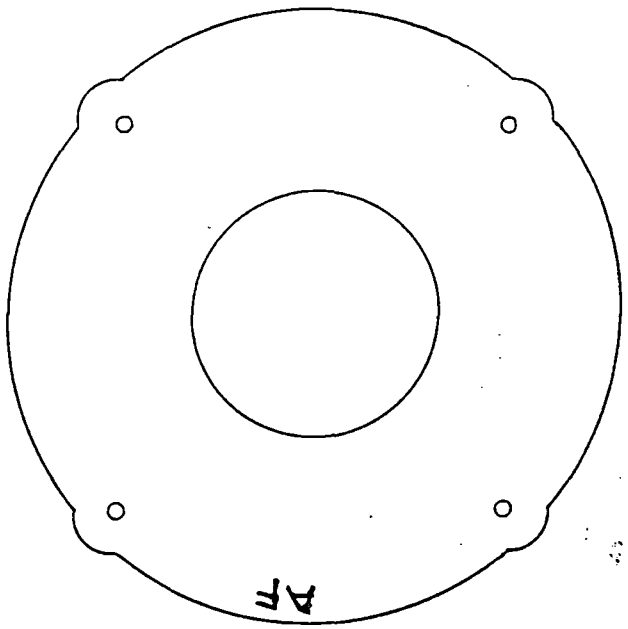
BEARING PLATE I.D. NO. AF

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/13/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Paul 11/3/87

KNC 11/3/87

E124

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

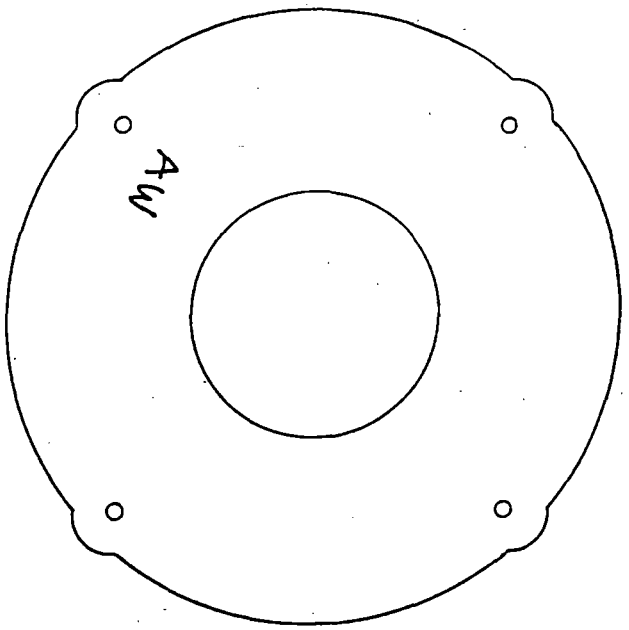
BEARING PLATE I.D. NO. AW

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/28/87

Title MGR, Q.C./PSC

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rul 11/3/87

WC 11/3/87

E125

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

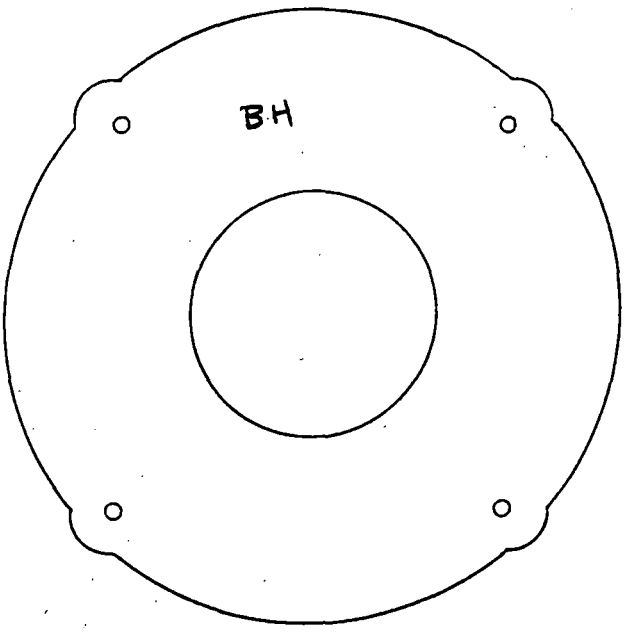
TENDON NO. 65BF TENDON END/BUTTRESS NO. FIELD/B BUTT UNIT 1

BEARING PLATE I.D. NO. BH

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/27/87

Title MGR, Q.C./PSC

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rel 11/12/87

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CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

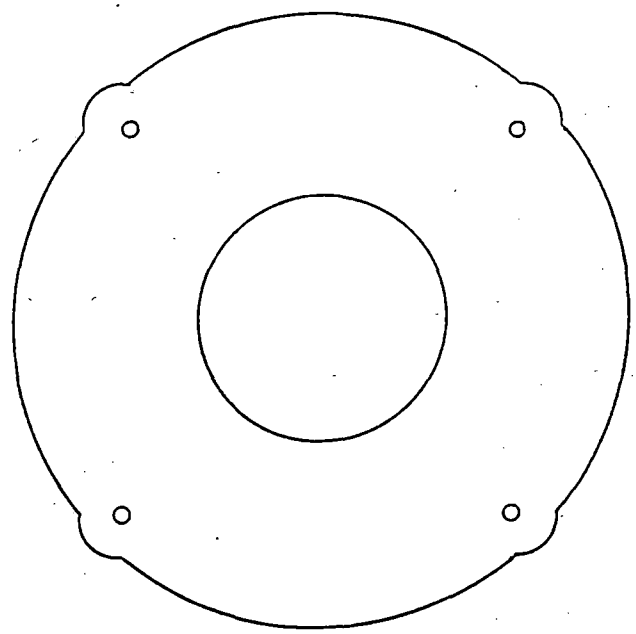
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/28/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

11/3/87

WC 11/3/87

E127

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. FIELD/B BUTT UNIT 1

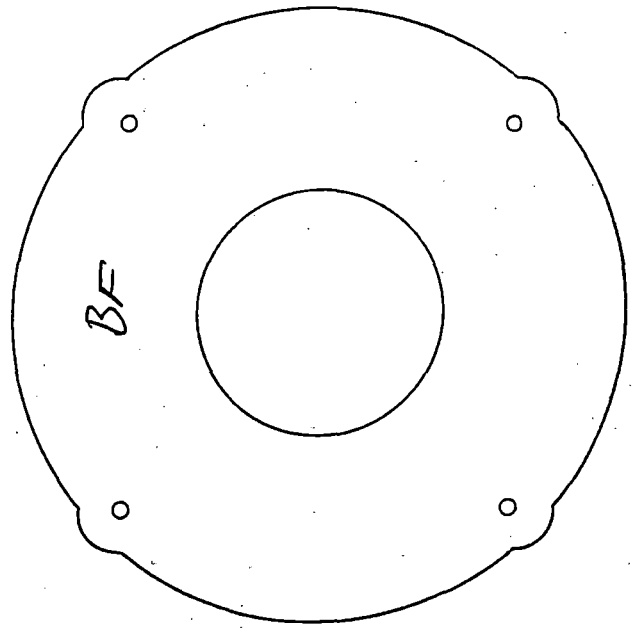
BEARING PLATE I.D. NO. BF

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NO CONCRETE CRACKS FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff H.F. Hendrickson Date 10-28-87

Title MGR., Q.A

Q.C. Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

11/3/87

WC 11/3/87

E128

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V36 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

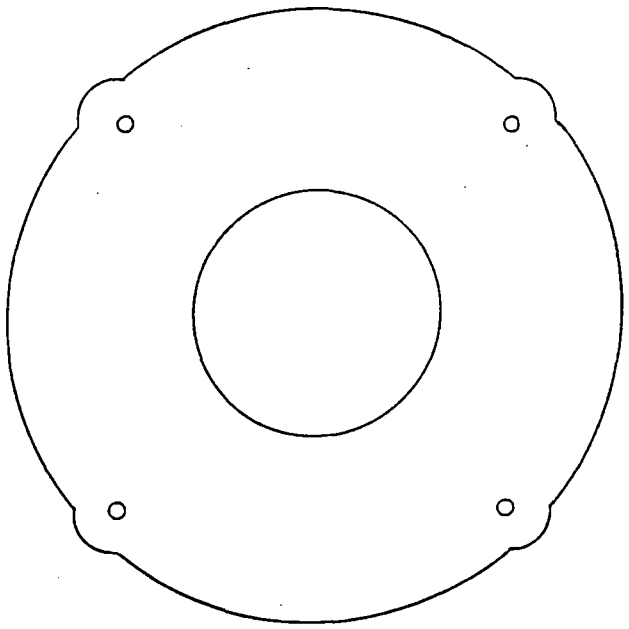
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff _____ Date 10/6/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

E129

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V62 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

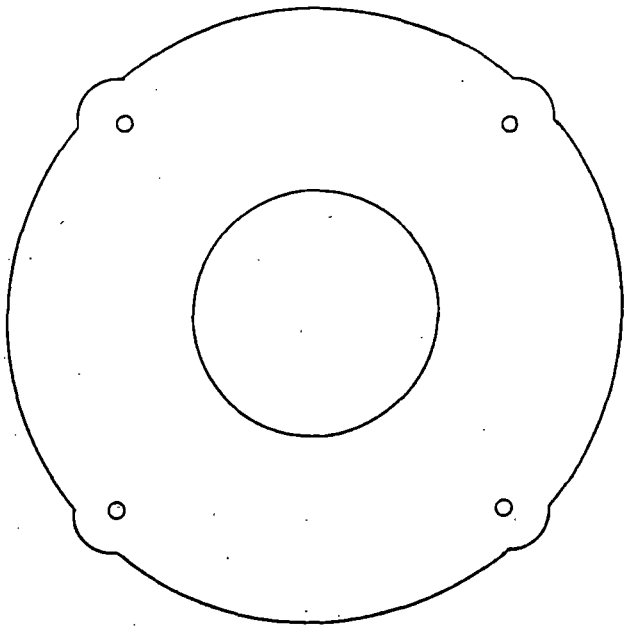
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/6/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

KWC 11/3/87

E130

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V 86 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

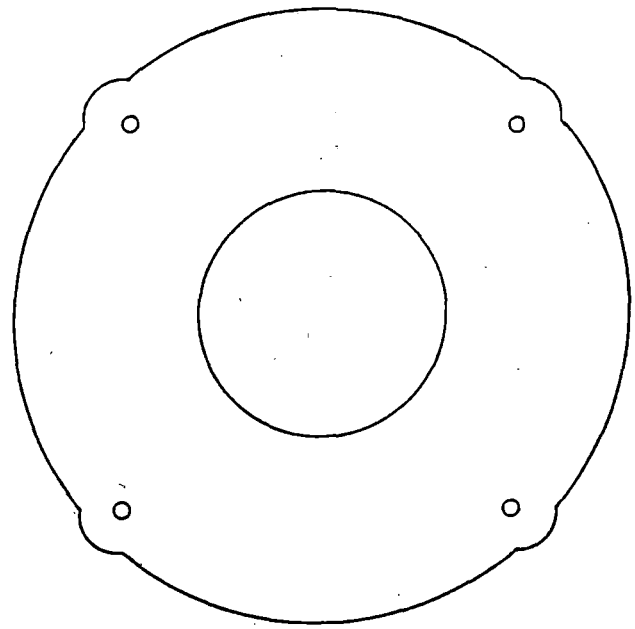
BEARING PLATE I.D. NO. NONE FOUND

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NO CRACKS FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff H. B. Hendrickson Date 10-15-87

Title MGR., Q.A./PSC

Q.C. Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

Rul 11/3/87

KWC 11/3/87

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CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V176 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

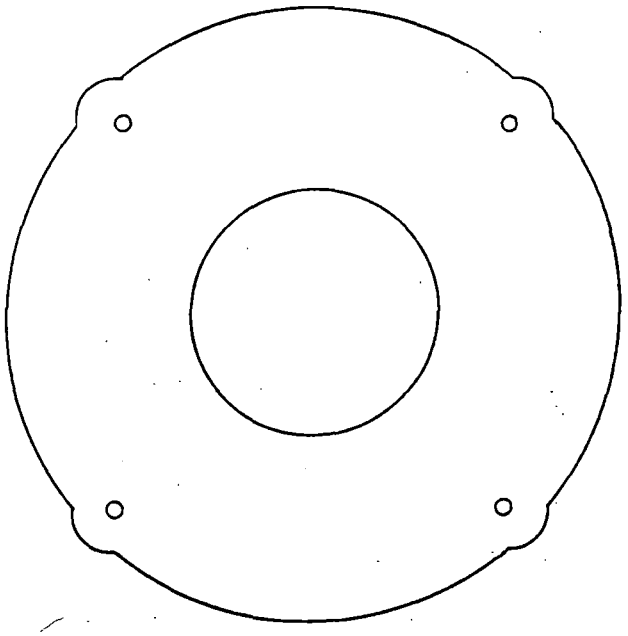
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/2/87

Title MGR, Q.C./PSC

Q.C. Review W. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

KWC 11/3/87

E132

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V202 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

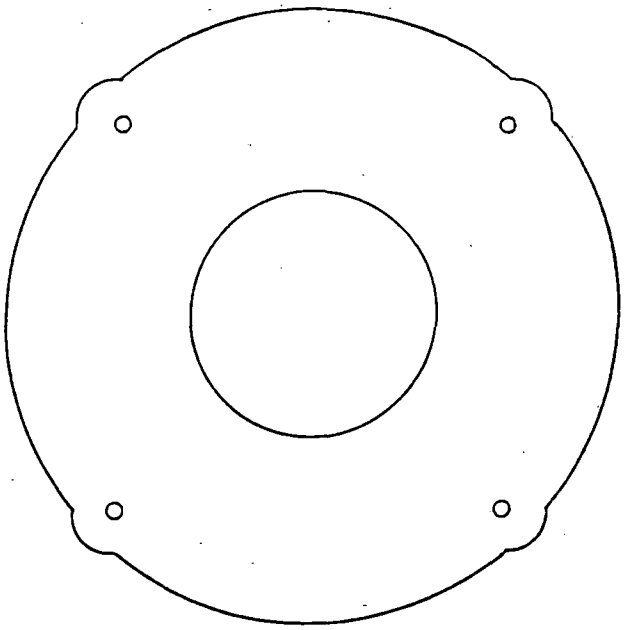
BEARING PLATE I.D. NO. UNKNOWN-COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/5/87

Title MGR, Q.C./PSC

Q.C. Review H. F. Hendrickson Level III Date 10-18-87

Title MGR., Q.A.

Rel 11/3/87

KWC 11/3/87

E133

CONCRETE INSPECTION - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V306 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

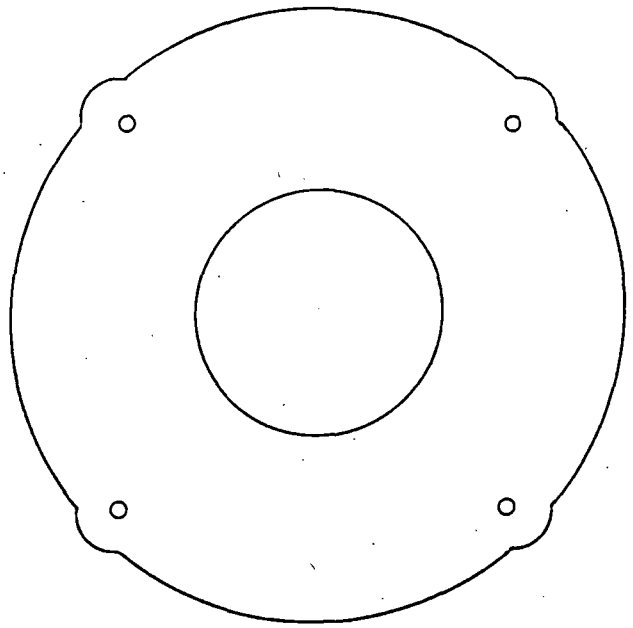
BEARING PLATE I.D. NO. UNKNOWN - COULD NOT LOCATE

The bearing plate shall be oriented as shown below. Place the location of the bearing plate identification on the sketch below. Sketch all visible cracks.

NONE FOUND

On BUTTRESS/DOME, this edge is up.

Vertical Tendon, this is toward reactor or center of containment.



BEARING PLATE

Q.C. Signoff [signature] Date 10/6/87

Title MGR, Q.C./PSC

Q.C. Review H.F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rec 11/3/87

WC 11/3/87

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⚠1 Revision 1, 8-14-87

LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 60 F. Therm. No. SM-2 Recal Date 9/8/88 CB 9/22/87
Ambient Temp. 58 F. Therm. No. PK42 Recal Date 9/8/88 CB 9/22/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 CB 9/22/87
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= -1.478 CB 9/22/87
Gauge ID FORNEY #1 Recal Date DAILY ON Daily Check OK CB 9/22/87

(9.6) Shim Stack Height #1 15.3 #2 15.3 Ruler ID R21 Recal Date 8/20/88 CB 9/22/87
Individual Shims: Stack #1 4½, 4½, 4½, 1, ½, ¼ Stack #2 4½, 4½, 4½, 1, ½, ¼ CB 9/22/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5670 psi CB 9/22/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3840 psi (95PF) 605 kips 4050 psi (PF) 636 kips 4260 psi CB 9/22/87

(9.8.5.3) ACTUAL LIFTOFF:

				(9.8.5.4) Circled	
Stack #1 - 1	4460	Stack #2 - 1	(4560)	Actual 1	4560
2	4400	2	(4560)	2	4560
3	4480	3	(4560)	3	4560
		Actual Average			4560

CB 9/22/87
FORCE (opposite end) N/A kips FORCE (this end) 681 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 681 kips CB 9/22/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4050 to 4260 psi FORCE 605 to 636 kips CB 9/22/87
(9.8.6) Acceptable ☒ YES ☐ NO NOTE: CONDITIONALLY ACCEPTABLE
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☒ YES ☐ NO Notify Owner YES - VERBALLY CB 9/22/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 9/22/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 9/22/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

				(9.8.8.5) Circled	
Stack #1 - 1	N/A	Stack #2 - 1	N/A	Actual 1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A
		Actual Average			N/A

CB 9/22/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 9/22/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 9/22/87

Q.C. Review W. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

⚠1 8-14-87 ADD INFO

fwl 11/3/87
WC 11/3/87

PSC PROCEDURE SQ 9.0
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 68 F. Therm. No. SM-2 Recal Date 9/8/88 CB 10/15/87
Ambient Temp. 64 F. Therm. No. PK42 Recal Date 9/8/88 CB 10/15/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 CB 10/15/87
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3.260 CB 10/15/87
Gauge ID FORNEY #2 Recal Date DAILY UPON USE Daily Check OK CB 10/15/87

(9.6) Shim Stack Height #1 14.0 #2 14.0 Ruler ID R21 Recal Date 8/20/88 CB 10/15/87
Individual Shims: Stack #1 4½, 4½, 4½, ½ Stack #2 4½, 4½, 4½, ½ CB 10/15/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5690 psi CB 10/15/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3840 psi (95PF) 605 kips 4050 psi (PF) 636 kips 4260 psi CB 10/15/87 CB 10/15/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2		(9.8.5.4) Circled Actual	
1	4190	1	(4420)	1	4420
2	4120	2	(4410)	2	4410
3	4200	3	(4420)	3	4420
		Actual Average			4416

CB 10/15/87
FORCE (opposite end) N/A kips FORCE (this end) 657 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 657 kips CB 10/15/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4050 to 4260 psi FORCE 605 to 636 kips CB 10/15/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A CB 10/15/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☒ YES ☐ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A PER SCHEDULE
Notify Owner N/A Tendon #2 N/A CB 10/15/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/15/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2		(9.8.8.5) Circled Actual	
1	N/A	1	N/A	1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A
		Actual Average			N/A

CB 10/15/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/15/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/15/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. RWL 11/13/87

⚠1 8-14-87 ADD INFO

LWC 11/3/87

E136

PSC PROCEDURE SQ 10.2
TEST WIRE REMOVAL
DATA SHEET 10.2
MAY 20, 1987
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WIRE REMOVAL INSPECTION DOCUMENTATION

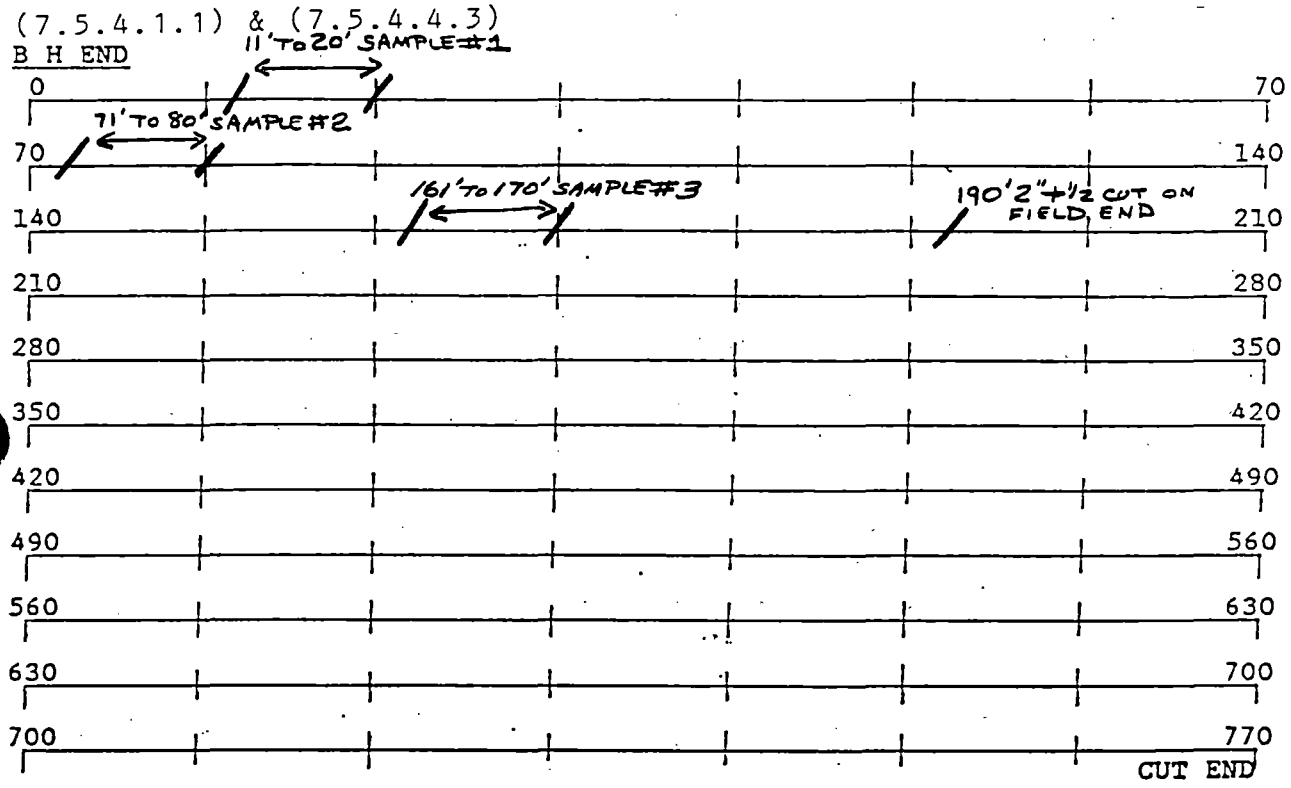
PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

DATE OF REMOVAL 10/16/87 DATE OF INSPECTION 10/16/87

INSPECTED BY [signature] (7.5.4.3.1) LENGTH OF WIRE 190'2½"

(7.5.4.1.1) & (7.5.4.4.3)



Remember to add the 1 inch for the marked line to the length of the wire.
If the samples are removed, mark the location of removal here and on DS 10.3.

(7.8)
Measuring Device RULER I.D. R21 Recal Date 8/20/88
Wire Pulling Ram I.D. N/A Recal Date N/A

CORROSION CONDITION (Refer SQ 8.1)

A = EXCELLENT
B = GOOD
C = FAIR
D = USABLE
E = REJECTED (Pitted)

Document the Corrosion Condition for each 10 foot segment.

TOTAL LENGTH OF WIRE CORROSION CONDITION "B"

(7.5.1) & (7.7)
Post the location of wire removal to DS 8.0 YES

RWL 11/3/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

WC 11/3/87

PSC PROCEDURE SQ 10.5 E137
CONTINUITY TEST
DATA SHEET 10.5
MAY 20, 1987

Revision 0

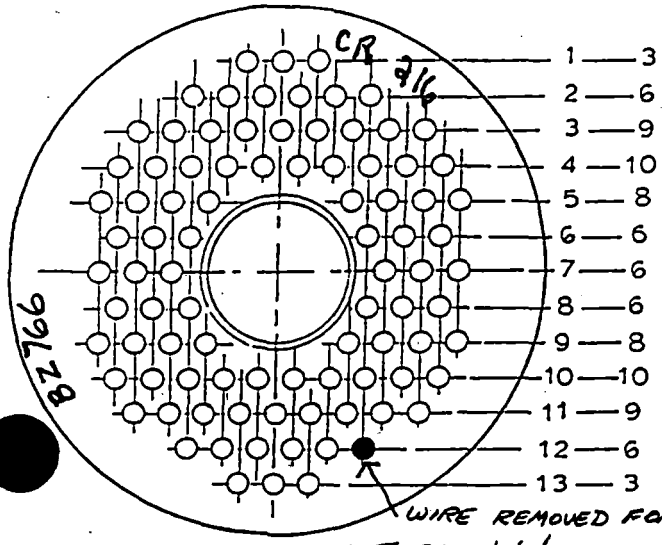
CONTINUITY TEST - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

Row/ Wire No.	Continuous	Force if Over 9425	Broken	Posted to DS 8.0	Corrosion Condition	COMMENTS	Q.C. Signoff
1 - 3	YES	N/A*	NO	N/A	N/A	NONE	10/16/87
2 - 6	YES	N/A	NO	N/A	N/A	NONE	10/16/87
3 - 9	YES	N/A	NO	N/A	N/A	NONE	10/16/87
4 - 10	YES	N/A	NO	N/A	N/A	NONE	10/16/87
5 - 8	YES	N/A	NO	N/A	N/A	NONE	10/16/87
6 - 6	YES	N/A	NO	N/A	N/A	NONE	10/16/87
7 - 6	YES	N/A	NO	N/A	N/A	NONE	10/16/87
8 - 6	YES	N/A	NO	N/A	N/A	NONE	10/16/87
9 - 8	YES	N/A	NO	N/A	N/A	NONE	10/16/87
10 - 10	YES	N/A	NO	N/A	N/A	NONE	10/16/87
11 - 9	YES	N/A	NO	N/A	N/A	NONE	10/16/87
12 - 6	YES 1-REMOVED FOR TESTING	N/A	NO	YES-1 REMOVED WIRE	N/A	NONE	10/16/87
13 - 3	YES	N/A	NO	N/A	N/A	NONE	10/16/87

* USED 1½ TON COME-ALONG TO PULL WIRES



Note that this form can be used to verify up to 17 individual wires in columnar fashion; if more than 17 are to be verified or if the entire tendon is to be verified, then a row by row inspection shall be performed.

Orient the anchorage sketch with the Heat Code Identification and note the wire number as it appears in each row starting at the left side in each row.

The Comments Area shall be used to identify particular wires or provide inspection remarks.

Q.C. Review H. T. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

11/3/87

11/3/87

PSC PROCEDURE SQ 11.0 E138
RETENSION TENDONS
DATA SHEET 11.0
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

RETENSIONING TENDONS - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

QC Signoff

(9.2) Concrete Temp. 62 F Therm. No. SM-2 Recal Date 9/8/88 EB 10/16/87
Ambient Temp. 64 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/16/87

(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 89 EB 10/16/87

(9.5.3) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K = 3.260
Gauge ID FORNEY #2 Recal Date DAILY ON USE Daily Check OK
EB 10/16/87

CALCULATED FORCE FOR ELONGATION MEASUREMENT AND RETENSIONING

Overstress shall not exceed 848 kips for a 90 Wire Tendon.

(9.6.6.) PTF = 148 kips Pressure 1010 psi (9.7.1)
Step 1 = 350 kips Pressure 2360 psi Elongation 3.33 in.
Step 2 = 600 kips Pressure 4030 psi Elongation 7.45 in.
LOF = 657 kips Pressure 4410 psi
OSF = 838 kips Pressure 5620 psi Elongation 11.375 in. EB 10/16/87

ACTUAL OBSERVED FORCE AND ELONGATION MEASUREMENTS

⚠1 (9.9.2.1) PTF = 148 kips Pressure 1010 psi Elongation 5.1 in.
(9.9.3.1) Step 1 = 350 kips Pressure 2360 psi Elongation 8.5 in.
(9.9.4.1) Step 2 = 600 kips Pressure 4030 psi Elongation 12.6 in.
(9.9.5.2) LOF = 657 kips Pressure 4410 psi Elongation 13.5 in.
OSF = 838 kips Pressure 5620 psi Elongation 16.8 in.
TOTAL ELONGATION (9.9.5.2) minus (9.9.2.1) = 11.7 in. EB 10/16/87
(9.9.6.2) Elongation Variation 2.8 % Ruler ID R21 Recal Date 8/20/88 EB 10/16/87
⚠1 (9.9.6.4) ELONGATION: Accept: ☒ YES ☐ NO Notify Owner: N/A EB 10/16/87

(9.10.5.1) ACTUAL LIFT OFF VALUES:

Stack #1		Stack #2		(9.10.5.2) CIRCLED	
1	4520	1	(4540)	Actual 1	4540 psi
2	4500	2	(4540)	2	4540 psi
3	4520	3	(4540)	3	4540 psi

(9.10.6) Required Liftoff Values 4410 PSI to 4670 kips Actual Average 4540 psi EB 10/16/87
657 to 696 KIPS

(9.10.6.2) FORCE: Opposite End N/A kips. This End 676 kips. TOTAL TENDON 676 kips EB 10/16/87
LIFTOFF: Acceptable ☒ YES ☐ NO Notify Owner: N/A NCR No. N/A EB 10/16/87

(9.10.9.1) Additional broken/missing wires NONE Amt. 0 Engr. Notified: N/A EB 10/16/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) NCR No. N/A EB 10/16/87
(9.10.9.2) Final Shim Stack Height #1 15.3 #2 15.3
(9.10.9.3) Protruding Unseated Wires (from DS 8.0) Seated 89 Unseated 0 EB 10/16/87
SHIMS EACH STACK 4½, 4½, 4½, (1), ½, (¼) - CIRCLED SHIMS ARE AISI 1045 MATERIAL.
(9.10.9.4) Additional Protruding/Unseated Wires NO EB 10/16/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) EB 10/16/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87 Rul 11/13/87

Title MGR., Q.A.

⚠1 8-14-87 ADD INFO.

KWC 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
DATA SHEET 9.0
MAY 20, 1987
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 40 F. Therm. No. SM-2 Recal Date 9/8/88 EB 10/1/87
Ambient Temp. 40 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/1/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 EB 10/1/87
(9.5.1) Ram ID 9184 Recal Date JOB END Ram Area 149.747 K= -5.762 EB 10/1/87
Gauge ID FORNEY #1 Recal Date DAILY UPON USE Daily Check OK EB 10/1/87

(9.6) Shim Stack Height #1 13.60 #2 13.60 Ruler ID R21 Recal Date 8/20/88 EB 10/1/87
Individual Shims: Stack #1 4½, 4½, 4½ Stack #2 4½, 4½, 4½ EB 10/1/87

1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5700 psi EB 10/1/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3865 psi (95PF) 605 kips 4080 psi (PF) 636 kips 4285 psi EB 10/1/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2		(9.8.5.4) Circled Actual	
1	4340	1	(4560)	1	4560
2	4400	2	(4560)	2	4560
3	4390	3	(4540)	3	4540

Actual Average 4553 EB 10/1/87

FORCE (opposite end) N/A kips FORCE (this end) 676 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 676 kips EB 10/1/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4080 to 4285 psi FORCE 605 to 636 kips EB 10/1/87
(9.8.6) Acceptable ☒ YES ☐ NO
1 (9.8.6.1) AALV Beyond 6% of (PF) ☒ YES ☐ NO Notify Owner YES EB 10/1/87
1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A EB 10/1/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A EB 10/1/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2		(9.8.8.5) Circled Actual	
1	N/A	1	N/A	1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A

Actual Average N/A EB 10/1/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips EB 10/1/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A EB 10/1/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87
Title MGR., Q.A.

Rel 11/3/87

1 8-14-87 ADD INFO

WNC 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
DATA SHEET 9.0
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 44 F. Therm. No. SM-2 Recal Date 9/8/88 CB 10/5/87
Ambient Temp. 44 F. Therm. No. PK42 Recal Date 9/8/88 CB 10/5/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 CB 10/5/87
(9.5.1) Ram ID 9184 Recal Date JOB END Ram Area 149.747 K= -5.762 CB 10/5/87
Gauge ID FARNEY #2 Recal Date DAILY UPON USE Daily Check OK CB 10/5/87

(9.6) Shim Stack Height #1 14.60 #2 14.60 Ruler ID R21 Recal Date 8/20/88 CB 10/5/87
Individual Shims: Stack #1 4½, 4½, 4½, ½, ¼, ⅛, ⅛ Stack #2 4½, 4½, 4½, ½, ¼, ⅛, ⅛ CB 10/5/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5700 psi CB 10/5/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3865 psi (95PF) 605 kips 4080 psi (PF) 636 kips 4285 psi CB 10/5/87 CB 10/5/87

(9.8.5.3) ACTUAL LIFTOFF:

	Stack #1	Stack #2
1	4470	(4600)
2	4480	(4580)
3	4380	(4590)
Actual Average		4590

(9.8.5.4) Circled

Actual 1	4600
2	4580
3	4590

CB 10/5/87

FORCE (opposite end) N/A kips FORCE (this end) 682 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 682 kips CB 10/5/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4080 to 4285 psi FORCE 605 to 636 kips CB 10/5/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☒ YES ☐ NO Notify Owner yes CB 10/5/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED No Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 10/5/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/5/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

	Stack #1	Stack #2
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A
Actual Average		N/A

(9.8.8.5) Circled

Actual 1	N/A
2	N/A
3	N/A

CB 10/5/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/5/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/5/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

Rul 11/3/87

⚠1 8-14-87 ADD INFO

KWC 11/3/87

PSC PROCEDURE SQ 9.0 E141
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. SHOP/NEAR B BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 60 F. Therm. No. SM-2 Recal Date 9/8/88 CB 9/25/87
Ambient Temp. 54 F. Therm. No. PK42 Recal Date 9/8/88 CB 9/25/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 CB 9/25/87
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3.260 CB 9/25/87
Gauge ID FORNEY #1 Recal Date DAILY ON USE Daily Check OK CB 9/25/87

(9.6) Shim Stack Height #1 4.0 #2 4.0 Ruler ID R21 Recal Date 8/20/88 CB 9/25/87
Individual Shims: Stack #1 1,3 Stack #2 1,3 CB 9/25/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5690 psi CB 9/25/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 554 kips 3720 psi (95PF) 585 kips 3930 psi (PF) 615 kips 4130 psi CB 9/25/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2		(9.8.5.4) Circled	
1	4180	1	(4180)	Actual 1	4180
2	4200	2	(4200)	2	4200
3	4190	3	(4190)	3	4190
		Actual Average			4190

CB 9/25/87

FORCE (opposite end) 639 kips FORCE (this end) 624 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 631 kips CB 10/9/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 3930 to 4130 psi FORCE 585 to 615 kips CB 9/25/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A CB 10/9/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 10/9/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/9/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2		(9.8.8.5) Circled	
1	N/A	1	N/A	Actual 1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A
		Actual Average			N/A

CB 10/9/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/9/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/9/87

Q.C. Review H.F. Hendrickson Level III Date 10-15-87
Title MGR., Q.A. RWL 11/3/87
⚠1 8-14-87 ADD INFO
WC 11/3/87

PSC PROCEDURE SQ 9.0
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. FIELD / NEAR ⊂ BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 50 F. Therm. No. SM-2 Recal Date 9/8/88 — 10/9/87
Ambient Temp. 46 F. Therm. No. PK42 Recal Date 9/8/88 — 10/9/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 — 10/9/87
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= -1.478 — 10/9/87
Gauge ID FORNEY#2 Recal Date DAILY UPON USE Daily Check OK — 10/9/87

(9.6) Shim Stack Height #1 4.8 #2 4.8 Ruler ID R21 Recal Date 8/20/88 — 10/9/87
Individual Shims: Stack #1 4½, ¼ Stack #2 4½, ¼ — 10/9/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5670 psi — 10/9/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 554 kips 3710 psi (95PF) 585 kips 3920 psi (PF) 615 kips 4120 psi — 10/9/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2		(9.8.5.4) Circled	
1	4280	1	(4280)	Actual 1	4280
2	4280	2	(4280)	2	4280
3	4280	3	(4280)	3	4280
		Actual Average			4280

FORCE (opposite end) 624 kips FORCE (this end) 639 kips — 10/9/87
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 631 kips — 10/9/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 3920 to 4120 psi FORCE 585 to 615 kips — 10/9/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A — 10/9/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A — 10/9/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A — 10/9/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2		(9.8.8.5) Circled	
1	N/A	1	N/A	Actual 1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A
		Actual Average			N/A

FORCE (opposite end) N/A kips FORCE (this end) N/A kips — 10/9/87
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips — 10/9/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A — 10/9/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A. — Rel 11/3/87

⚠1 8-14-87 ADD INFO

GJC 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
DATA SHEET 9.0
MAY 20, 1987
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-38 TENDON END/BUTTRESS NO. SHOP / NEAR A BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 62 F. Therm. No. SM-2 Recal Date 9/8/88 CB 9/29/87
Ambient Temp. 60 F. Therm. No. PK42 Recal Date 9/8/88 CB 9/29/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 88 CB 9/29/87
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= -1.478 CB 9/29/87
Gauge ID FORNEY#1 Recal Date DAILY ON USE Daily Check OK CB 9/29/87

(9.6) Shim Stack Height #1 5.5 #2 5.5 Ruler ID R21 Recal Date 8/20/88 CB 9/29/87
Individual Shims: Stack #1 1, 4½ Stack #2 1, 4½ CB 9/29/87

1 (9.7.2) Tendon Liftoff Overstress Force 829 kips Pressure 5550 psi CB 9/29/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 554 kips 3710 psi (95PF) 585 kips 3920 psi (PF) 615 kips 4120 psi CB 9/29/87 CB 9/29/87

(9.8.5.3) ACTUAL LIFTOFF:

	Stack #1	Stack #2
1	4380	(4380)
2	4360	(4360)
3	4320	(4320)

(9.8.5.4) Circled

	Actual
1	4380
2	4360
3	4320

Actual Average 4353 CB 9/29/87

FORCE (opposite end) 684 kips FORCE (this end) 650 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 667 kips CB 10/9/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 3920 to 4120 psi FORCE 585 to 615 kips CB 9/29/87
(9.8.6) Acceptable ☒ YES ☐ NO
1 (9.8.6.1) AALV Beyond 6% of (PF) ☒ YES ☐ NO Notify Owner YES CB 10/9/87
1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 10/9/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/9/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

	Stack #1	Stack #2
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

(9.8.8.5) Circled

	Actual
1	N/A
2	N/A
3	N/A

Actual Average N/A CB 10/9/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/9/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/9/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A. RWL 11/3/87

1 8-14-87 ADD INFO

KNC 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
DATA SHEET 9.0
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-38 TENDON END/BUTTRESS NO. FIELD/D NEAR BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 48 F. Therm. No. SM-2 Recal Date 9/8/88 CB 10/9/87
Ambient Temp. 46 F. Therm. No. PK42 Recal Date 9/8/88 CB 10/9/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 88 CB 10/9/87
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= -1.478 CB 10/9/87
Gauge ID FORNEY #2 Recal Date DAILY UPON USE Daily Check OK CB 10/9/87

(9.6) Shim Stack Height #1 5.85 #2 5.85 Ruler ID R21 Recal Date 8/20/88 CB 10/9/87
Individual Shims: Stack #1 1/4, 1, 4 1/2 Stack #2 1/4, 1, 4 1/2 CB 10/9/87

1 (9.7.2) Tendon Liftoff Overstress Force 829 kips Pressure 5550 psi CB 10/9/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 554 kips 3710 psi (95PF) 585 kips 3920 psi (PF) 615 kips 4120 psi CB 10/9/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2	
1	4580	1	(4580)
2	4580	2	(4580)
3	4580	3	(4580)

(9.8.5.4) Circled

Actual 1	4580
2	4580
3	4580

Actual Average 4580 CB 10/9/87

FORCE (opposite end) 650 kips FORCE (this end) 684 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 667 kips CB 10/9/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 3920 to 4120 psi FORCE 585 to 615 kips CB 10/9/87
(9.8.6) Acceptable ☒ YES ☐ NO
1 (9.8.6.1) AALV Beyond 6% of (PF) ☒ YES ☐ NO Notify Owner YES CB 10/9/87
1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 10/9/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/9/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2	
1	N/A	1	N/A
2	N/A	2	N/A
3	N/A	3	N/A

(9.8.8.5) Circled

Actual 1	N/A
2	N/A
3	N/A

Actual Average N/A CB 10/9/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/9/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/9/87

Q.C. Review H. F. Hendrickson Level III Date 10-15-87

Title MGR., Q.A.

RWL 11/3/87

1 8-14-87 ADD INFO

WC 11/3/87

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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. SHOP/NEAR F BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 44 F. Therm. No. SM-2 Recal Date 9/8/88 EB 10/17/87
Ambient Temp. 44 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/17/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 EB 10/17/87
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3.260 EB 10/17/87
Gauge ID FORNEY#2 Recal Date DAILY ON USE Daily Check OK EB 10/17/87

(9.6) Shim Stack Height #1 3.3 #2 3.3 Ruler ID R21 Recal Date 8/20/88 EB 10/17/87
Individual Shims: Stack #1 1/4, 3 Stack #2 1/4, 3 EB 10/17/87

△1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5690 psi EB 10/17/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 554 kips 3720 psi (95PF) 585 kips 3930 psi (PF) 615 kips 4130 psi EB 10/17/87

(9.8.5.3) ACTUAL LIFTOFF:
Stack #1 - 1 4140, 2 4140, 3 4140
Stack #2 - 1 (4140), 2 (4140), 3 (4140)
(9.8.5.4) Circled Actual 1 4140, 2 4140, 3 4140
Actual Average 4140 EB 10/17/87
FORCE (opposite end) 663 kips FORCE (this end) 616 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 640 kips EB 10/17/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 3930 to 4130 psi FORCE 585 to 615 kips EB 10/17/87
(9.8.6) Acceptable ☒ YES ☐ NO
△1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A EB 10/17/87
△1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A EB 10/17/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A EB 10/17/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:
Stack #1 - 1 N/A, 2 N/A, 3 N/A
Stack #2 - 1 N/A, 2 N/A, 3 N/A
(9.8.8.5) Circled Actual 1 N/A, 2 N/A, 3 N/A
Actual Average N/A EB 10/17/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips EB 10/17/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A EB 10/17/87

Q.C. Review W.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. Rel 11/3/87

△1 8-14-87 ADD INFO

QC 11/3/87

PSC PROCEDURE SQ 9.0
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. FIELD/NEAR A BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 60 F. Therm. No. SM-2 Recal Date 9/8/88 9/30/87
Ambient Temp. 58 F. Therm. No. PK42 Recal Date 9/8/88 9/30/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 9/30/87
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3.260 9/30/87
Gauge ID FORNEY #1 Recal Date DAILY ON USE Daily Check OK 9/30/87

(9.6) Shim Stack Height #1 4.55 #2 4.55 Ruler ID R21 Recal Date 8/20/88 9/30/87
Individual Shims: Stack #1 4½ Stack #2 4½ 9/30/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5690 psi 9/30/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 554 kips 3720 psi (95PF) 585 kips 3930 psi (PF) 615 kips 4130 psi 9/30/87

(9.8.5.3) ACTUAL LIFTOFF:
Stack #1 - 1 4280, 2 4300, 3 4280
Stack #2 - 1 (4440), 2 (4460), 3 (4460)
(9.8.5.4) Circled Actual 1 4440, 2 4460, 3 4460
Actual Average 4453 9/30/87
FORCE (opposite end) 616 kips FORCE (this end) 663 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 640 kips 10/17/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 3930 to 4130 psi FORCE 585 to 615 kips 9/30/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A 10/17/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A 10/17/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A 10/17/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:
Stack #1 - 1 N/A, 2 N/A, 3 N/A
Stack #2 - 1 N/A, 2 N/A, 3 N/A
(9.8.8.5) Circled Actual 1 N/A, 2 N/A, 3 N/A
Actual Average N/A 10/17/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips 10/17/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A 10/17/87

Q.C. Review W. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

⚠1 8-14-87 ADD INFO

11/2/87

WC 11/3/87

PSC PROCEDURE SQ 9.0
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TOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP/F NEAR BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 44 F. Therm. No. SM-2 Recal Date 9/8/88 EB 10/20/87
Ambient Temp. 40 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/20/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 EB 10/20/87
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3.260 EB 10/20/87
Gauge ID FORNEY #2 Recal Date DAILY ON USE Daily Check OK EB 10/20/87

(9.6) Shim Stack Height #1 5.3 #2 5.3 Ruler ID R21 Recal Date 8/20/88 EB 10/20/87
Individual Shims: Stack #1 1/2, 1/4, 4 1/2 Stack #2 1/2, 1/4, 4 1/2 EB 10/20/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5690 psi EB 10/20/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 554 kips 3720 psi (95PF) 585 kips 3930 psi (PF) 615 kips 4130 psi EB 10/20/87 EB 10/20/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2		(9.8.5.4) Circled Actual	
1	4340	1	(4360)	1	4360
2	4340	2	(4360)	2	4360
3	4340	3	(4340)	3	4340
		Actual Average			4346 4353 EB 12/1/87

EB 10/20/87
FORCE (opposite end) 675 kips FORCE (this end) 647 kips 648 EB 12/1/87
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 661 kips EB 10/23/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 3930 to 4130 psi FORCE 585 to 615 kips EB 10/20/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☒ YES ☐ NO Notify Owner YES EB 10/23/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☒ YES ☐ NO NCR No. N/A PER SCHEDULE
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A EB 10/23/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A EB 10/23/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2		(9.8.8.5) Circled Actual	
1	N/A	1	N/A	1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A
		Actual Average			N/A

EB 10/23/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips EB 10/23/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A EB 10/23/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rel 11/3/87

⚠1 8-14-87 ADD INFO

EWC 11/3/87

PSC PROCEDURE SQ 9.0
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. FIELD / NEAR C BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 32 F. Therm. No. SM-2 Recal Date 9/8/88 CB 10/23/87
Ambient Temp. 36 F. Therm. No. PK42 Recal Date 9/8/88 CB 10/23/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 CB 10/23/87
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= -1.478 CB 10/23/87
Gauge ID FORNEY #2 Recal Date DAILY ON USE Daily Check OK CB 10/23/87

(9.6) Shim Stack Height #1 5.15 #2 5.15 Ruler ID R21 Recal Date 8/20/88 CB 10/23/87
Individual Shims: Stack #1 1/8, 1/2, 4 1/2 Stack #2 1/8, 1/2, 4 1/2 CB 10/23/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5670 psi CB 10/23/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 554 kips 3710 psi (95PF) 585 kips 3920 psi (PF) 615 kips 4120 psi CB 10/23/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2	
1	4420	1	4520
2	~~4420~~ 4440 CB 10/23/87	2	4520
3	4420	3	4520

Actual Average 4520 CB 10/23/87

(9.8.5.4) Circled

Actual	
1	4520
2	4520
3	4520

FORCE (opposite end) 647 kips FORCE (this end) 675 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 661 kips CB 10/23/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 3920 to 4120 psi FORCE 585 to 615 kips CB 10/23/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☒ YES ☐ NO Notify Owner YES CB 10/23/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☒ YES ☐ NO NCR No. N/A PER SCHEDULE
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 10/23/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/23/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2	
1	N/A	1	N/A
2	N/A	2	N/A
3	N/A	3	N/A

Actual Average N/A CB 10/23/87

(9.8.8.5) Circled

Actual	
1	N/A
2	N/A
3	N/A

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/23/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/23/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87
Title MGR., Q.A. Rvd 11/13/87

⚠1 8-14-87 ADD INFO

WC 11/3/87

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PSC PROCEDURE SQ 10.2
TEST WIRE REMOVAL
DATA SHEET 10.2
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WIRE REMOVAL INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

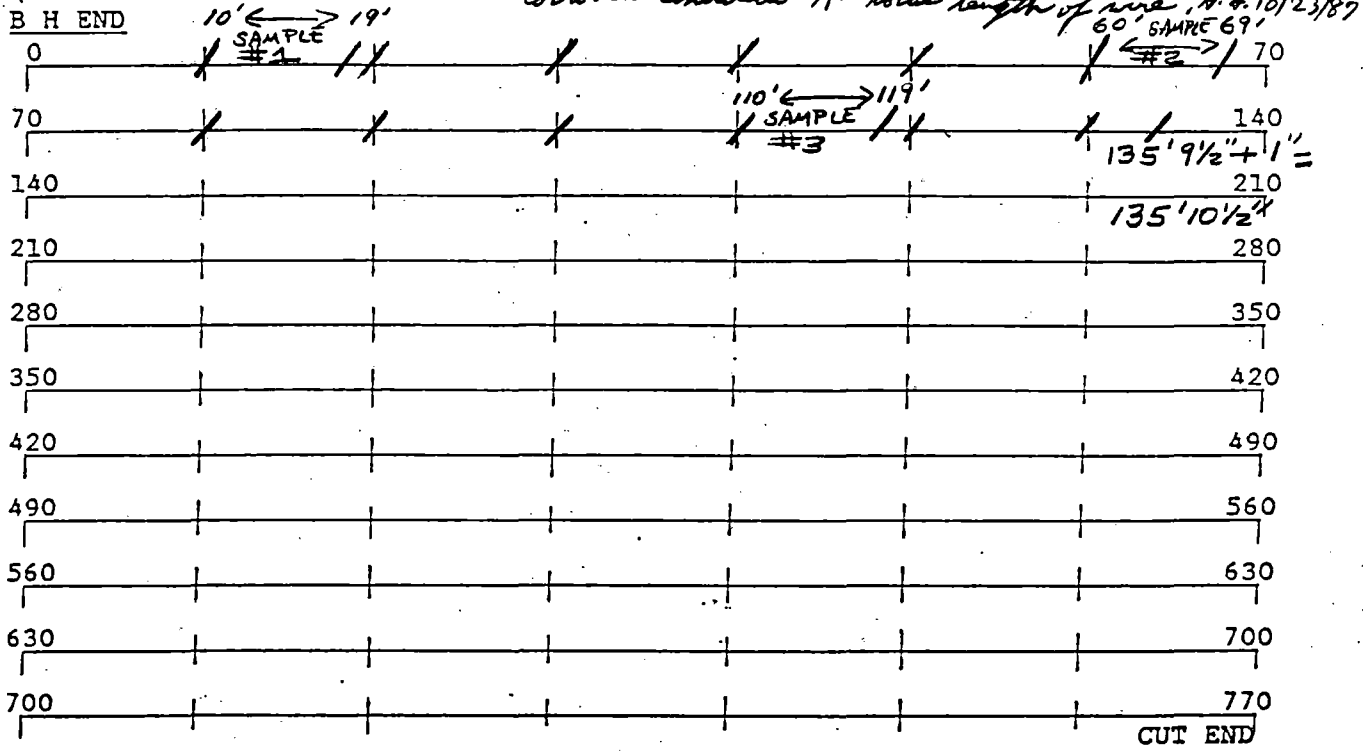
TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP/NEAR E BUTT. UNIT 1

DATE OF REMOVAL 10-23-87 DATE OF INSPECTION 10-23-87

INSPECTED BY H. F. Hendrickson (7.5.4.3.1) LENGTH OF WIRE 135'10½"

(7.5.4.1.1) & (7.5.4.4.3) Inspected during removal from Tendon corrosion condition "A" total length of wire, W.F. 10/23/87

B H END



Remember to add the 1 inch for the marked line to the length of the wire.
If the samples are removed, mark the location of removal here and on DS 10.3.

(7.8)
Measuring Device R21 I.D. R21 Recal Date 8/20/88
Wire Pulling Ram I.D. N/A Recal Date N/A

CORROSION CONDITION (Refer SQ 8.1)

A = EXCELLENT
B = GOOD
C = FAIR
D = USABLE
E = REJECTED (Pitted)

} Document the Corrosion Condition for each 10 foot segment.

(7.5.1) & (7.7)
Post the location of wire removal to DS 8.0 OK W.F. 10/23/87

Q.C. Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

Rel 11/3/87

KWC 11/3/87

E150

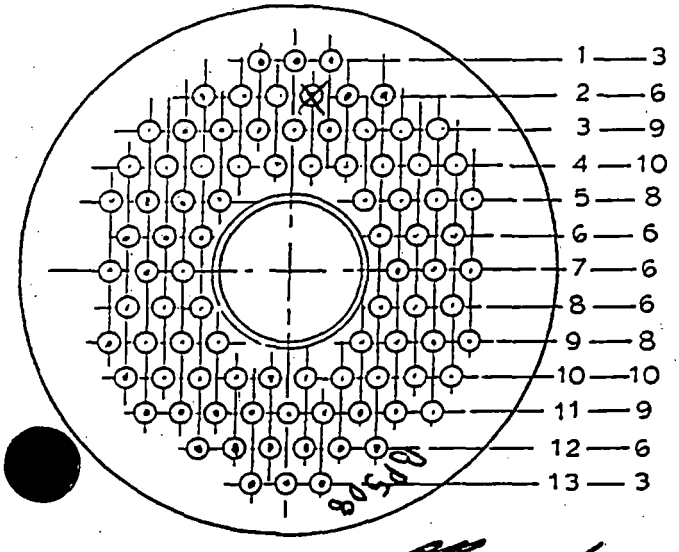
CONTINUITY TEST - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 1987

TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP/NEAR F BUTT UNIT 1

Row/ Wire No.	Continuous	Force if Over 9425	Broken	Posted to DS 8.0	Corrosion Condition	COMMENTS	Q.C. Signoff
1 - 3	ALL OK	N/A *	NONE	N/A	N/A	NONE	H.H. 10/23/87
2 - 6	ALL OK		NONE	YES-1 REMOVED WIRE	N/A		H.H. 10/23/87
3 - 9	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
4 - 10	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
5 - 8	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
6 - 6	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
7 - 6	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
8 - 6	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
9 - 8	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
10 - 10	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
11 - 9	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
12 - 6	ALL OK		NONE	N/A	N/A		H.H. 10/23/87
13 - 3	ALL OK	N/A	NONE	N/A	N/A	NONE	H.H. 10/23/87

* USED 1½ TON COME-ALONG TO PULL WIRES



Note that this form can be used to verify up to 17 individual wires in columnar fashion; if more than 17 are to be verified or if the entire tendon is to be verified, then a row by row inspection shall be performed.

Orient the anchorage sketch with the Heat Code Identification and note the wire number as it appears in each row starting at the left side in each row.

The Comments Area shall be used to identify particular wires or provide inspection remarks.

Q.C. Review [signature] Level III Date 11/23/87

Rul 11/3/87

Title MGR, Q.C./PSC

KWC 11/3/87

PSC PROCEDURE SQ 11.0 E157
RETENSION TENDONS
DATA SHEET 11.0
MAY 20, 1987

Revision 0
⚠1 Revision 1, 8-14-87

RETENSIONING TENDONS - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP / NEAR F BUTT UNIT 1

QC Signoff

(9.2) Concrete Temp. ST69 34° F Therm. No. ST69 Recal Date 8/21/88 W.H. 10/23/87
Ambient Temp. 40° F. Therm. No. PK45 Recal Date 8/21/88 W.H. 10/23/87

(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 89 W.H. 10/23/87

(9.5.3) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K = 3,260
Gauge ID Borney #1 Recal Date DAILY UPON USE Daily Check OK 10/23/87

W.H. 10/23/87

CALCULATED FORCE FOR ELONGATION MEASUREMENT AND RETENSIONING

Overstress shall not exceed 848 kips for a 90 Wire Tendon.

(9.6.6.) PTF = 148 kips Pressure 1010 psi (9.7.1)
Step 1 = 350 kips Pressure 2360 psi Elongation 2.34 in.
Step 2 = 600 kips Pressure 4030 psi Elongation 5.24 in.
LOF = 647 kips Pressure 4350 psi
OSF = 838 kips Pressure 5620 psi Elongation 8.000 in. W.H. 10/23/87

ACTUAL OBSERVED FORCE AND ELONGATION MEASUREMENTS

⚠1 (9.9.2.1) PTF = 148 kips Pressure 1010 psi Elongation 2.6 in.
(9.9.3.1) Step 1 = 350 kips Pressure 2360 psi Elongation 3.3 in.
(9.9.4.1) Step 2 = 600 kips Pressure 4030 psi Elongation 5.3 in.
(9.9.5.2) LOF = 647 kips Pressure 4350 psi Elongation 5.6 in.
OSF = 838 kips Pressure 5620 psi Elongation 7.0 in.
TOTAL ELONGATION (9.9.5.2) minus (9.9.2.1) = 4.4 in. W.H. 10/23/87
(9.9.6.2) Elongation Variation +5 % Ruler ID R17 Recal Date 8/20/88 W.H. 10/23/87
⚠1 (9.9.6.4) ELONGATION: Accept: ☒YES ☐NO Notify Owner: N/A W.H. 10/23/87

(9.10.5.1) ACTUAL LIFT OFF VALUES: (9.10.5.2) CIRCLED

Stack #1 - 1	4580	Stack #2 - 1	(4580)	Actual 1	4580 psi
2	4560	2	(4560)	2	4560 psi
3	4560	3	(4560)	3	4560 psi

(9.10.6) Required Liftoff Values 647 to 685 kips (4350 TO 4600) Actual Average 4567 psi (680 KIPS) W.H. 10/23/87

(9.10.6.2) FORCE: Opposite End 714 kips. This End 680 kips. TOTAL TENDON 697 kips W.H. 10/23/87
LIFTOFF: Acceptable ☒YES ☐NO Notify Owner: N/A NCR No. N/A W.H. 10/23/87

(9.10.9.1) Additional broken/missing wires NONE Amt. 0 Engr.Notified: N/A EB 10/26/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) NCR No. N/A EB 10/26/87
(9.10.9.2) Final Shim Stack Height #1 6.05 #2 6.05
(9.10.9.3) Protruding Unseated Wires (from DS 8.0) Seated 89 Unseated 0 EB 10/26/87
(9.10.9.4) Additional Protruding/Unseated Wires NONE 1/2, 1/2 (1/2) 4 1/2 CIRCLED ARE AISI 1045 MATL. EB 10/26/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) EB 10/26/87

Q.C. Review [signature] Level III Date 11/23/87 Rwl 11/3/87

Title MGR, Q.C./PSC

⚠1 8-14-87 ADD INFO.

WC 11/3/87

PSC PROCEDURE SQ 11.0 E152
RETENSION TENDONS
DATA SHEET 11.0
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

RETENSIONING TENDONS - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. FIELD/C NEAR BUTT UNIT 1

QC Signoff

(9.2) Concrete Temp. 32 F Therm. No. SM-2 Recal Date 9/8/88 EB 10/23/87
Ambient Temp. 36 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/23/87

(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 89 EB 10/23/87
(9.5.3) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K = 1.478
Gauge ID FORNEY #2 Recal Date DAILY ON USE Daily Check OK
EB 10/23/87

CALCULATED FORCE FOR ELONGATION MEASUREMENT AND RETENSIONING

Overstress shall not exceed 848 kips for a 90 Wire Tendon.

(9.6.6.) PTF = 148 kips Pressure 1000 psi (9.7.1)
Step 1 = 350 kips Pressure 2350 psi Elongation 2.34 in.
Step 2 = 600 kips Pressure 4020 psi Elongation 5.24 in.
LOF = 675 kips Pressure 4520 psi
OSF = 838 kips Pressure 5610 psi Elongation 8.000 in. EB 10/23/87

ACTUAL OBSERVED FORCE AND ELONGATION MEASUREMENTS

⚠1 (9.2.1) PTF = 148 kips Pressure 1000 psi Elongation 2.45 in.
(9.3.1) Step 1 = 350 kips Pressure 2350 psi Elongation 4.0 in.
(9.9.4.1) Step 2 = 600 kips Pressure 4020 psi Elongation 5.0 in.
(9.9.5.2) LOF = 675 kips Pressure 4520 psi Elongation 5.45 in.
OSF = 838 kips Pressure 5610 psi Elongation 6.45 in.
TOTAL ELONGATION (9.9.5.2) minus (9.9.2.1) = 4.0 in. EB 10/23/87
(9.9.6.2) Elongation Variation ±5 % Ruler ID R21 Recal Date 8/20/88 EB 10/23/87
⚠1 (9.9.6.4) ELONGATION: Accept: ☒ YES ☐ NO Notify Owner: N/A EB 10/23/87

(9.10.5.1) ACTUAL LIFT OFF VALUES: (9.10.5.2) CIRCLED

Stack #1 - 1	4780	Stack #2 - 1	(4780)	Actual 1	4780 psi
2	4780	2	(4780)	2	4780 psi
3	4780	3	(4780)	3	4780 psi

(9.10.6) Required Liftoff Values ~~647 to 685~~ EB 10/23/87 675 TO 715 KIPS 4520 TO 4790 PSI kips Actual Average 4780 psi EB 10/23/87

(9.10.6.2) FORCE: Opposite End 680 kips. This End 714 kips. TOTAL TENDON 697 kips EB 10/23/87
LIFTOFF: Acceptable ☒ YES ☐ NO Notify Owner: N/A NCR No. N/A EB 10/23/87

(9.10.9.1) Additional broken/missing wires NONE Amt. 0 Engr. Notified: N/A EB 10/23/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) NCR No. N/A EB 10/23/87
(9.10.9.2) Final Shim Stack Height #1 5.8 #2 5.8
(9.10.9.3) Protruding Unseated Wires (from DS 8.0) Seated 89 Unseated 0 EB 10/23/87
SHIMS (1/4) (1), 4½"
(9.10.9.4) Additional Protruding/Unseated Wires NONE EB 10/23/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) EB 10/23/87
CIRCLED ARE AISI 1045 MAT'L

Q.C. Review H. F. Hendrick Level III Date 11-13-87 pel 11/3/87

Title MGR., Q.A.

⚠1 8-14-87 ADD INFO.

EWC 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. SHOP / A BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 58 F. Therm. No. SM-2 Recal Date 4/8/88 EB 10/12/87
Ambient Temp. 50 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/12/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 EB 10/12/87
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3.260 EB 10/12/87
Gauge ID FORNEY #2 Recal Date DAILY UPON USE Daily Check OK EB 10/12/87

(9.6) Shim Stack Height #1 6.35 #2 6.35 Ruler ID R21 Recal Date 8/20/88 EB 10/12/87
Individual Shims: Stack #1 3,1/4,3 Stack #2 3,1/4,3 EB 10/12/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5690 psi EB 10/12/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3850 psi (95PF) 605 kips 4065 psi (PF) 636 kips 4270 psi EB 10/12/87 EB 10/12/87

(9.8.5.3) ACTUAL LIFTOFF:
Stack #1 - 1 4270, 2 4270, 3 4240
Stack #2 - 1 (4270), 2 (4270), 3 (4240)
Actual Average 4270 4260 EB 12/1/87 EB 10/12/87
FORCE (opposite end) 642 kips FORCE (this end) ~~636~~ 634 kips EB 12/1/87
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 638 ~~639~~ kips EB 12/1/87 EB 10/20/87

(9.8.5.4) Circled
Actual 1 4270
2 4270
3 ~~4270~~ 4240 EB 12/1/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4065 to 4270 psi FORCE 605 to 636 kips EB 10/12/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A EB 10/20/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A EB 10/20/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A EB 10/20/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:
Stack #1 - 1 N/A, 2 N/A, 3 N/A
Stack #2 - 1 N/A, 2 N/A, 3 N/A
Actual Average N/A EB 10/20/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips EB 10/20/87

(9.8.8.5) Circled
Actual 1 N/A
2 N/A
3 N/A

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A EB 10/20/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87 Rul 11/3/87

Title MGR., Q.A.

⚠1 8-14-87 ADD INFO

KNC 11/3/87

PSC PROCEDURE SQ 9.0
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. FIELD/C BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 44 F. Therm. No. SM-2 Recal Date 9/8/88 — EB 10/20/87
Ambient Temp. 36 F. Therm. No. PK42 Recal Date 9/8/88 — EB 10/20/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 — EB 10/20/87
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= 1.478 — EB 10/20/87
Gauge ID FORNEY #2 Recal Date DAILY ON USE Daily Check OK — EB 10/20/87

(9.6) Shim Stack Height #1 6.1 #2 6.1 Ruler ID R21 Recal Date 8/20/88 — EB 10/20/87
Individual Shims: Stack #1 3,3 Stack #2 3,3 — EB 10/20/87

1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5670 psi — EB 10/20/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3840 psi (95PF) 605 kips 4050 psi (PF) 636 kips 4260 psi — EB 10/20/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2	
1	4300	1	(4300)
2	4300	2	(4300)
3	4280	3	(4300)

(9.8.5.4) Circled

Actual	
1	4300
2	4300
3	4300

Actual Average 4300 — EB 10/20/87

FORCE (opposite end) 636 kips FORCE (this end) 642 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE ~~639~~ 638 kips EB 12/1/87 — EB 10/20/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4050 to 4260 psi FORCE 605 to 636 kips — EB 10/20/87
(9.8.6) Acceptable ☒ YES ☐ NO
1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A — EB 10/20/87
1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A — EB 10/20/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A — EB 10/20/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2	
1	N/A	1	N/A
2	N/A	2	N/A
3	N/A	3	N/A

(9.8.8.5) Circled

Actual	
1	N/A
2	N/A
3	N/A

Actual Average N/A — EB 10/20/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips — EB 10/20/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A — EB 10/20/87

Q.C. Review H. E. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. — Rul 11/3/87

1 8-14-87 ADD INFO

EWC 11/3/87

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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. SHOP / A BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 32 F. Therm. No. SM-2 Recal Date 9/8/88 EB 10/8/87
Ambient Temp. 32 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/8/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 EB 10/8/87
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3.260 EB 10/8/87
Gauge ID FORNEY#2 Recal Date DAILY UPON USE Daily Check OK EB 10/8/87

(9.6) Shim Stack Height #1 6.70 #2 6.70 Ruler ID R21 Recal Date 8/20/88 EB 10/8/87
Individual Shims: Stack #1 1,1,1/8,4 1/2 Stack #2 1,1,1/8,4 1/2 EB 10/8/87

△1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5690 psi EB 10/8/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3850 psi (95PF) 605 kips 4065 psi (PF) 636 kips 4270 psi EB 10/8/87 EB 10/8/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2		(9.8.5.4) Circled	
1	4420	1	(4420)	Actual 1	4420
2	4440	2	(4440)	2	4440
3	4430	3	(4430)	3	4430
		Actual Average			4430

EB 10/8/87
FORCE (opposite end) 666 kips FORCE (this end) 660 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 663 kips EB 10/22/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4065 to 4270 psi FORCE 605 to 636 kips EB 10/8/87
(9.8.6) Acceptable ☒ YES ☐ NO
△1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A EB 10/22/87
△1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED No Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A EB 10/22/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A EB 10/22/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2		(9.8.8.5) Circled	
1	N/A	1	N/A	Actual 1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A
		Actual Average			N/A

EB 10/22/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips EB 10/22/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A EB 10/22/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A. 11/3/87

△1 8-14-87 ADD INFO

KWC 11/3/87

PSC PROCEDURE SQ 9.0
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. FIELD/BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 40 F. Therm. No. SM-2 Recal Date 9/8/88 CB 10/22/87
Ambient Temp. 36 F. Therm. No. PK42 Recal Date 9/8/88 CB 10/22/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 CB 10/22/87
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= -1.478 CB 10/22/87
Gauge ID FORNEY#9 Recal Date DAILY ON USE Daily Check OK CB 10/22/87

(9.6) Shim Stack Height #1 6.0 #2 6.0 Ruler ID R21 Recal Date 8/20/88 CB 10/22/87
Individual Shims: Stack #1 1/2, 1, 4 1/2 Stack #2 1/2, 1, 4 1/2 CB 10/22/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5670 psi CB 10/22/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3840 psi (95PF) 605 kips 4050 psi (PF) 636 kips 4260 psi CB 10/22/87 CB 10/22/87

(9.8.5.3) ACTUAL LIFTOFF:

Stack #1		Stack #2		(9.8.5.4) Circled Actual	
1	4460	1	(4460)	1	4460
2	4460	2	(4460)	2	4460
3	4460	3	(4460)	3	4460
		Actual Average			4460

CB 10/22/87

FORCE (opposite end) 660 kips FORCE (this end) 666 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 663 kips CB 10/22/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4050 to 4260 psi FORCE 605 to 636 kips CB 10/22/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A CB 10/22/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 10/22/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/22/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

Stack #1		Stack #2		(9.8.8.5) Circled Actual	
1	N/A	1	N/A	1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A
		Actual Average			N/A

CB 10/22/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/22/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/22/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/3/87

⚠1 8-14-87 ADD INFO

WC 11/3/87

PSC PROCEDURE SQ 9.0
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 50 F. Therm. No. SM-2 Recal Date 9/8/88 CB 10/14/87
Ambient Temp. 52 F. Therm. No. PK42 Recal Date 9/8/88 CB 10/14/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 CB 10/14/87
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3260 CB 10/14/87
Gauge ID FORNEY#2 Recal Date DAILY UPON USE Daily Check OK CB 10/14/87

(9.6) Shim Stack Height #1 5.20 #2 5.20 Ruler ID R21 Recal Date 8/20/88 CB 10/14/87
Individual Shims: Stack #1 4½, ½, ⅛ Stack #2 4½, ½, ⅛ CB 10/14/87

1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5690 psi CB 10/14/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3850 psi (95PF) 605 kips 4065 psi (PF) 636 kips 4270 psi CB 10/14/87 CB 10/14/87

(9.8.5.3) ACTUAL LIFTOFF:
Stack #1 - 1 4460, 2 4460, 3 4420
Stack #2 - 1 (4460), 2 (4460), 3 (4440)

(9.8.5.4) Circled
Actual 1 4460, 2 4460, 3 4440
Actual Average 4453 CB 10/14/87

FORCE (opposite end) 629 kips FORCE (this end) 663 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 646 kips CB 10/14/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4065 to 4270 psi FORCE 605 to 636 kips CB 10/14/87
(9.8.6) Acceptable ☒ YES ☐ NO
1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A CB 10/14/87
1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 10/14/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/14/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:
Stack #1 - 1 N/A, 2 N/A, 3 N/A
Stack #2 - 1 N/A, 2 N/A, 3 N/A

(9.8.8.5) Circled
Actual 1 N/A, 2 N/A, 3 N/A
Actual Average N/A CB 10/14/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/14/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/14/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87 Rel 11/13/87

Title MGR., Q.A.

1 8-14-87 ADD INFO

ENC 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
DATA SHEET 9.0
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. FIELD/D BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 50 F. Therm. No. SM-2 Recal Date 9/8/88 EB 10/13/87
Ambient Temp. 50 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/13/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 90 EB 10/13/8
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= -1.478 EB 10/13/8
Gauge ID FORNEY#2 Recal Date DAILY UPON USE Daily Check OK EB 10/13/8
(9.6) Shim Stack Height #1 ~~6.80~~ 5 EB 11/23/87 #2 ~~6.80~~ 5 EB 11/23/87 Ruler ID R21 Recal Date 8/20/88 EB 10/13/8
Individual Shims: Stack #1 4½, ¼, 1 Stack #2 4½, ¼, 1 EB 10/13/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 848 kips Pressure 5670 psi EB 10/13/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3840 psi (95PF) 605 kips 4050 psi (PF) 636 kips 4260 psi EB 10/13/87

(9.8.5.3) ACTUAL LIFTOFF:

	Stack #1	Stack #2
1	4200	(4200)
2	4220	(4220)
3	4220	(4220)

(9.8.5.4) Circled

	Actual
1	4200
2	4220
3	4220

Actual Average 4213 EB 10/13/87
FORCE (opposite end) 663 kips FORCE (this end) 629 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 646 kips EB 10/14/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4050 to 4260 psi FORCE 605 to 636 kips EB 10/13/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A EB 10/14/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A EB 10/14/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A EB 10/14/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

	Stack #1	Stack #2
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

(9.8.8.5) Circled

	Actual
1	N/A
2	N/A
3	N/A

Actual Average N/A EB 10/14/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips EB 10/14/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A EB 10/14/87

Q.C. Review H.B. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

⚠1 8-14-87 ADD INFO

Rel 11/3/87

KWL 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
DATA SHEET 9.0
MAY 20, 1987
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TOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 40 F. Therm. No. SM-2 Recal Date 9/8/88 CB 10/28/87
Ambient Temp. 40 F. Therm. No. PK42 Recal Date 9/8/88 CB 10/28/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 87 CB 10/28/87
(9.5.1) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K= -1.478 CB 10/28/87
Gauge ID FORNEY #2 Recal Date DAILY ON USE Daily Check OK CB 10/28/87

(9.6) Shim Stack Height #1 7.55 #2 7.55 Ruler ID R21 Recal Date 8/20/88 CB 10/28/87
Individual Shims: Stack #1 1,1,1,4½ Stack #2 1,1,1,4½ CB 10/28/87

1 (9.7.2) Tendon Liftoff Overstress Force 820 kips Pressure 5490 psi CB 10/28/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3840 psi (95PF) 605 kips 4050 psi (PF) 636 kips 4260 psi CB 10/28/87 CB 10/28/87

(9.8.5.3) ACTUAL LIFTOFF:

				(9.8.5.4) Circled	
Stack #1 - 1	4420	Stack #2 - 1	(4440)	Actual 1	4440
2	4440	2	(4440)	2	4440
3	4440	3	(4440)	3	4440
			Actual Average		4440

CB 10/28/87

FORCE (opposite end) 671 kips FORCE (this end) 663 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 667 kips CB 10/28/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4050 to 4260 psi FORCE 605 to 636 kips CB 10/28/87
(9.8.6) Acceptable ☒ YES ☐ NO
1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A CB 10/28/87
1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A CB 10/28/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A CB 10/28/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

				(9.8.8.5) Circled	
Stack #1 - 1	N/A	Stack #2 - 1	N/A	Actual 1	N/A
2	N/A	2	N/A	2	N/A
3	N/A	3	N/A	3	N/A
			Actual Average		N/A

CB 10/28/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips CB 10/28/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A CB 10/28/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

1 8-14-87 ADD INFO

Rel 11/3/87

WC 11/3/87

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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. FIELD / "B" BUTT UNIT 1

Q.C. Signo

(9.2) Concrete Temp. 40 F. Therm. No. SM-2 Recal Date 9/8/88 EB 10/27
Ambient Temp. 40 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/27
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 87 EB 10/27
(9.5.1) Ram ID 9180 Recal Date JOB END Ram Area 149.613 K= -3.260 EB 10/27
Gauge ID FORNEY#2 Recal Date DAILY ON USE Daily Check OK EB 10/27

(9.6) Shim Stack Height #1 7.65 #2 7.65 Ruler ID R21 Recal Date 8/20/88 EB 10/27
Individual Shims: Stack #1 1/8, 1, 1, 1, 4½ Stack #2 1/8, 1, 1, 1, 4½ EB 10/27

1 (9.7.2) Tendon Liftoff Overstress Force 820 kips Pressure 5500 psi EB 10/27
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3850 psi (95PF) 605 kips 4065 psi (PF) 636 kips 4270 psi EB 10/27

(9.8.5.3) ACTUAL LIFTOFF:

	Stack #1	Stack #2
1	4520	(4520)
2	4500	(4500)
3	4500	(4500)

(9.8.5.4) Circled

	Actual
1	4520
2	4500
3	4500

Actual Average 4506 EB 10/27

FORCE (opposite end) 663 kips FORCE (this end) 671 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 667 kips EB 10/28

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4065 to 4270 psi FORCE 605 to 636 kips EB 10/27
(9.8.6) Acceptable ☒ YES ☐ NO
1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A EB 10/28
1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☐ YES ☒ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A
Notify Owner N/A Tendon #2 N/A EB 10/28
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A EB 10/28

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

	Stack #1	Stack #2
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

(9.8.8.5) Circled

	Actual
1	N/A
2	N/A
3	N/A

Actual Average N/A EB 10/28

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips EB 10/28

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A EB 10/28

Q.C. Review W. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

RWL 11/3/87

1 8-14-87 ADD INFO

WJC 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
DATA SHEET 9.0
MAY 20, 1987
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

Q.C. Signof

(9.2) Concrete Temp. 40 F. Therm. No. SM-2 Recal Date 9/8/88 — CB 10/28/87
Ambient Temp. 40 F. Therm. No. PK42 Recal Date 9/8/88 — CB 10/28/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 88* #PER FIELD END — CB 10/28/87
(9.5.1) Ram ID 9/85 Recal Date JOB END Ram Area 149.604 K= 1.478 — CB 10/28/87
Gauge ID FORNEY#2 Recal Date DAILY ON USE Daily Check OK — CB 10/28/87

(9.6) Shim Stack Height #1 5.75 #2 5.75 Ruler ID R21 Recal Date 8/20/88 — CB 10/28/87
Individual Shims: Stack #1 1, 1/4, 4 1/2 Stack #2 1, 1/4, 4 1/2 — CB 10/28/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 829 kips Pressure 5550 psi — CB 10/28/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3840 psi (95PF) 605 kips 4050 psi (PF) 636 kips 4260 psi — CB 10/28/87

(9.8.5.3) ACTUAL LIFTOFF:
Stack #1 - 1 4420, 2 4420, 3 4420
Stack #2 - 1 (4420), 2 (4420), 3 (4420)
(9.8.5.4) Circled: Actual 1 4420, 2 4420, 3 4420
Actual Average 4420 — CB 10/28/87
FORCE (opposite end) 607 kips FORCE (this end) 660 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 634 kips — CB 10/28/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4050 to 4260 psi FORCE 605 to 636 kips — CB 10/28/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A — CB 10/28/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☒ YES ☐ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A — PER SCHEDULE
Notify Owner N/A Tendon #2 N/A — CB 10/28/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A — CB 10/28/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:
Stack #1 - 1 N/A, 2 N/A, 3 N/A
Stack #2 - 1 N/A, 2 N/A, 3 N/A
(9.8.8.5) Circled: Actual 1 N/A, 2 N/A, 3 N/A
Actual Average N/A — CB 10/28/87
FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips — CB 10/28/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A — CB 10/28/87

Q.C. Review H. F. Hendrickson Level III Date 11-13-87 — Rwl 11/3/87

Title MGR., Q.A.

⚠1 8-14-87 ADD INFO

WNC 11/3/87

PSC PROCEDURE SQ 9.0
MONITOR TENDON FORCE
DATA SHEET 9.0
MAY 20, 1987
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LIFTOFF FORCE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. FIELD / B BUTT UNIT 1

Q.C. Signoff

(9.2) Concrete Temp. 54 F. Therm. No. ST69 Recal Date 6/21/88 — H.H. 10/28/87
Ambient Temp. 48 F. Therm. No. PK45 Recal Date 8/21/88 — H.H. 10/28/87
(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 88 — H.H. 10/28/87
(9.5.1) Ram ID 9180 Recal Date END OF JOB Ram Area 149.613 K= -3.260 — H.H. 10/28/87
Gauge ID FORNEY #1 Recal Date DAILY ON USE Daily Check OK 10/28/87 — H.H. 10/28/87

(9.6) Shim Stack Height #1 6.45" #2 6.45" Ruler ID R17 Recal Date 8/20/88 — H.H. 10/28/87
Individual Shims: Stack #1 4½, 1, ½, ¼, ⅛ Stack #2 4½, 1, ½, ¼, ⅛ — H.H. 10/28/87

⚠1 (9.7.2) Tendon Liftoff Overstress Force 829 kips Pressure 5560 psi — H.H. 10/28/87
(Tendon Overstress shall not exceed 848 kips for a 90 wire tendon.)
(9PF) 573 kips 3850 psi (95PF) 605 kips 4065 psi (PF) 636 kips 4270 psi — H.H. 10/28/87

(9.8.5.3) ACTUAL LIFTOFF: H.H. 10/28/87

	Stack #1	Stack #2
1	4040	~~4040~~ 4080
2	4040	4080
3	4040	4080

(9.8.5.4) Circled Actual

1	4080
2	4080
3	4080
Actual Average	4080

H.H. 10/28/87

FORCE (opposite end) 660 kips FORCE (this end) 607 kips
This Tendon - ACTUAL AVERAGE LIFTOFF FORCE 634 kips — H.H. 10/28/87

(9.8.6.3) LIFTOFFS - See (9.8.6) and (9.8.6.1)
REQUIRED LIFTOFF: PRESSURE 4065 to 4270 psi FORCE 605 to 636 kips — H.H. 10/28/87
(9.8.6) Acceptable ☒ YES ☐ NO
⚠1 (9.8.6.1) AALV Beyond 6% of (PF) ☐ YES ☒ NO Notify Owner N/A — H.H. 10/28/87
⚠1 (9.6.6.2) AALV Below (95PF) ☐ YES ☒ NO DETENSION ☒ YES ☐ NO NCR No. N/A
(9.8.7.1) ADJACENT TENDON LIFTOFF REQUIRED NO Tendon #1 N/A PER SCHEDULE
Notify Owner N/A Tendon #2 N/A — H.H. 10/28/87
(9.8.8.3) RESET SHIM STACK HEIGHT: #1 Stack N/A #2 Stack N/A — H.H. 10/28/87

(9.8.8.4) NEW ACTUAL LIFTOFF VALUE:

	Stack #1	Stack #2
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

(9.8.8.5) Circled Actual

1	N/A
2	N/A
3	N/A
Actual Average	N/A

H.H. 10/28/87

FORCE (opposite end) N/A kips FORCE (this end) N/A kips
This Tendon - NEW ACTUAL AVERAGE LIFTOFF FORCE N/A kips — H.H. 10/28/87

(9.10) ADJACENT TENDON LIFTOFF

(9.10.3) #1 Accept N/A Unacceptable N/A
(9.10.3) #2 Accept N/A Unacceptable N/A Notify Owner N/A — H.H. 10/28/87

Q.C. Review [signature] Level III Date 11/23/87

Title MGR, QC/PSC

⚠1 8-14-87 ADD INFO

Rel 11/3/87
WC 11/3/87

E163

PSC PROCEDURE SQ 10.2
TEST WIRE REMOVAL
DATA SHEET 10.2
MAY 20, 1987
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SAMPLE WIRE REMOVED FOR TESTING @B 11/3/87

WIRE REMOVAL INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

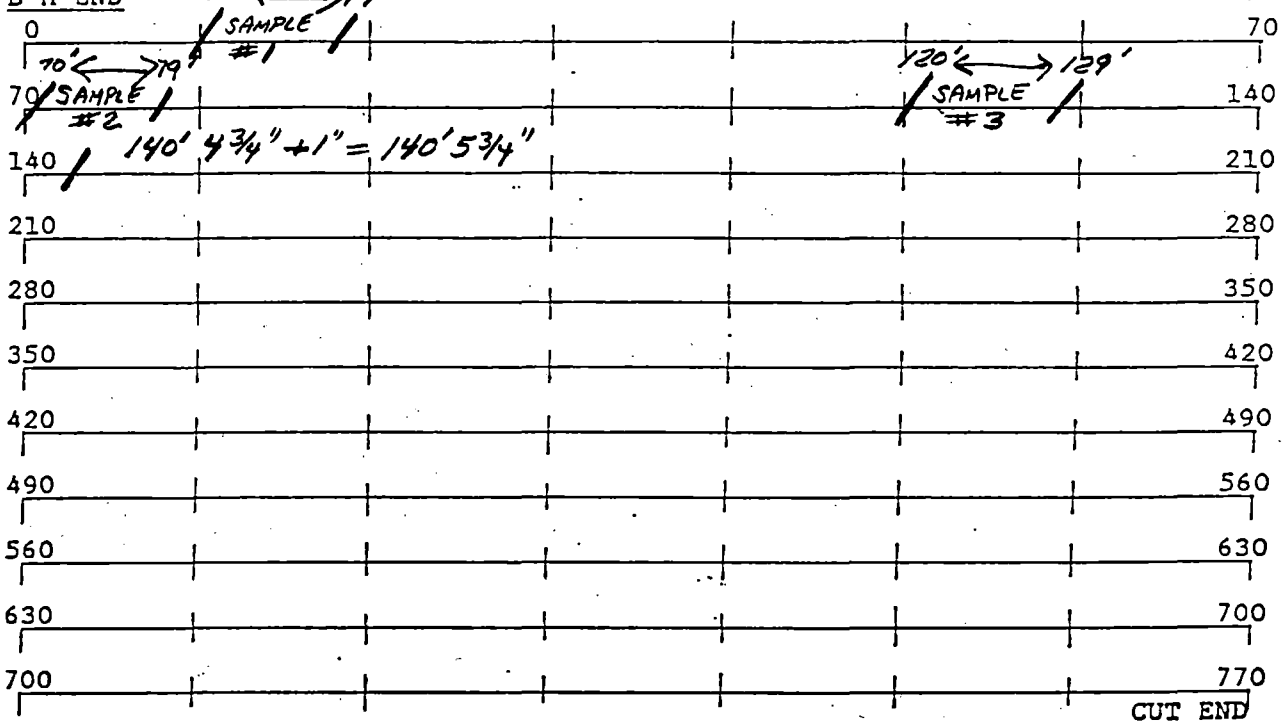
TENDON NO. 74BF TENDON END/BUTTRESS NO. FIELD/B BUTT UNIT 1

DATE OF REMOVAL 10/29/87 DATE OF INSPECTION 10/29/87

INSPECTED BY W.F. Hendrickson (7.5.4.3.1) LENGTH OF WIRE 140'5 3/4"

(7.5.4.1.1) & (7.5.4.4.3) ENTIRE LENGTH OF WIRE INSPECTED AS REMOVED AND ENTIRE LENGTH CONDITION "A" W.H. 10/29/87

FIELD END B H END



Remember to add the 1 inch for the marked line to the length of the wire.
If the samples are removed, mark the location of removal here and on DS 10.3.

(7.8)
Measuring Device RULER I.D. R21 Recal Date 8/20/88
Wire Pulling Ram I.D. N/A Recal Date N/A

CORROSION CONDITION (Refer SQ 8.1)

A = EXCELLENT
B = GOOD
C = FAIR
D = USABLE
E = REJECTED (Pitted)

Document the Corrosion Condition for each 10 foot segment.

(7.5.1) & (7.7)
Post the location of wire removal to DS 8.0 YES

Q.C. Review [signature] Level III Date 11/23/87

Title MGR, Q.C./PSC

Rel 11/3/87

LWC 11/3/87

E164

PSC PROCEDURE SQ 10.2
TEST WIRE REMOVAL
DATA SHEET 10.2
MAY 20, 1987

Revision 0

BROKEN WIRE REMOVED DURING CONTINUITY TEST EB 11/3/87

CENTER WIRE

WIRE REMOVAL INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

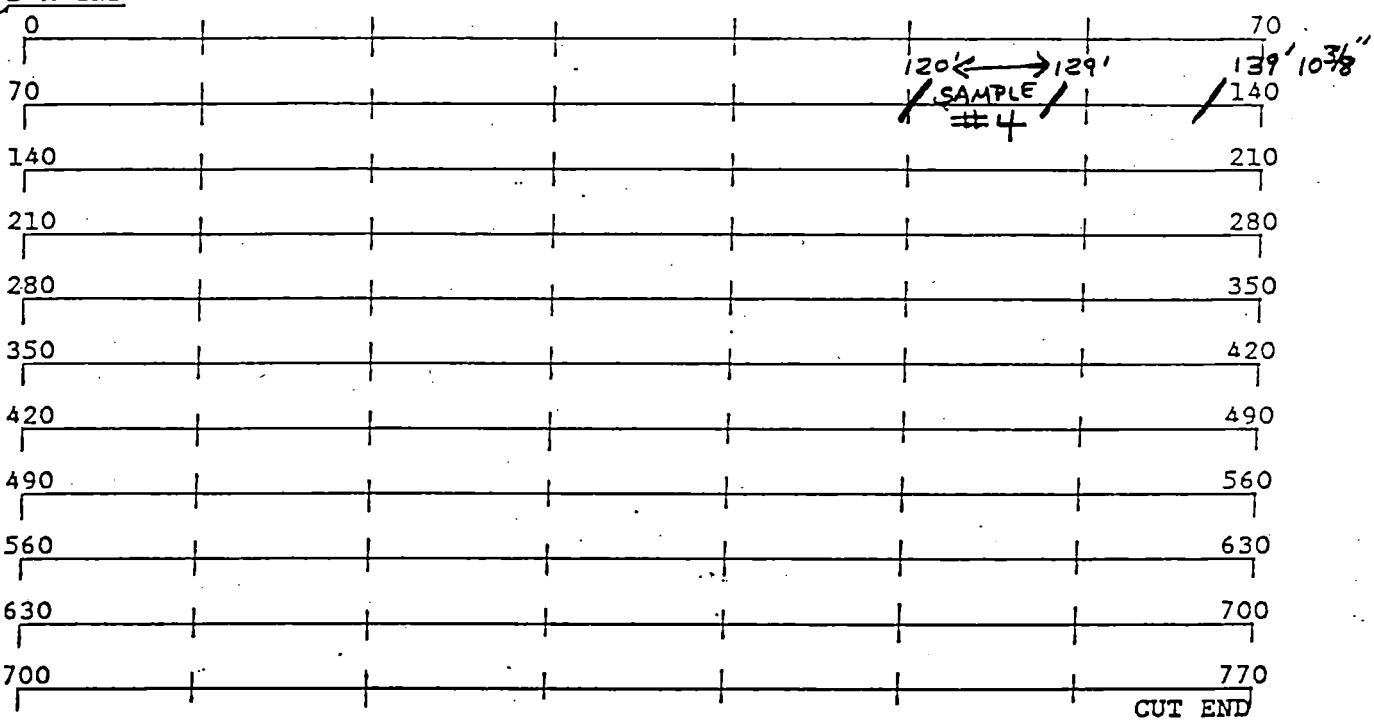
TENDON NO. 74BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

DATE OF REMOVAL 10/29/87 DATE OF INSPECTION 10/29/87

INSPECTED BY C Brooks (7.5.4.3.1) LENGTH OF WIRE 139' 10 3/8"

(7.5.4.1.1) & (7.5.4.4.3) TOTAL LENGTH OF WIRE CORROSION COND. "A".

SHOP B H END



Remember to add the 1 inch for the marked line to the length of the wire.
If the samples are removed, mark the location of removal here and on DS 10.3.

(7.8)
Measuring Device RULER I.D. R21 Recal Date 8/20/88
Wire Pulling Ram I.D. N/A Recal Date N/A

CORROSION CONDITION (Refer SQ 8.1)

A = EXCELLENT
B = GOOD
C = FAIR
D = USABLE
E = REJECTED (Pitted)

} Document the Corrosion Condition for each 10 foot segment.

(7.5.1) & (7.7)
Post the location of wire removal to DS 8.0 YES

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rul 11/3/87

WNC 11/3/87

E165

PSC PROCEDURE SQ 10.2
TEST WIRE REMOVAL
DATA SHEET 10.2
MAY 20, 1987
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OUTSIDE WIRE

BROKEN WIRE REMOVED DURING CONTINUITY TEST 08 11/3/87

WIRE REMOVAL INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

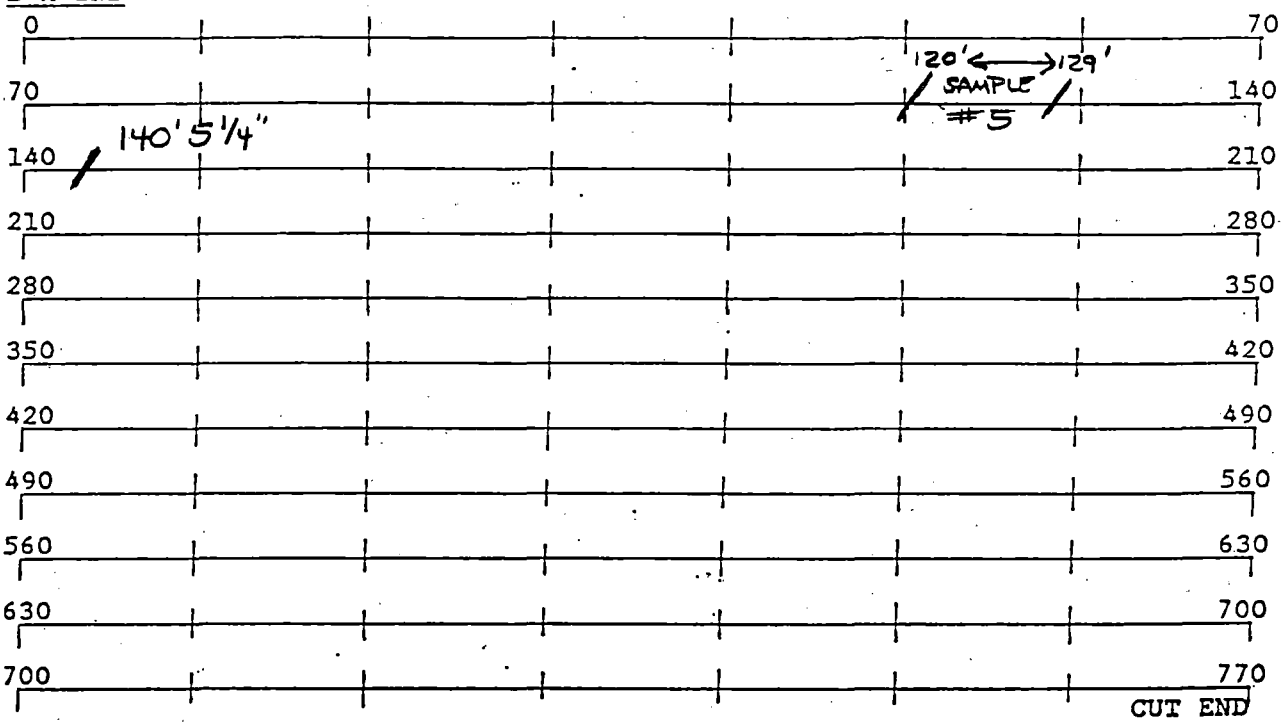
TENDON NO. 74BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

DATE OF REMOVAL 10/29/87 DATE OF INSPECTION 10/29/87

INSPECTED BY [signature] (7.5.4.3.1) LENGTH OF WIRE 140'5¼"

(7.5.4.1.1) & (7.5.4.4.3) TOTAL LENGTH OF WIRE CORROSION COND. "A"

SHOP B H END



Remember to add the 1 inch for the marked line to the length of the wire.
If the samples are removed, mark the location of removal here and on DS 10.3.

(7.8)
Measuring Device RULER I.D. R21 Recal Date 8/20/88
Wire Pulling Ram I.D. N/A Recal Date N/A

CORROSION CONDITION (Refer SQ 8.1)

A = EXCELLENT
B = GOOD
C = FAIR
D = USABLE
E = REJECTED (Pitted)

} Document the Corrosion Condition for each 10 foot segment.

(7.5.1) & (7.7)
Post the location of wire removal to DS 8.0 YES

Q.C. Review H. F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

11/3/87

WC 11/3/87

PSC PROCEDURE SQ 10.5 E166
CONTINUITY TEST
DATA SHEET 10.5
MAY 20, 1987

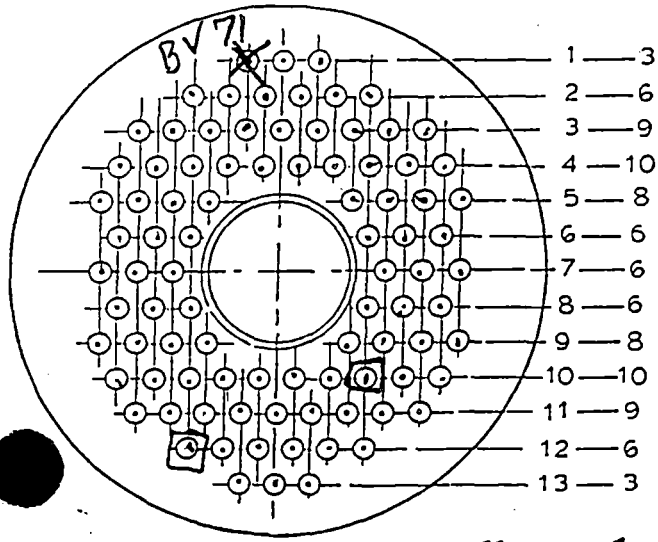
Revision 0

CONTINUITY TEST - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74 BF TENDON END/BUTTRESS NO. FIELD/B BUTTRESS UNIT 1

Row/ Wire No.	Continuous	Force if Over 9425	Broken	Posted to DS 8.0	Corrosion Condition	COMMENTS	Q.C. Signoff
1 - 3	ALL OK	USED N/A 1½	NONE	YES 1-REMOVED WIRE	A	NONE	H.H. 10/29/87
2 - 6	ALL OK	N/A TON	NONE	N/A	N/A		H.H. 10/29/87
3 - 9	ALL OK	N/A COME	NONE	N/A	N/A		H.H. 10/29/87
4 - 10	ALL OK	N/A ALONG	NONE	N/A	N/A		H.H. 10/29/87
5 - 8	ALL OK	N/A	NONE	N/A	N/A		H.H. 10/29/87
6 - 6	ALL OK	N/A	NONE	N/A	N/A		H.H. 10/29/87
7 - 6	ALL OK	N/A	NONE	N/A	N/A		H.H. 10/29/87
8 - 6	ALL OK	N/A	NONE	N/A	N/A		H.H. 10/29/87
9 - 8	ALL OK	N/A	NONE	N/A	N/A		H.H. 10/29/87
10 - 10	ALL OK	N/A	1-BROKEN WIRE	REMOVED BROKEN WIRE	A		H.H. 10/29/87
11 - 9	ALL OK	N/A	NONE	N/A	N/A		H.H. 10/29/87
12 - 6	ALL OK	N/A	1-BROKEN	REMOVED BROKEN WIRE	N/A		H.H. 10/29/87
13 - 3	ALL OK	N/A	NONE	N/A	A	NONE	H.H. 10/29/87



Note that this form can be used to verify up to 17 individual wires in columnar fashion; if more than 17 are to be verified or if the entire tendon is to be verified, then a row by row inspection shall be performed.

Orient the anchorage sketch with the Heat Code Identification and note the wire number as it appears in each row starting at the left side in each row.

The Comments Area shall be used to identify particular wires or provide inspection remarks.

Q.C. Review [signature] Level III Date 11/23/87 RWL 11/3/87

Title M&R, Q.C./PSC

KNC 11/3/87

PSC PROCEDURE SQ 11.0 E167
RETENSION TENDONS
DATA SHEET 11.0
MAY 20, 1987
Page 1 of 1
Revision 0
⚠1 Revision 1, 8-14-87

RETENSIONING TENDONS - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

QC Signoff

(9.2) Concrete Temp. 50 F Therm. No. SM-2 Recal Date 9/8/88 EB 10/29/87
Ambient Temp. 50 F. Therm. No. PK42 Recal Date 9/8/88 EB 10/29/87

(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 87 EB 10/29/87
(9.5.3) Ram ID 9185 Recal Date JOB END Ram Area 149.604 K = 1.478
Gauge ID FORNEY #2 Recal Date DAILY ON USE Daily Check OK

EB 10/29/87

CALCULATED FORCE FOR ELONGATION MEASUREMENT AND RETENSIONING

Overstress shall not exceed 848 kips for a 90 Wire Tendon.

(9.6.6.) PTF = 145 kips Pressure 980 psi (9.7.1)
Step 1 = 350 kips Pressure 2350 psi Elongation 2.51 in.
Step 2 = 600 kips Pressure 4020 psi Elongation 5.57 in.
LOF = 660 kips Pressure 4420 psi
OSF = 819 kips Pressure 5480 psi Elongation 8.250 in. EB 10/29/87

ACTUAL OBSERVED FORCE AND ELONGATION MEASUREMENTS

⚠1 (9.2.1) PTF = 145 kips Pressure 980 psi Elongation 3.35 in.
(9.3.1) Step 1 = 350 kips Pressure 2350 psi Elongation 4.55 in.
(9.9.4.1) Step 2 = 600 kips Pressure 4020 psi Elongation 6.1 in.
(9.9.5.2) LOF = 660 kips Pressure 4420 psi Elongation 6.50 in.
OSF = 819 kips Pressure 5480 psi Elongation 7.5 in.
TOTAL ELONGATION (9.9.5.2) minus (9.9.2.1) = 4.15 in. EB 10/29/87
(9.9.6.2) Elongation Variation +4.8 % Ruler ID R21 Recal Date 8/20/88 EB 10/29/87
⚠1 (9.9.6.4) ELONGATION: Accept: ☒ YES ☐ NO Notify Owner: N/A EB 10/29/87

(9.10.5.1) ACTUAL LIFT OFF VALUES: (9.10.5.2) CIRCLED

Stack #1 - 1	4540	Stack #2 - 1	(4540)	Actual 1	4540 psi
2	4540	2	(4540)	2	4540 psi
3	4540	3	(4540)	3	4540 psi

(9.10.6) Required Liftoff Values 660 To 699 kips (4420 To 4680) Actual Average 4540 psi EB 10/29/87

(9.10.6.2) FORCE: Opposite End 613 kips. This End 678 kips. TOTAL TENDON 646 kips EB 10/29/87
LIFTOFF: Acceptable ☒ YES ☐ NO Notify Owner: N/A NCR No. N/A EB 10/29/87

(9.10.9.1) Additional broken/missing wires NONE Amt. 0 Engr. Notified: N/A EB 10/29/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) NCR No. N/A EB 10/29/87
(9.10.9.2) Final Shim Stack Height #1 6.8 #2 6.8
(9.10.9.3) Protruding Unseated Wires (from DS 8.0) Seated 87 Unseated 0 EB 10/29/87
(9.10.9.4) Additional Protruding/Unseated Wires NONE (1/4, (1), 1, 4½) — CIRCLED SHIM IS AISI 1045 MATERIAL EB 10/29/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) EB 10/29/87

Q.C. Review H.F. Hendrickson Level III Date 11-13-87

Title MGR., Q.A.

Rel 11/3/87

⚠1 8-14-87 ADD INFO.

WC 11/3/87

PSC PROCEDURE SQ 11.0
RETENSION TENDONS
DATA SHEET 11.0
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

E168

RETENSIONING TENDONS - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. FIELD/B BUTT UNIT 1

QC Signoff

(9.2) Concrete Temp. 58 F Therm. No. ST69 Recal Date 8/21/88 W.W. 10/29/87
Ambient Temp. 52 F. Therm. No. PK45 Recal Date 8/21/88 W.W. 10/29/87

(9.4) Amount of Effective Wires (From DS 8.0 - 8.3.7.3) 87 W.W. 10/29/87

(9.5.3) Ram ID 9180 Recal Date END OF JOB Ram Area 149.613 K = 3.260
Gauge ID FORNEY #1 Recal Date DAILY ON USE Daily Check OK 10/29/87
W.W. 10/29/87

CALCULATED FORCE FOR ELONGATION MEASUREMENT AND RETENSIONING

Overstress shall not exceed 848 kips for a 90 Wire Tendon.

(9.6.6.) PTF = 145 kips Pressure 990 psi (9.7.1)
Step 1 = 350 kips Pressure 2360 psi Elongation 2.51 in.
Step 2 = 600 kips Pressure 4030 psi Elongation 5.57 in.
LOF = 607 kips Pressure 4080 psi
OSF = 819 kips Pressure 5490 psi Elongation 8.250 in. W.W. 10/29/87

ACTUAL OBSERVED FORCE AND ELONGATION MEASUREMENTS

⚠1 (9.2.1) PTF = 145 kips Pressure 990 psi Elongation 3.5 in.
(9.3.1) Step 1 = 350 kips Pressure 2360 psi Elongation 4.9 in.
(9.4.1) Step 2 = 600 kips Pressure 4030 psi Elongation 6.6 in.
(9.5.2) LOF = 607 kips Pressure 4080 psi Elongation 6.7 in.
OSF = 819 kips Pressure 5490 psi Elongation 8.0 in.
TOTAL ELONGATION (9.9.5.2) minus (9.9.2.1) = 4.5 in. W.W. 10/29/87
(9.9.6.2) Elongation Variation +4.8 % Ruler ID R17 Recal Date 8/20/88 W.W. 10/29/87
⚠1 (9.9.6.4) ELONGATION: Accept: ☒ YES ☐ NO Notify Owner: N/A W.W. 10/29/87

(9.10.5.1) ACTUAL LIFT OFF VALUES: (9.10.5.2) CIRCLED

Stack #1 - 1	4100	Stack #2 - 1	(4150)	Actual 1	4150 psi
2	4080	2	(4100)	2	4100 psi
3	4086	3	(4100)	3	4100 psi

(9.10.6) Required Liftoff Values 607 TO 643 kips Actual Average 4117 psi W.W. 10/29/87
4080 TO 4320

(9.10.6.2) FORCE: Opposite End 678 kips. This End 613 kips. TOTAL TENDON 646 kips W.W. 10/29/87
LIFTOFF: Acceptable ☒ YES ☐ NO Notify Owner: N/A NCR No. N/A W.W. 10/29/87

(9.10.9.1) Additional broken/missing wires 0 Amt. N/A Engr. Notified: N/A W.W. 10/29/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) NCR No. N/A W.W. 10/29/87
(9.10.9.2) Final Shim Stack Height #1 7.1" #2 7.1" 4½", 1", (1") ½"
(9.10.9.3) Protruding Unseated Wires (from DS 8.0) Seated N/A Unseated N/A W.W. 10/29/87

(9.10.9.4) Additional Protruding/Unseated Wires NONE W.W. 10/29/87
(TRANSFER AMOUNT AND LOCATION TO DATA SHEET 8.0) N/A W.W. 10/29/87

CIRCLED SHIM IS 4151 1045 MATERIAL

Q.C. Review [signature] Level III Date 11/23/87

Title MGR. Q.C./PSC

Rel 11/3/87

⚠1 8-14-87 ADD INFO.

KNC 11/3/87

PSC PROCEDURE SQ 12.1 E169
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. YES 1/4 Gal. Q.C. Signoff EB 9/22/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 3/4 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 3/4 Gal. EB 9/22/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. FROM FIELD END EB 10/6/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports 48 1/8 Gal. EB 10/6/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 48 1/8 Gal. EB 10/6/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 10/6/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE N/A (9.7 .5.1) AFTER N/A EB 10/6/87
Calculations: FULL 55 GAL DRUM HAND PUMPED IN EB 10/6/87

(10.1) Ambient Temp. 42 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 10/6/87
(10.2.1) Can Removal 9/22/87 Can Replacement 10/6/87 Days Elapsed 14 EB 10/6/87
(11.1.5) Cold Pack Grease 1/2 Gal. (1/4 COATED ON SHOP + FIELD END = 1/2)
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 10/6/87
(11.2.7) Pump Hot Grease 55 Gal. Grease Temp. 200°F
Thermo.No. PK42 Recal Date 9/8/88 EB 10/6/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 55 Gal. EB 10/6/87
(11.2.9) Cold Pack 1/2 Gal + Partial Fill 0 Gal. + Total Pumped In 55 Gal.
TOTAL QUANTITY REPLACED 55 1/2 Gal. EB 10/6/87

(11.2.10.1.1) Grease Leaks ☒ YES ☐ NO - ~~LOSSING~~ LOSING GREASE ON FIELD END NEED TO REPLACE GASKET AND REGREASE EB 11/12/87 EB 10/6/87

(11.2.10.2.1) REFILL ACCEPTABLE ☐ YES ☒ NO Variation N/A % EB 10/6/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 10/6/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW W. F. Hendrickson LEVEL III DATE 10-15-87

TITLE MGR., Q.A. ⚠1 8-14-87 ADD INFO. Rel 11/12/87

PSC PROCEDURE SQ 12.1 E170
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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Revision 0
⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. N/A Gal. Q.C. Signoff EB 10/12/87
⚠1 SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only SEE 8.5.1 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. SEE 8.5.1 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS SEE 8.5.1 Gal. EB 10/12/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks 42½ Gal. EB 10/12/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports N/A Gal. EB 10/12/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 42½ * Gal. * SEE COMMENTS BELOW ACTUALLY 35 7/8 GAL EB 10/22/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/6/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 31 (9.7 .5.1) AFTER 6 EB 11/6/87
Calculations: 31 - 6 = 25 × 1.77 = 44.2 EB 11/6/87

(10.1) Ambient Temp. 34 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/6/87
(10.2.1) Can Removal 9/29/87 Can Replacement 11/6/87 Days Elapsed 39 EB 11/6/87
(11.1.5) Cold Pack Grease N/A Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/6/87
(11.2.7) Pump Hot Grease 44.2 Gal. Grease Temp. 220 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/6/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 44.2 Gal. EB 11/6/87
(11.2.9) Cold Pack 0 Gal + Partial Fill 0 Gal + Total Pumped In 44.2 Gal.
TOTAL QUANTITY REPLACED 44.2 Gal. EB 11/6/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/6/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +23 % EB 11/6/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/6/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: TOTAL LOST ORIGINALLY 48 7/8 ADD TOTAL REPLACED 10-6-87 55½ = 6 5/8 ADDITIONAL MINUS TOTAL LOSS OF 42½ = (ON 10-12-87) 35 7/8 MISSING

Q.C. REVIEW H. L. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO. 11/12/87

PSC PROCEDURE SQ 12.1 E171
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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Revision 0
⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V14 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 9/28/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 47 5/8 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/2 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 48 1/8 Gal. EB 9/28/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE ~~N/A~~ EB 10/6/87 Gal. EB 10/6/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE ~~N/A~~ EB 10/6/87 Gal. EB 10/6/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 48 1/8 Gal. TRANSFER TOTAL TO SHOP END EB 10/6/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension N/A Gallons per inch EB 10/6/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE N/A (9.7 .5.1) AFTER N/A EB 10/6/87
Calculations: N/A N/A EB 10/6/87

(10.1) Ambient Temp. N/A ° F. Thermo.ID. N/A Recal Date N/A EB 10/6/87
(10.2.1) Can Removal 9/28/87 Can Replacement SEE Days Elapsed N/A EB 10/6/87
(11.1.5) Cold Pack Grease N/A Gal. → SHOP END
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 10/6/87
(11.2.7) Pump Hot Grease N/A Gal. Grease Temp. N/A °F
Thermo.No. N/A Recal Date N/A EB 10/6/87

(11.2.8) Waste Grease N/A Gal. TOTAL PUMPED IN N/A Gal. EB 10/6/87
(11.2.9) Cold Pack N/A Gal + Partial Fill N/A Gal. + Total Pumped In N/A Gal.
TOTAL QUANTITY REPLACED N/A Gal. EB 10/6/87

(11.2.10.1.1) Grease Leaks N/A ☐ YES ☐ NO EB 10/6/87

(11.2.10.2.1) REFILL ACCEPTABLE N/A ☐ YES ☐ NO Variation N/A % EB 10/6/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 10/6/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: NONE

Q.C. REVIEW W.F. Hendrickson LEVEL III DATE 10-15-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO. pwl 11/12/87

PSC PROCEDURE SQ 12.1 E172
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/2 Gal. Q.C. Signoff CB 10/16/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 Gal. CB 10/15/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. CB 11/10/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports 55 / FROM FIELD END Gal. CB 11/10/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 56 Gal. CB 11/10/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch CB 11/10/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 31 (9.7 .5.1) AFTER NONE CB 11/10/87
Calculations: 31 x 1.77 = 55 + 13½ HAND POURED IN CB 11/10/87

(10.1) Ambient Temp. 24 ° F. Thermo.ID. PK42 Recal Date 9/8/88 CB 11/10/87
(10.2.1) Can Removal 10/15/87 Can Replacement 11/10/87 Days Elapsed 26 CB 11/10/87
(11.1.5) Cold Pack Grease 3/4 Gal. (¼ COATED ON FIELD + SHOP = ¾)
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. CB 11/10/87
(11.2.7) Pump Hot Grease 68½ Gal. Grease Temp. 210 °F ALL GREASE TEMP 210°F
Thermo.No. PK42 Recal Date 9/8/87 CB 11/10/87

(11.2.8) Waste Grease 1/4 Gal. TOTAL PUMPED IN 68½ Gal. CB 11/10/87
(11.2.9) Cold Pack ¾ Gal + Partial Fill 0 Gal. + Total Pumped In 68¼ Gal.
TOTAL QUANTITY REPLACED 69 Gal. CB 11/10/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO CB 11/10/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +23 % CB 11/10/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 11/10/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN + POURED

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. ⚠1 8-14-87 ADD INFO. pel 11/12/87

PSC PROCEDURE SQ 12.1 E173
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V124 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 4 Gal. Q.C. Signoff H.H. 10/16/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 21 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 34 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 55 Gal. H.H. 10/16/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/3/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/3/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 55 Gal. → TRANSFER TOTAL TO SHOP END EB 11/3/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension N/A Gallons per inch EB 11/3/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE N/A (9.7 .5.1) AFTER N/A EB 11/3/87
Calculations: N/A EB 11/3/87

(10.1) Ambient Temp. N/A ° F. Thermo.ID. N/A Recal Date N/A EB 11/3/87
(10.2.1) Can Removal 10/2/87 Can Replacement SEE SHOP END Days Elapsed N/A EB 11/3/87
(11.1.5) Cold Pack Grease N/A Gal. EB 11/3/87
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity ~~N/A~~ NONE Gal. EB 11/3/87
(11.2.7) Pump Hot Grease N/A Gal. Grease Temp. N/A °F
Thermo.No. N/A Recal Date N/A EB 11/3/87

(11.2.8) Waste Grease N/A Gal. TOTAL PUMPED IN N/A Gal. EB 11/3/87
(11.2.9) Cold Pack N/A Gal + Partial Fill N/A Gal + Total Pumped In N/A Gal.
TOTAL QUANTITY REPLACED N/A Gal. EB 11/3/87

(11.2.10.1.1) Grease Leaks N/A ☐ YES ☐ NO EB 11/3/87

(11.2.10.2.1) REFILL ACCEPTABLE N/A ☐ YES ☐ NO Variation N/A % EB 11/3/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/3/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: NONE

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO.

RWL 11/12/87

PSC PROCEDURE SQ 12.1 E174
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. SHOP / TOP UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/1/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 Gal. EB 10/1/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. FROM FIELD END EB 11/4/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports 45 3/4 Gal. EB 11/4/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 46 3/4 Gal. EB 11/4/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/6/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 31" (9.7 .5.1) AFTER NONE EB 11/6/87
Calculations: 31" x 1.77 = 55 GAL EB 11/4/87 11 1/2 - 8 1/2 = 3 x 1.77 = 5.3 EB 11/6/87

(10.1) Ambient Temp. 54 / 34 °F. Thermo.ID. PK42 / PK42 Recal Date 9/8/88 / 9/8/88 EB 11/4/87 EB 11/6/87
(10.2.1) Can Removal 10/1/87 Can Replacement 11/4/87 + 11/6/87 Days Elapsed 36 EB 11/6/87
(11.1.5) Cold Pack Grease 1/2 Gal. (1/4 COATED ON FIELD END + 1/4 ON SHOP = 1/2)
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/4/87
(11.2.7) Pump Hot Grease 60.3 Gal. Grease Temp. 218 °F 55 GAL TEMP 220° PK42 DATE 9/8/88 EB 11/4/87
Thermo.No. PK42 Recal Date 9/8/88 / 11/6/87 1/2 ON 11-4-87 EB EB 11/6/87
(11.2.8) Waste Grease NONE ON Gal. TOTAL PUMPED IN 60.3 Gal. EB 11/6/87
(11.2.9) Cold Pack 1/2 Gal + Partial Fill 0 Gal. + Total Pumped In 59.8 Gal.
TOTAL QUANTITY REPLACED 60.3 Gal. EB 11/6/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/6/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +28 % EB 11/6/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/4/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. 1 8-14-87 ADD INFO. RWL 11/12/87

PSC PROCEDURE SQ 12.1 E175
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 9/28/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 45 5/8 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/8 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 45 3/4 Gal. EB 9/28/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/3/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/3/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 45 3/4 Gal. ← TRANSFER TOTAL TO SHOP END EB 11/3/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension N/A Gallons per inch EB 11/3/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE N/A (9.7 .5.1) AFTER N/A EB 11/3/87
Calculations: N/A EB 11/3/87

(10.1) Ambient Temp. N/A ° F. Thermo.ID. N/A Recal Date N/A EB 11/3/87
(10.2.1) Can Removal 9/24/87 Can Replacement SEE SHOP END Days Elapsed N/A EB 11/3/87
(11.1.5) Cold Pack Grease N/A ~~42~~ EB 11/3/87 Gal. (~~1/4 COATED ON FIELD END + SHOP = 1/2~~) EB 11/3/87
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/3/87
(11.2.7) Pump Hot Grease N/A Gal. Grease Temp. N/A °F
Thermo.No. N/A Recal Date N/A EB 11/3/87

(11.2.8) Waste Grease N/A Gal. TOTAL PUMPED IN N/A Gal. EB 11/3/87
(11.2.9) Cold Pack N/A ~~42~~ EB 11/3/87 Gal. + Partial Fill N/A Gal. + Total Pumped In N/A Gal.
TOTAL QUANTITY REPLACED N/A Gal. EB 11/3/87

(11.2.10.1.1) Grease Leaks N/A ☐ YES ☐ NO EB 11/3/87

(11.2.10.2.1) REFILL ACCEPTABLE N/A ☐ YES ☐ NO Variation N/A % EB 11/3/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/3/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: NONE

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. ⚠1 8-14-87 ADD INFO. 11/12/87

PSC PROCEDURE SQ 12.1 E176
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. SHOP/TOP UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/5/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 3/4 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 3/4 Gal. EB 10/5/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. FROM FIELD END EB 11/6/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports 42 3/4 Gal. EB 11/6/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 43 1/2 Gal. EB 11/6/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/6/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE EB 11/6/87 31 31 (9.7 .5.1) AFTER 13 1/2 EB 11/6/87
Calculations: 8 1/2 ALL PUMPED IN 8 1/2 x 1.77 = 15 31" - 13 1/2 = 30.9 GAL EB 11/6/87

(10.1) Ambient Temp. 34 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/6/87 EB 11/6/87
(10.2.1) Can Removal 10/5/87 Can Replacement 11/6/87 + 11/6/87 Days Elapsed 32 EB 11/6/87
(11.1.5) Cold Pack Grease 1/2 Gal. (1/4 COATED ON FIELD END + SHOP = 1/2)
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/6/87
(11.2.7) Pump Hot Grease 45.9 Gal. Grease Temp. 212 °F 15 GAL 218°F PK 42 9/8/88 EB 11/6/87 EB 11/6/87
Thermo.No. PK42 Recal Date 9/8/88

(11.2.8) Waste Grease TOTAL ← 1 GAL WASTE EB 11/6/87 Gal. TOTAL PUMPED IN 45.9 Gal. EB 11/6/87
(11.2.9) Cold Pack 1/2 Gal + Partial Fill 0 Gal + Total Pumped In 44.9 Gal.
TOTAL QUANTITY REPLACED 45.4 Gal. EB 11/6/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/6/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +4 % EB 11/6/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/6/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. ⚠1 8-14-87 ADD INFO. RWL 11/12/87

PSC PROCEDURE SQ 12.1 E177
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V250 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff CB 9/28/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 42 5/8 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/8 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 42 3/4 Gal. CB 9/28/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. CB 11/3/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. CB 11/3/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 42 3/4 Gal. =TRANSFER TOTAL TO SHOP END CB 11/3/87

1 (9.7 .3.1) Pump Gauge N/A Dimension N/A Gallons per inch CB 11/3/87
1 (9.7 .4.1) Grease Height in Drum BEFORE N/A (9.7 .5.1) AFTER N/A CB 11/3/87
Calculations: N/A CB 11/3/87

(10.1) Ambient Temp. N/A ° F. Thermo.ID. N/A Recal Date N/A CB 11/3/87
(10.2.1) Can Removal 9/24/87 Can Replacement SEE SHOP END Days Elapsed N/A CB 11/3/87
(11.1.5) Cold Pack Grease N/A Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. CB 11/3/87
(11.2.7) Pump Hot Grease N/A Gal. Grease Temp. N/A °F
Thermo.No. N/A Recal Date N/A CB 11/3/87

(11.2.8) Waste Grease N/A Gal. TOTAL PUMPED IN N/A Gal. CB 11/3/87
(11.2.9) Cold Pack N/A Gal + Partial Fill N/A Gal. + Total Pumped In N/A Gal.
TOTAL QUANTITY REPLACED N/A Gal. CB 11/3/87

(11.2.10.1.1) Grease Leaks N/A ☐ YES ☐ NO CB 11/3/87

(11.2.10.2.1) REFILL ACCEPTABLE N/A ☐ YES ☐ NO Variation N/A % CB 11/3/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 11/3/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: NONE

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. 1 8-14-87 ADD INFO. fwl 11/12/87

PSC PROCEDURE SQ 12.1 E178
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. SHOP/NEAR B BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/2 Gal. Q.C. Signoff CB 9/25/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 2 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/2 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 2 1/2 Gal. CB 9/25/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. CB 11/4/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. CB 11/4/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 2 1/2 Gal. CB 11/4/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch CB 11/4/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 6 3/4 (9.7 .5.1) AFTER 7 1/4 8 CB 11/4/87
Calculations: 8" - 6 3/4 = 1 1/4 x 1.77 = 2.2 CB 11/4/87 CB 11/4/87

(10.1) Ambient Temp. 62 ° F. Thermo.ID. PK42 Recal Date 9/8/88 CB 11/4/87
(10.2.1) Can Removal 9/25/87 Can Replacement 11/4/87 Days Elapsed 40 CB 11/4/87
(11.1.5) Cold Pack Grease 1/2 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. CB 11/4/87
(11.2.7) Pump Hot Grease 2.2 Gal. Grease Temp. 180 °F
Thermo.No. PK42 Recal Date 9/8/88 CB 11/4/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 2.2 Gal. CB 11/4/87
(11.2.9) Cold Pack 1/2 Gal + Partial Fill 0 Gal + Total Pumped In 2.2 Gal.
TOTAL QUANTITY REPLACED 2.7 Gal. CB 11/4/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO CB 11/4/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +8 % CB 11/4/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 11/4/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO. fcl 11/12/87

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-9 TENDON END/BUTTRESS NO. FIELD / C NEAR BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/9/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 2 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 2 Gal. EB 10/9/87

SQ 12.1

(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/2/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/2/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 2 Gal. EB 11/2/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/2/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 3 3/4 (9.7 .5.1) AFTER 5 1/2 EB 11/2/87
Calculations: 5 1/2 - 3 3/4 - 1 3/4 x 1.77 = 3.0 EB 11/2/87

(10.1) Ambient Temp. 60 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/2/87
(10.2.1) Can Removal 10/9/87 Can Replacement 11/2/87 Days Elapsed 24 EB 11/2/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/2/87
(11.2.7) Pump Hot Grease 3.0 Gal. Grease Temp. 218 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/2/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 3.0 Gal. EB 11/2/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal. + Total Pumped In 3.0 Gal.
TOTAL QUANTITY REPLACED 3 1/4 Gal. EB 11/2/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/2/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +62 % EB 11/2/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/2/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. 1 8-14-87 ADD INFO. Rel 11/3/87

KNC 11/3/87

PSC PROCEDURE SQ 12.1 E180
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-38 TENDON END/BUTTRESS NO. SHOP / NEAR A BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/2 Gal. Q.C. Signoff EB 9/29/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 2 3/4 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/2 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 3 1/4 Gal. EB 9/29/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/9/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/9/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 3 1/4 Gal. EB 11/9/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/9/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 11" (9.7 .5.1) AFTER 12 3/4 EB 11/9/87
Calculations: 12 3/4 - 11 = 1 3/4 x 1.77 = 3 EB 11/9/87

(10.1) Ambient Temp. 34 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/9/87
(10.2.1) Can Removal 9/29/87 Can Replacement 11/9/87 Days Elapsed 41 EB 11/9/87
(11.1.5) Cold Pack Grease 1/2 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/9/87
(11.2.7) Pump Hot Grease 3 Gal. Grease Temp. 180 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/9/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 3 Gal. EB 11/9/87
(11.2.9) Cold Pack 1/2 Gal + Partial Fill 0 Gal. + Total Pumped In 3 Gal.
TOTAL QUANTITY REPLACED 3 1/2 Gal. EB 11/9/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/9/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +7 % EB 11/9/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/9/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW W.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO. Rel 11/12/87

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D1-38 TENDON END/BUTTRESS NO. FIELD / D NEAR BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/9/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1½ Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1½ Gal. EB 10/9/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/9/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/9/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1½ Gal. EB 11/9/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/9/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 10½ (9.7 .5.1) AFTER 11½ EB 11/9/87
Calculations: 11½ - 10½ = 1 x 1.77 = 1 3/4 EB 11/9/87

(10.1) Ambient Temp. 36 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/9/87
(10.2.1) Can Removal 10/9/87 Can Replacement 11/9/87 Days Elapsed 31 EB 11/9/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/9/87
(11.2.7) Pump Hot Grease 1 3/4 Gal. Grease Temp. 218 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/9/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 1 3/4 Gal. EB 11/9/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal. + Total Pumped In 1 3/4 Gal.
TOTAL QUANTITY REPLACED 2 Gal. EB 11/9/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/9/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +33 % EB 11/9/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/9/87

(11.3.3.15.3) Vents Open V Vents Closed After Filling V
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO.

Pul 11/12/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. SHOP / F NEAR BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/17/87
SQ 6.0 – DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 3/4 Gal.
1 SQ 6.0 – DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 – DS 6.0 – Bottom of Page TOTAL GREASE LOSS 1 3/4 Gal. EB 10/17/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/10/87
(8.6.1) Documented Grease Losses – NCRs or Other Reports NONE Gal. EB 11/10/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 3/4 Gal. EB 11/10/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/10/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 17 (9.7 .5.1) AFTER 18 1/4 EB 11/10/87
Calculations: 18 1/4 - 17 = 1 1/4 x 1.77 = 2.2 EB 11/10/87

(10.1) Ambient Temp. 28 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/10/87
(10.2.1) Can Removal 10/17/87 Can Replacement 11/10/87 Days Elapsed 24 EB 11/10/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/10/87
(11.2.7) Pump Hot Grease 2.2 Gal. Grease Temp. 210 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/10/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 2.2 Gal. EB 11/10/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal.+ Total Pumped In 2.2 Gal.
TOTAL QUANTITY REPLACED 2.4 Gal. EB 11/10/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/10/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +37% EB 11/10/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/10/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. B. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

1 8-14-87 ADD INFO.

Rul 11/12/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D2-3 TENDON END/BUTTRESS NO. FIELD / NEAR A BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff CB 9/30/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 2 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/2 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 2 1/2 Gal. CB 9/30/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. CB 11/6/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. CB 11/6/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 2 1/2 Gal. CB 11/6/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch CB 11/6/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 7 1/2 (9.7 .5.1) AFTER 9 CB 11/6/87
Calculations: 9 - 7 1/2 = 1 1/2 x 1.77 = 2.6 CB 11/6/87

(10.1) Ambient Temp. 42 ° F. Thermo.ID. PK42 Recal Date 9/8/88 CB 11/6/87
(10.2.1) Can Removal 9/30/87 Can Replacement 11/6/87 Days Elapsed 37 CB 11/6/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. CB 11/6/87
(11.2.7) Pump Hot Grease 2.6 Gal. Grease Temp. 184 °F
Thermo.No. PK42 Recal Date 9/8/88 CB 11/6/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 2.6 Gal. CB 11/6/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 2.6 Gal.
TOTAL QUANTITY REPLACED 2.9 Gal. CB 11/6/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO CB 11/6/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +16 % CB 11/6/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 11/6/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND POMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO.

RAL 11/12/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. SHOP/ NEAR F BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/26/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 2¼ Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 2¼ Gal. EB 10/26/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/10/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/10/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 2¼ Gal. EB 11/10/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/10/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 15½ (9.7 .5.1) AFTER 17 EB 11/10/87
Calculations: 17-15½ = 1½ x 1.77 = 2.6 EB 11/10/87

(10.1) Ambient Temp. 28 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/10/87
(10.2.1) Can Removal 10/20/87 Can Replacement 11/10/87 Days Elapsed 21 EB 11/10/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/10/87
(11.2.7) Pump Hot Grease 2.6 Gal. Grease Temp. 210 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/10/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 2.6 Gal. EB 11/10/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal. + Total Pumped In 2.6 Gal.
TOTAL QUANTITY REPLACED 2.9 Gal. EB 11/10/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/10/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +28 % EB 11/10/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/10/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q-A.

1 8-14-87 ADD INFO.

Rel 11/12/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. D3-18 TENDON END/BUTTRESS NO. FIELD / NEAR ℄ BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/23/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 2 1/4 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/2 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 2 3/4 Gal. EB 10/23/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/2/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/2/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 2 3/4 Gal. EB 11/2/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/2/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 2" (9.7 .5.1) AFTER 3 3/4" EB 11/2/87
Calculations: 3 3/4" - 2" = 1 3/4 x 1.77 = 3.0 EB 11/2/87

(10.1) Ambient Temp. 60 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/2/87
(10.2.1) Can Removal 10/23/87 Can Replacement 11/2/87 Days Elapsed 10 EB 11/2/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/2/87
(11.2.7) Pump Hot Grease 3.0 Gal. Grease Temp. 218 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/2/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 3.0 Gal. EB 11/2/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill N/A Gal. + Total Pumped In 3.0 Gal.
TOTAL QUANTITY REPLACED 3 1/4 Gal. EB 11/2/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/2/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation 18 % EB 11/2/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/2/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. 1 8-14-87 ADD INFO. RWL 11/3/87

KNC 11/3/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. SHOP / A BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/2 Gal. Q.C. Signoff EB 10/12/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 3/4 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 3/4 Gal. EB 10/12/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/9/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/9/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 3/4 Gal. EB 11/9/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/9/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 8 (9.7 .5.1) AFTER 10" EB 11/9/87
Calculations: 10" - 8 = 2 x 1.77 = 3 1/2 EB 11/9/87

(10.1) Ambient Temp. 32 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/9/87
(10.2.1) Can Removal 10/12/87 Can Replacement 11/9/87 Days Elapsed 28 EB 11/9/87
(11.1.5) Cold Pack Grease 1/2 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/9/87
(11.2.7) Pump Hot Grease 3 1/2 Gal. Grease Temp. 210 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/9/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 3 1/2 Gal. EB 11/9/87
(11.2.9) Cold Pack 1/2 Gal + Partial Fill 0 Gal. + Total Pumped In 3 1/2 Gal.
TOTAL QUANTITY REPLACED 4 Gal. EB 11/9/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/9/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +128 % EB 11/9/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/9/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. L. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO.

RWL 11/12/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 59AC TENDON END/BUTTRESS NO. FIELD/C BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/20/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 3/4 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 3/4 Gal. EB 10/20/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/2/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/2/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 3/4 Gal. EB 11/2/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/2/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 6 3/4 (9.7 .5.1) AFTER 8 1/2 EB 11/2/87
Calculations: 8 1/2 - 6 3/4 = 1 3/4 x 1.77 = 3.0 EB 11/2/87

(10.1) Ambient Temp. 60 °F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/2/87
(10.2.1) Can Removal 10/20/87 Can Replacement 11/2/87 Days Elapsed 13 EB 11/2/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/2/87
(11.2.7) Pump Hot Grease 3.0 Gal. Grease Temp. 218 °F
Thermo.No. PK42 Recal Date 4/9/88 EB 11/2/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 30 Gal. EB 11/2/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal. + Total Pumped In 3.0 Gal.
TOTAL QUANTITY REPLACED 3 1/4 Gal. EB 11/2/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/2/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +85 % EB 11/2/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/2/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. 1 8-14-87 ADD INFO. Rel 11/3/87

KWC 11/3/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. SHOP / A BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/8/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 Gal. EB 10/8/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/9/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/9/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 Gal. EB 11/9/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/9/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 10 (9.7 .5.1) AFTER 11 EB 11/9/87
Calculations: 11 - 10 = 1 x 1.77 = 1 3/4 EB 11/9/87

(10.1) Ambient Temp. 32 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/9/87
(10.2.1) Can Removal 10/8/87 Can Replacement 11/9/87 Days Elapsed 32 EB 11/9/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/9/87
(11.2.7) Pump Hot Grease 1 3/4 Gal. Grease Temp. 210 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/9/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 1 3/4 Gal. EB 11/9/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 1 3/4 Gal.
TOTAL QUANTITY REPLACED 2 Gal. EB 11/9/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/9/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +100 % EB 11/9/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/9/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. ⚠1 8-14-87 ADD INFO.

pwl 11/12/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 77AC TENDON END/BUTTRESS NO. FIELD / C BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/22/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 1/2 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 1/2 Gal. EB 10/22/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/2/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/2/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 1/2 Gal. EB 11/2/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/2/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 5 1/2 (9.7 .5.1) AFTER 6 3/4 EB 11/2/87
Calculations: 6 3/4 - 5 1/2 = 1 1/4 x 1.77 = 2.2 EB 11/2/87

(10.1) Ambient Temp. 60 ° F. Thermo.ID. PK42 Recal Date 4/8/88 EB 11/2/87
(10.2.1) Can Removal 10/21/87 Can Replacement 11/2/87 Days Elapsed 12 EB 11/2/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity N/A Gal. EB 11/2/87
(11.2.7) Pump Hot Grease 2.2 Gal. Grease Temp. 218 °F
Thermo.No. PK42 Recal Date 9/8/87 EB 11/2/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 2.2 Gal. EB 11/2/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal. + Total Pumped In 2.2 Gal.
TOTAL QUANTITY REPLACED 2.45 Gal. EB 11/2/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/2/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +63 % EB 11/2/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/2/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. ⚠1 8-14-87 ADD INFO. RWL 11/3/87

VWL 11/3/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/14/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 1/4 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 1/4 Gal. EB 10/14/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/11/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/11/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 1/4 Gal. EB 11/11/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/11/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 12 1/2 (9.7 .5.1) AFTER 11 1/4 EB 11/11/87
Calculations: 12 1/2 - 11 1/4 = 1 1/4 x 1.77 = 2.2 EB 11/11/87

(10.1) Ambient Temp. 30 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/11/87
(10.2.1) Can Removal 10/14/87 Can Replacement 11/11/87 Days Elapsed 28 EB 11/11/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/11/87
(11.2.7) Pump Hot Grease 2.2 Gal. Grease Temp. 218 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/11/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 2.2 Gal. EB 11/11/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal. + Total Pumped In 2.2 Gal.
TOTAL QUANTITY REPLACED 2.4 Gal. EB 11/11/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/11/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +92 % EB 11/11/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/11/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO.

pwl 11/12/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 42DF TENDON END/BUTTRESS NO. FIELD / "D" BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/2 Gal. Q.C. Signoff EB 10/13/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 1/4 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 1/4 Gal. EB 10/13/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/4/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/4/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 1/4 Gal. EB 11/4/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/4/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 9 1/2 (9.7 .5.1) AFTER 10 1/2 EB 11/4/87
Calculations: 10 1/2 - 9 1/2 = 1 x 1.77 = 1 3/4 EB 11/4/87

(10.1) Ambient Temp. 58 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/4/87
(10.2.1) Can Removal 10/13/87 Can Replacement 11/3/87 Days Elapsed 22 EB 11/4/87
(11.1.5) Cold Pack Grease 1/2 Gal. EB 11/4/87
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/4/87
(11.2.7) Pump Hot Grease 1 3/4 Gal. Grease Temp. 170 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/4/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 1 3/4 Gal. EB 11/4/87
(11.2.9) Cold Pack 1/2 Gal + Partial Fill 0 Gal + Total Pumped In 1 3/4 Gal.
TOTAL QUANTITY REPLACED 2 1/4 Gal. EB 11/4/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/4/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +80 % EB 11/4/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/4/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

1 8-14-87 ADD INFO.

pwl 11/12/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff CB 10/28/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 3/4 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 3/4 Gal. CB 10/28/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. CB 11/10/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. CB 11/10/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 3/4 Gal. CB 11/10/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch CB 11/10/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 19 1/4 (9.7 .5.1) AFTER 20 3/4 CB 11/10/87
Calculations: 20 3/4 - 19 1/4 = 1 1/2 x 1.77 = 2.6 CB 11/10/87

(10.1) Ambient Temp. 28 ° F. Thermo.ID. PK42 Recal Date 9/8/88 CB 11/10/87
(10.2.1) Can Removal 10/28/87 Can Replacement 11/10/87 Days Elapsed 13 CB 11/10/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. CB 11/10/87
(11.2.7) Pump Hot Grease 2.6 Gal. Grease Temp. 218 °F
Thermo.No. PK42 Recal Date 9/8/88 CB 11/10/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 2.6 Gal. CB 11/10/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal.+ Total Pumped In 2.6 Gal.
TOTAL QUANTITY REPLACED 2.9 Gal. CB 11/10/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO CB 11/10/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +65 % CB 11/10/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 11/10/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

1 8-14-87 ADD INFO.

Rul 11/12/87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 65BF TENDON END/BUTTRESS NO. FIELD/"B" BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/27/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 3/4 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 3/4 Gal. EB 10/27/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. EB 11/3/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/3/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 3/4 Gal. EB 11/3/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/3/87
⚠1 (9.7 .4.I) Grease Height in Drum BEFORE 3 1/2 (9.7 .5.1) AFTER 5 1/4 EB 11/3/87
Calculations: 5 1/4 - 3 1/2 = 1 3/4 x 1.77 = 3.0 EB 11/3/87

(10.1) Ambient Temp. 60 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/3/87
(10.2.1) Can Removal 10/27/87 Can Replacement 11/3/87 Days Elapsed 7 EB 11/3/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/3/87
(11.2.7) Pump Hot Grease 3.0 Gal. Grease Temp. 220°F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/3/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 3.0 Gal. EB 11/3/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal. + Total Pumped In 3.0 Gal.
TOTAL QUANTITY REPLACED 3 1/4 Gal. EB 11/3/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/3/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +85 % EB 11/3/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/3/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN.

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. ⚠1 8-14-87 ADD INFO. Rel 11/3/87

ENC 11/3/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. SHOP/F BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff eb 10/29/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 1/2 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/4 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 3/4 Gal. eb 10/29/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. eb 11/10/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. eb 11/10/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 3/4 Gal. eb 11/10/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch eb 11/10/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 18 1/4 (9.7 .5.1) AFTER 19 1/4 eb 11/10/87
Calculations: 19 1/4 - 18 1/4 = 1 x 1.77 = 1 3/4 eb 11/10/87

(10.1) Ambient Temp. 28 ° F. Thermo.ID. PK42 Recal Date 9/8/88 eb 11/10/87
(10.2.1) Can Removal 10/28/87 Can Replacement 11/10/87 Days Elapsed 13 eb 11/10/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity ~~1/4~~ NONE Gal. eb 11/10/87 eb 11/8/87
(11.2.7) Pump Hot Grease 1 3/4 Gal. Grease Temp. 218 °F eb 11/10/87
Thermo.No. PK42 Recal Date 9/8/88

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 1 3/4 Gal. eb 11/10/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 1 3/4 Gal.
TOTAL QUANTITY REPLACED 2 Gal. eb 11/10/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO eb 11/10/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +14 % eb 11/10/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A eb 11/10/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 12 11-13-87 *R.R. 11/13/87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO. 11/12/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. FIELD / B BUTT UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 4 Gal. Q.C. Signoff H.F. 10/29/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 1 Gal.
△1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 0 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 1 3/4 Gal. H.F. 10/29/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. CB 11/3/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. CB 11/3/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 1 3/4 Gal. CB 11/3/87

△1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch CB 11/3/87
△1 (9.7 .4.1) Grease Height in Drum BEFORE 5 1/4 (9.7 .5.1) AFTER 6 1/4 CB 11/3/87
Calculations: 6 1/4 - 5 1/4 = 1" x 1.77 = 1.7 CB 11/3/87

(10.1) Ambient Temp. 60 ° F. Thermo.ID. PK42 Recal Date 9/8/88 CB 11/3/87
(10.2.1) Can Removal 10/28/87 Can Replacement ~~10/29/87~~ 11/3/87 CB 11/3/87 Days Elapsed 6 CB 11/3/87
(11.1.5) Cold Pack Grease 1/4 Gal. CB 11/3/87
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. CB 11/3/87
(11.2.7) Pump Hot Grease 1.7 Gal. Grease Temp. 220 °F
Thermo.No. PK42 Recal Date 9/8/88 CB 11/3/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 1.7 Gal. CB 11/3/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 1.7 Gal.
TOTAL QUANTITY REPLACED 1.95 Gal. CB 11/3/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO CB 11/3/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +11 % CB 11/3/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 11/3/87

(11.3.3.15.3) Vents Open ✓ Vents Closed After Filling ✓
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. △1 8-14-87 ADD INFO. Rel 11/3/87

KNC 11/3/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V36 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/6/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 38 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 38 Gal. EB 10/6/87

SQ 12.1

(8.5.1) Estimated Grease Losses From Leaks UNKNOWN Gal. PUMPED IN FROM SHOP END EB 11/6/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/6/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 38 Gal. EB 11/6/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/6/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 31 (9.7 .5.1) AFTER 5 1/2 EB 11/6/87
Calculations: 31 - 5 1/2 = 25 1/2 x 1.77 = 45.1 EB 11/6/87

(10.1) Ambient Temp. 34 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/6/87
(10.2.1) Can Removal 10/2/87 Can Replacement 11/6/87 Days Elapsed 35 EB 11/6/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/6/87
(11.2.7) Pump Hot Grease 45.1 Gal. Grease Temp. 220 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/6/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 45.1 Gal. EB 11/6/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 45.1 Gal.
TOTAL QUANTITY REPLACED 45.3 Gal. EB 11/6/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/6/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +19 % EB 11/6/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/6/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.T. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

1 8-14-87 ADD INFO.

fal 11/12/87

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PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V62 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff CB 10/6/87
SQ 6.0 – DS 6.0 (8.7.1) Grease Loss From Grease Can Only 31½ Gal.
⚠1 SQ 6.0 – DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 – DS 6.0 – Bottom of Page TOTAL GREASE LOSS 31½ Gal. CB 10/6/87

SQ 12.1 PUMPED IN FROM SHOP END
(8.5.1) Estimated Grease Losses From Leaks NONE Gal. CB 10/8/87
(8.6.1) Documented Grease Losses – NCRs or Other Reports NONE Gal. CB 10/8/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 31½ Gal. CB 10/8/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch CB 10/8/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 31 (9.7 .5.1) AFTER 15½" CB 10/8/87
Calculations: 31 – 15½ = 15½ × 1.77 = 27.4 CB 10/8/87

(10.1) Ambient Temp. 48 ° F. Thermo.ID. PK42 Recal Date 9/8/88 CB 10/8/87
(10.2.1) Can Removal 10/2/87 Can Replacement 10/8/87 Days Elapsed 6 CB 10/8/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. CB 10/8/87
(11.2.7) Pump Hot Grease 27.4 Gal. Grease Temp. 208 °F
Thermo.No. PK42 Recal Date 9/8/88 CB 10/8/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 27.4 Gal. CB 10/8/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 27.4 Gal.
TOTAL QUANTITY REPLACED 27.9 Gal. ~~– MORE TO BE ADDED~~ CB 11/3/87. CB 10/8/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO CB 10/8/87

NCR #F7N314-006

(11.2.10.2.1) REFILL ACCEPTABLE ☐ YES ☒ NO Variation -11 % CB 11/3/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 10/8/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO.

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V86 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff H.F. 10/15/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 3 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 8 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 52 3/4 Gal. H.F. 10/15/87

SQ 12.1

(8.5.1) Estimated Grease Losses From Leaks UNKNOWN Gal. (PUMPED IN FROM SHOP END) EB 11/3/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/3/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 52 3/4 Gal. EB 11/3/87

---

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/3/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 31" (9.7 .5.1) AFTER 4" EB 11/3/87
Calculations: 31 - 4 = 27 x 1.77 = 47 3/4 EB 11/3/87

(10.1) Ambient Temp. 62 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/3/87
(10.2.1) Can Removal 10/2/87 Can Replacement 11/3/87 Days Elapsed 32 EB 11/3/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/3/87
(11.2.7) Pump Hot Grease 47 3/4 Gal. Grease Temp. 220 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/3/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 47 3/4 Gal. EB 11/3/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 47 3/4 Gal.
TOTAL QUANTITY REPLACED 48 Gal. EB 11/3/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO NCR # F-7N314-007 EB 11/3/87

(11.2.10.2.1) REFILL ACCEPTABLE ☐ YES ☒ NO Variation -9 % EB 11/3/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/3/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

1 8-14-87 ADD INFO.

11/12/87 jwl

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

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GREASE REPLACEMENT – INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V176 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff CB 10/2/87
SQ 6.0 – DS 6.0 (8.7.1) Grease Loss From Grease Can Only 38 Gal.
⚠1 SQ 6.0 – DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE * Gal.
SQ 6.0 – DS 6.0 – Bottom of Page TOTAL GREASE LOSS 38 Gal. CB 10/2/87

SQ 12.1

* SEE DATA SHEET 6.0 PUMPED IN FROM SHOP END

(8.5.1) Estimated Grease Losses From Leaks UNKNOWN Gal. CB 11/9/87
(8.6.1) Documented Grease Losses – NCRs or Other Reports NONE Gal. CB 11/9/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 38 Gal. CB 11/9/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch CB 11/9/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 31 (9.7 .5.1) AFTER 7½ CB 11/9/87
Calculations: 31 - 7½ = 23½ x 1.77 = 41½ CB 11/9/87

(10.1) Ambient Temp. 32 ° F. Thermo.ID. PK42 Recal Date 9/8/88 CB 11/9/87
(10.2.1) Can Removal 10/2/87 Can Replacement 11/9/87 Days Elapsed 38 CB 11/9/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE. Gal. CB 11/9/87
(11.2.7) Pump Hot Grease 41½ Gal. Grease Temp. 208 °F
Thermo.No. PK42 Recal Date 9/8/88 CB 11/9/87

(11.2.8) Waste Grease 3/4 Gal. TOTAL PUMPED IN 41½ Gal. CB 11/9/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 40¾ Gal.
TOTAL QUANTITY REPLACED 41 Gal. CB 11/9/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO CB 11/9/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +7 % CB 11/9/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 11/9/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO.

Rel 11/12/87

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
DATA SHEET 12.1
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1 Revision 1, 8-14-87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V202 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff EB 10/5/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 37 3/4 Gal.
1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. 1/2 Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 38 1/4 Gal. EB 10/5/87

SQ 12.1
(8.5.1) Estimated Grease Losses From Leaks UNKNOWN Gal. PUMPED IN FROM SHOP END EB 11/4/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. EB 11/4/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 38 1/4 Gal. EB 11/4/87

1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch EB 11/4/87
1 (9.7 .4.1) Grease Height in Drum BEFORE 31" (9.7 .5.1) AFTER 4" EB 11/4/87
Calculations: 31 - 4 = 27 x 1.77 = 47.75 EB 11/4/87

(10.1) Ambient Temp. 54 ° F. Thermo.ID. PK42 Recal Date 9/8/88 EB 11/4/87
(10.2.1) Can Removal 10/2/87 Can Replacement 11/4/87 Days Elapsed 33 EB 11/4/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. EB 11/4/87
(11.2.7) Pump Hot Grease 47.75 Gal. Grease Temp. 212 °F
Thermo.No. PK42 Recal Date 9/8/88 EB 11/4/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN SAY 47 3/4 Gal EB 11/4/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 47 3/4 Gal.
TOTAL QUANTITY REPLACED 48 Gal. EB 11/4/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO EB 11/4/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +25 % EB 11/4/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A EB 11/4/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H.T. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A. 1 8-14-87 ADD INFO. 11/12/87

PSC PROCEDURE SQ 12.1
GREASE REPLACEMENT
DATA SHEET 12.1
MAY 20, 1987
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⚠1 Revision 1, 8-14-87

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GREASE REPLACEMENT - INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V306 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

QC Signoff

SQ 12.0(9.3.1) Coat End Anchorage Assm. 1/4 Gal. Q.C. Signoff CB 10/6/87
SQ 6.0 - DS 6.0 (8.7.1) Grease Loss From Grease Can Only 28 Gal.
⚠1 SQ 6.0 - DS 6.0 (10.3): Grease Loss from Tendon Duct. NONE Gal.
SQ 6.0 - DS 6.0 - Bottom of Page TOTAL GREASE LOSS 28 Gal. CB 10/6/87

SQ 12.1

(8.5.1) Estimated Grease Losses From Leaks UNKNOWN Gal. PUMPED IN FROM SHOP END CB 11/10/87
(8.6.1) Documented Grease Losses - NCRs or Other Reports NONE Gal. CB 11/10/87
(8.7.1) TOTAL GREASE LOSS THIS TENDON 28 Gal. CB 11/10/87

⚠1 (9.7 .3.1) Pump Gauge N/A Dimension 1.77 Gallons per inch CB 11/10/87
⚠1 (9.7 .4.1) Grease Height in Drum BEFORE 31 (9.7 .5.1) AFTER 2½ CB 11/10/87
Calculations: 31 - 2½ = 28½ x 1.77 = 50.4 CB 11/10/87

(10.1) Ambient Temp. 22 ° F. Thermo.ID. PK42 Recal Date 9/8/88 CB 11/10/87
(10.2.1) Can Removal 10/2/87 Can Replacement 11/10/87 Days Elapsed 39 CB 11/10/87
(11.1.5) Cold Pack Grease 1/4 Gal.
(11.1.6) Grease Can Partially Filled ☐ YES ☒ NO Quantity NONE Gal. CB 11/10/87
(11.2.7) Pump Hot Grease 50.4 Gal. Grease Temp. 220°F
Thermo.No. PK42 Recal Date 9/8/88 CB 11/10/87

(11.2.8) Waste Grease NONE Gal. TOTAL PUMPED IN 50.4 Gal. CB 11/10/87
(11.2.9) Cold Pack 1/4 Gal + Partial Fill 0 Gal + Total Pumped In 50.4 Gal.
TOTAL QUANTITY REPLACED 50.6 Gal. CB 11/10/87

(11.2.10.1.1) Grease Leaks ☐ YES ☒ NO CB 11/10/87

(11.2.10.2.1) REFILL ACCEPTABLE ☒ YES ☐ NO Variation +80 % CB 11/10/87

(11.3.3.15.2) Complete Refilling ☐ YES ☒ NO
Exit Temp. of Grease N/A °F. Thermo. I.D. N/A Recal Date N/A CB 11/10/87

(11.3.3.15.3) Vents Open N/A Vents Closed After Filling N/A
Drain Vents Closed Before Filling N/A

(11.2.10.2.2) COMMENTS: HAND PUMPED IN

Q.C. REVIEW H. F. Hendrickson LEVEL III DATE 11-13-87

TITLE MGR., Q.A.

⚠1 8-14-87 ADD INFO.

fwl 11/24/87

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

APPENDIX F

FCR's and NCR's

FIELD CHANGE REQUEST

INDEX LOG

PSC Precision Surveillance Corporation

[redacted] No.	Item	Date Written	Date Approved	Date Rev.
001	PROCEDURE SQ2.0 SECTION 1.2.3 – ALL CANS TO BE VISUALLY INSPECTED – CHANGE TO ONLY THOSE NOTED W/ LEAKS	9-29-87	9/30/87	
002	PROCEDURE SQ12.1 SECTION 10.2 + 10.3 10.2 - CHANGE 21 DAY REQUIREMENT 10.3 - DELETE	10/15/87	10/15/87	

PAGE

SPECIAL FIELD REVISION CONTROL PALISADES UNIT 1

PSC Precision Surveillance Corporation

FIELD CHANGE REQUEST NO. FCR 001

Requested By: C. BROOKS Title: MGR, Q.C./PSC Date: 9-29-87

Originator: C. BROOKS

PROCEDURE NUMBER: SQ2.0 REV. NO.: 2 PROCEDURE TITLE: SURVEILLANCE SCOPE

AFFECTED SECTION: 1.2.3 Revision to Manual Required Yes [X] No [ ]

NCR REQUIRED: Yes [ ] No [X] NCR. No. N/A Hold Tag No. N/A

DETAILED DESCRIPTION OF EXISTING CONDITION: (use extra pages or write on back)

SECTION 1.2.3 OF PROCEDURE SQ2.0 STATES "IN ADDITION TO THE ABOVE, A VISUAL INSPECTION OF ALL GREASE CANS FOR GREASE OR WATER LEAKAGE, AND DAMAGE TO THE CAN WILL BE PERFORMED AND ANY OBSERVATIONS ARE TO BE REPORTED TO THE OWNER."

RECOMMENDED CHANGE: REVISE SECTION 1.2.3 TO READ "IN ADDITION TO THE ABOVE, ANY GREASE CANS OBSERVED TO HAVE GREASE OR WATER LEAKAGE OR DAMAGE TO THE CAN SHALL BE REPORTED TO THE OWNER"

PSC Approval: Quality Assurance	Quality Control	Engineering
Sign & Date H. HENDRICKSON eb 9/29/87 PER TELEPHONE CONVER	C Brooks 9/29/87	D. BRONARS eb 9/29/87 PER TELEPHONE CONVER.

H.H. 11/13/87

ON SITE OWNER/AGENT, APPROVAL OR COMMENTS: Robert Leard Sr. Mechan. Analyst 9/30/87

APPROVED SITE QA AUTHORITY: Glen J Jenley TITLE: Sr. Engr DATE: 9/30/87

DISPOSITION PSC QC: HOLD TAG APPLIED N/A HOLD TAG REMOVED N/A

Q.C. INSPECTOR: DATE:

Distribution:

- ___ Quality Assurance Owner
- ___ Quality Assurance PSC
- X Engineering Owner
- ___ Engineering PSC
- ___ Project Manager PSC
- ___ Quality Control Owner
- ___ Quality Control PSC
- ___ _____
- ___ _____
- ___ _____

SPECIAL FIELD REVISION CONTROL

PSC Precision Surveillance Corporation

FIELD CHANGE REQUEST NO. FCR 002

[redacted]sted By: C. BROOKS Title: MGR, Q.C. /PSC Date: 10/15/87

Originator: C. BROOKS

PROCEDURE NUMBER: SQ12.1 REV. NO.: 1 PROCEDURE TITLE: GREASE REPLACEMENT

AFFECTED SECTION: 10.2 AND 10.3 Revision to Manual Required Yes [X] No [ ]

NCR REQUIRED: Yes [ ] No [X] NCR. No. N/A Hold Tag No. N/A

DETAILED DESCRIPTION OF EXISTING CONDITION: (use extra pages or write on back)

SECTION 10.2 STATES "THE REPLACEMENT OF GREASE SHALL NOT EXCEED 21 CALENDAR DAYS FROM DATE OF REMOVAL TO THE DATE OF REPLACING THE GREASE. THIS IS OF LESS IMPORTANCE IF THE TENDON ANCHORAGES HAVE BEEN LIGHTLY COATED WITH GREASE AND SUITABLY PROTECTED FROM WEATHER, MOISTURE AND DIRT."

SECTION 10.3 STATES "IF THE ELAPSED TIME EXCEEDS 21 DAYS, A NONCONFORMANCE REPORT SHALL BE DRAFTED AND SUBMITTED IN ACCORDANCE WITH PSC PROCEDURE Q.A.9.0"

RECOMMENDED CHANGE: CHANGE AS FOLLOWS:

[redacted]ON 10.2 "REPLACEMENT OF GREASE SHALL BE PERFORMED PRIOR TO MOBILIZATION OF TENDON IN-SERVICE INSPECTION EQUIPMENT AND PERSONNEL" DURING THE SAME SURVEILLANCE PERIOD, PROVIDED THAT THE END ANCHOR IS LIGHTLY COATED WITH NEW GREASE AND GREASE CAP INSTALLED.

SECTION 10.3 "DELETE"

PSC Approval: Quality Assurance Sign & Date	Quality Control	Engineering
R. F. Hendrickson 10/15/87	10/15/87	D. BRONARS PER TELEPHONE CONVER ON 10-15-87 DB

ON SITE OWNER/AGENT, APPROVAL OR COMMENTS: Robert Ward 10/15/87

THE PROPOSED CHANGE ABOVE IS ACCEPTABLE AND IS APPROVED AS MARKED ABOVE

Ke Chao 10/15/87

APPROVED SITE QA AUTHORITY: Glen Y Jacks TITLE: SR. ENGR. DATE: 10/15/87

DISPOSITION PSC QC: HOLD TAG APPLIED _____ HOLD TAG REMOVED _____

Q.C. INSPECTOR: DATE:

Distribution:

- ___ Quality Assurance Owner
- ___ Quality Assurance PSC
- X Engineering Owner
- ___ Engineering PSC
- ___ Project Manager PSC
- ___ Quality Control Owner
- ___ Quality Control PSC
- ___ _____
- ___ _____
- ___ _____

QUALITY ASSURANCE PROGRAM

NONCONFORMANCE REPORT INDEX

PSC Precision Surveillance Corporation

No.	Item	Date Written	Date Submitted	Date Approved	Date Complete
F-7N314-001	TENDON V230 FIELD END - FIELD HEAD WITH CORROSION LEVEL 3 PRESENT	9/29/87	9/30/87	9/30/87	10/2/87
F-7N314-002	TENDON V202 FIELD END - FIELD HEAD WITH CORROSION LEVEL 3 PRESENT	10/5/87	10/5/87	10/8/87	10/8/87
F-7N314-003	TENDON V62 MISSING ONE BUTTONHEAD NOT PREVIOUSLY RECORDED	10/6/87	10/7/87	10/8/87	10/8/87
F-7N314-004	TENDON V14 NOT GREASED WITHIN 21 DAY REQUIREMENT.	10/15/87	10/15/87	10/15/87	10/15/87
F-7N314-005	TENDON 74BF - MISSING TWO WIRES FIELD END - NOT PREVIOUSLY RECORDED	10/28/87	10/28/87	11/4/87	11/4/87
F-7N314-006	NOT ENOUGH GREASE PUT IN V62	11/3/87	11/5/87	11/5/87	11/5/87
F-7N314-007	NOT ENOUGH GREASE PUT IN V86	11/3/87	11/5/87	11/5/87	11/5/87

NONCONFORMANCE/CORRECTIVE ACTION REPORT FORM

PSC Precision Surveillance Corporation

HOLD TAG NO. N/A NC/CA NO. F7N314-001

NONCONFORMANCE: PER PROCEDURE SQ 8.0 SECTION 9.2 "CORROSION LEVEL 3, 4, OR 5 [illegible] DETECTED FOR ANCHORAGES, SHIMS AND/OR BEARING PLATE, THE OWNER SHALL BE NOTIFIED BY A NONCONFORMANCE REPORT." TENDON V230 FIELD END GALLERY FIELD HEAD BV5 WAS FOUND TO HAVE CORROSION LEVEL 3 PRESENT ON THE BUTTONHEAD SEATING SURFACE.

APPARENT CAUSE KNOWN ☐ YES ☒ NO - If yes, describe: UNKNOWN

RECOMMENDED CORRECTIVE ACTION: OWNER'S EVALUATION AND OR ACCEPTANCE.

REFER DATA SHEET SQ8.0 FOR TENDON V230 FIELD END FOR DETAILS

Any nonconforming item to be repaired shall have an approved repair procedure.

CORRECTIVE ACTION TO PREVENT RECURRENCE: N/A

Initiator C Brooks Title MGR, Q.C./PSC Date 9/29/87

SIGNIFICANT CONDITION: ☐ YES ☒ NO - If yes, refer QAM Section 4 Criteria XV.

APPROVAL COMMENTS: The corrosion level is not significant. In addition, the areas where corrosion is evident are located around the periphery of bushing where stress level is low. The clean-up and regreasing of the areas are determined to be adequate for preventing further corrosion. The condition is acceptable "as-is". KWC 9/30/87

PSC APPROVAL SIGN & DATE	QC	QA	Engineering
	C Brooks 9/29/87	H.F.H. 11/13/87 H. HENDRICKSON cs 9/30/87 PER TELEPHONE CONVER	D. BRONARS cs 9/29/87 PER TELEPHONE CONVER.

OWNER/AGENT APPROVAL REQUIRED ☒ YES ☐ NO

Engineer Robert S Infante Date 9/30/87

QA Colby Jordy Date 9/30/87

COMMENTS:

DISTRIBUTION

☐ QA Section ☐ Vice President ☐ Vendor
☐ QE Section ☐ Contr. Mgmt. ☐ _____
☐ Engineering ☒ Owner/Agent ☐ _____

DISPOSITION COMPLETED
ACCEPTED AS IS
Signed C Brooks
Title MGR, Q.C./PSC
Date 10/2/87

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PSC PROCEDURE SQ 8.0
ANCHORAGE INSPECTION
DATA SHEET 8.0
MAY 20, 1987
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ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V230 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV5 BUSHING I.D. N/A Q.C. Signoff

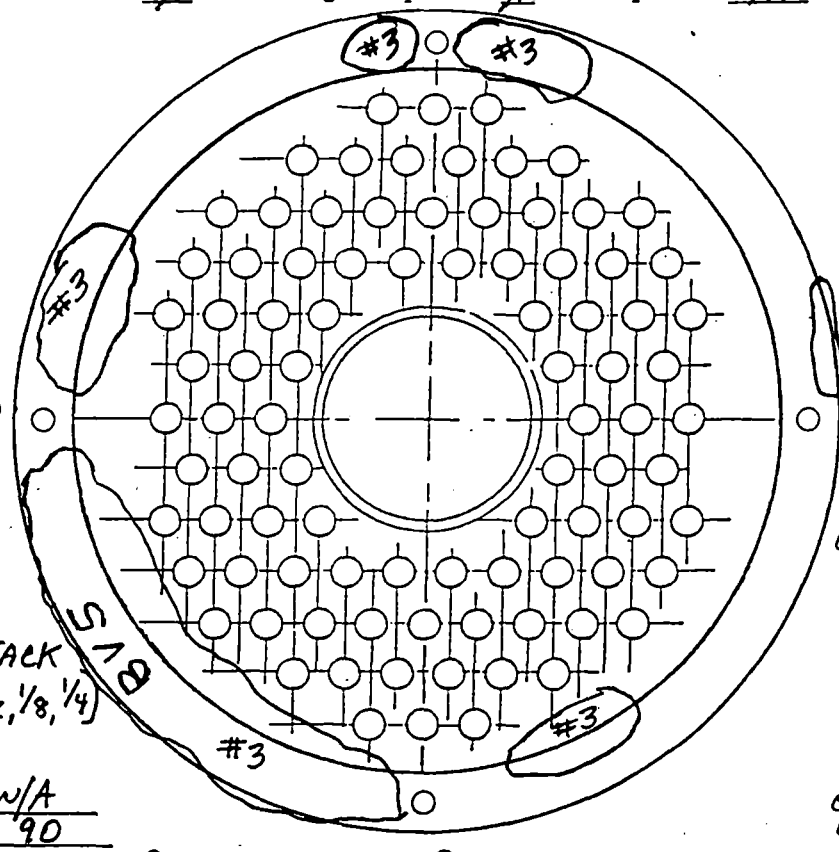
(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition B — OTHER AREAS #1 AND #2 — EB 9/28/87
(8.1.2) Anchorage Head Level #3 AS NOTED (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level 1 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE — EB 9/28/87
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 9/28/87
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 9/28/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
⊠ = Discontinuous-Removed
⊗ = Removed for Testing
= Previously Missing
= Protruding
= Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 9/28/87
EB 9/28/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK .9" (1/2, 1/8, 1/4)

(8.3.7.2) Buttonheads Found N/A — EB 9/28/87
(8.3.7.3) Total Effective BH 90 — EB 9/28/87
(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 — EB 9/28/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A — EB 9/28/87
Bushing Thread Joint Line — EB 9/28/87

Reporting: Accept [Unacceptable] Engineer Notified NCR NO F7N314-001 EB 9/29/87

Q.C. Review _____ Level ____ Date _____

Title _____

NONCONFORMANCE/CORRECTIVE ACTION REPORT FORM

PSC Precision Surveillance Corporation

HOLD TAG NO. N/A NC/CA NO. F7N314-002

NONCONFORMANCE: PER PROCEDURE SQ8.0 SECTION 9.2 "CORROSION LEVEL 3, 4, OR 5 WIRES DETECTED FOR ANCHORAGES, SHIMS AND/OR BEARING PLATE, THE OWNER SHALL BE NOTIFIED BY A NONCONFORMANCE REPORT." TENDON V202 FIELD END GALLERY FIELD HEAD BV15 WAS FOUND TO HAVE CORROSION LEVEL 3 PRESENT ON THE BUTTONHEAD SEATING SURFACE.

APPARENT CAUSE KNOWN ☐ YES ☒ NO – If yes, describe: UNKNOWN

RECOMMENDED CORRECTIVE ACTION: OWNERS' EVALUATION AND/OR ACCEPTANCE.

REFER DATA SHEET SQ8.0 FOR TENDON V202 FIELD END FOR DETAILS

Any nonconforming item to be repaired shall have an approved repair procedure.

CORRECTIVE ACTION TO PREVENT RECURRENCE: N/A

Initiator [signature] Title MGR Q.C./PSC Date 10/5/87

SIGNIFICANT CONDITION: ☐ YES ☒ NO – If yes, refer QAM Section 4 Criteria XV.

APPROVAL COMMENTS: The corrosion level is not significant. In addition, the areas where corrosion is evident are located around the periphery of bushing where stress level is low. The clean-up and regreasing of the areas are determined to be adequate for preventing further corrosion. The condition is acceptable "as-is".

PSC APPROVAL SIGN & DATE	QC	QA	Engineering
	[signature] 10/5/87	H.E.H. 11/13/87 H. HENDRICKSON PER TELEPHONE CONVER EB 10/15/87	D. BRONARS PER TELEPHONE CONVER EB 10/5/87

KJC 10/8/87

OWNER/AGENT APPROVAL REQUIRED ☒ YES ☐ NO

Engineer [signature] Date 10/8/87

QA [signature] Date 10/8/87

COMMENTS:

DISTRIBUTION

☐ QA Section ☐ QE Section ☐ Engineering
☐ Vice President ☐ Contr. Mgmt. ☐ Owner/Agent
☐ Vendor ☐ _____ ☐ _____

DISPOSITION COMPLETED

ACCEPT AS IS

Signed [signature]

Title MGR, Q.C./PSC

Date 10/8/87

F8

PSC PROCEDURE SQ 8.0
ANCHORAGE INSPECTION
DATA SHEET 8.0
MAY 20, 1987

Revision 0

CHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V202 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV15 BUSHING I.D. N/A

Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition A		EB 10/5/87
(8.1.2) Anchorage Head	Level #2/#3 AS NOTED	(8.2) Cracks NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks N/A	
(8.1.2) Shims	Level 1	(8.2) Cracks NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks NONE	EB 10/5/87

SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/5/87

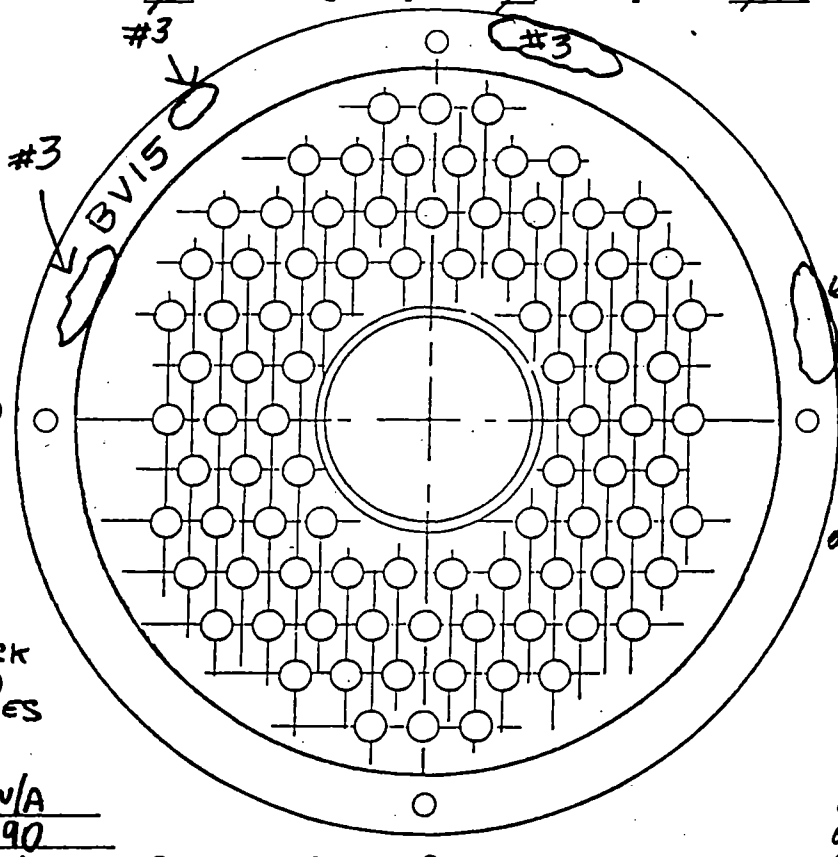
SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/5/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA

- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ◐ = Previously Missing
- ● = Protruding
- ▣ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/5/87

EB 10/5/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK .5" (1/2) BOTH SIDES

(8.3.7.2) Buttonheads Found N/A EB 10/5/87

(8.3.7.3) Total Effective BH 90 EB 10/5/87

(8.4.1) Protruding BH 0 Missing BH 0 Total BH 0 EB 10/5/87

(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked N/A EB 10/5/87

Bushing Thread Joint Line EB 10/5/87

Reporting: Accept **Unacceptable** Engineer Notified NCR NO. F7N314-002 EB 10/5/87

Q.C. Review _____ Level ____ Date _____

Title _____

NONCONFORMANCE/CORRECTIVE ACTION REPORT FORM

PSC Precision Surveillance Corporation

HOLD TAG NO. N/A NC/CA NO. F7N314-003

NONCONFORMANCE: PER PROCEDURE SQ8.0 SECTION 9.7 "ADDITIONAL MISSING OR BROKEN WIRES/BUTTONHEADS - WHEN DETECTED FOR A QUANTITY OF 1 OR MORE SINCE THE ORIGINAL INSTALLATION OR PREVIOUS SURVEILLANCE, THE OWNER SHALL BE NOTIFIED BY A NONCONFORMACE REPORT." TENDON V62 FIELD END WAS FOUND TO HAVE 1 WIRE BROKEN. THE BUTTONHEAD/WIRE WAS FOUND IN THE GREASE THE WIRE BROKE BEHIND THE BUTTONHEAD. (THIS WIRE WAS NOT PREVIOUSLY RECORDED)

APPARENT CAUSE KNOWN ☒ YES ☐ NO - If yes, describe: LOOKS LIKE BUTTONHEAD GRIPPER PLATES PINCHED WIRE BEHIND THE BUTTONHEAD

RECOMMENDED CORRECTIVE ACTION: OWNER'S EVALUATION AND OR ACCEPTANCE

REFER DATA SHEET SQ8.0 FOR TENDON V62 FIELD END FOR DETAILS

Any nonconforming item to be repaired shall have an approved repair procedure.

CORRECTIVE ACTION TO PREVENT RECURRENCE: N/A

Initiator [signature] Title MGR, Q.C./PSC Date 10/6/87

SIGNIFICANT CONDITION: ☐ YES ☒ NO - If yes, refer QAM Section 4 Criteria XV.

APPROVAL COMMENTS: The observed broken wire was not a result of corrosion but a installation deficency. The remaining 89 effective wires are sufficent to maintain the desirable prestressing force. The condition is acceptable "as-is". RJC 10/8/87

PSC APPROVAL SIGN & DATE	QC	QA	Engineering
	[signature] 10/6/87	H.T.H. 11/13/87 EB 10/6/87 ~~D. GAITKU~~ H. HENDRICKSON PER TELEPHONE CONVER EB 10/6/87	D. BRONARS EB 10/6/87 PER TELEPHONE CONVER.

OWNER/AGENT APPROVAL REQUIRED ☒ YES ☐ NO

Engineer [signature] Date 10/8/87

QA [signature] Date 10/8/87

COMMENTS:

DISTRIBUTION

☐ QA Section ☐ QE Section ☐ Engineering ☐ Vice President ☐ Contr. Mgmt. ☒ Owner/Agent ☐ Vendor ☐ ____ ☐ ____

DISPOSITION COMPLETED ACCEPT AS IS

Signed [signature]

Title MGR, Q.C./PSC

Date 10/8/87

F10

PSC PROCEDURE SQ 8.0
ANCHORAGE INSPECTION
DATA SHEET 8.0
MAY 20, 1987
Page 1 of 1
Revision 0

CHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. V62 TENDON END/BUTTRESS NO. FIELD/GALLERY UNIT 1

(8.3.5) ANCHORHEAD I.D. BV812 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads	Condition B		EB 10/6/87
(8.1.2) Anchorage Head	Level 2	(8.2) Cracks NONE	
(8.1.2) Bushing	Level N/A	(8.2) Cracks N/A	
(8.1.2) Shims	Level 2	(8.2) Cracks NONE	
(8.1.2) Bearing Plate	Level 2	(8.2) Cracks NONE	EB 10/6/87

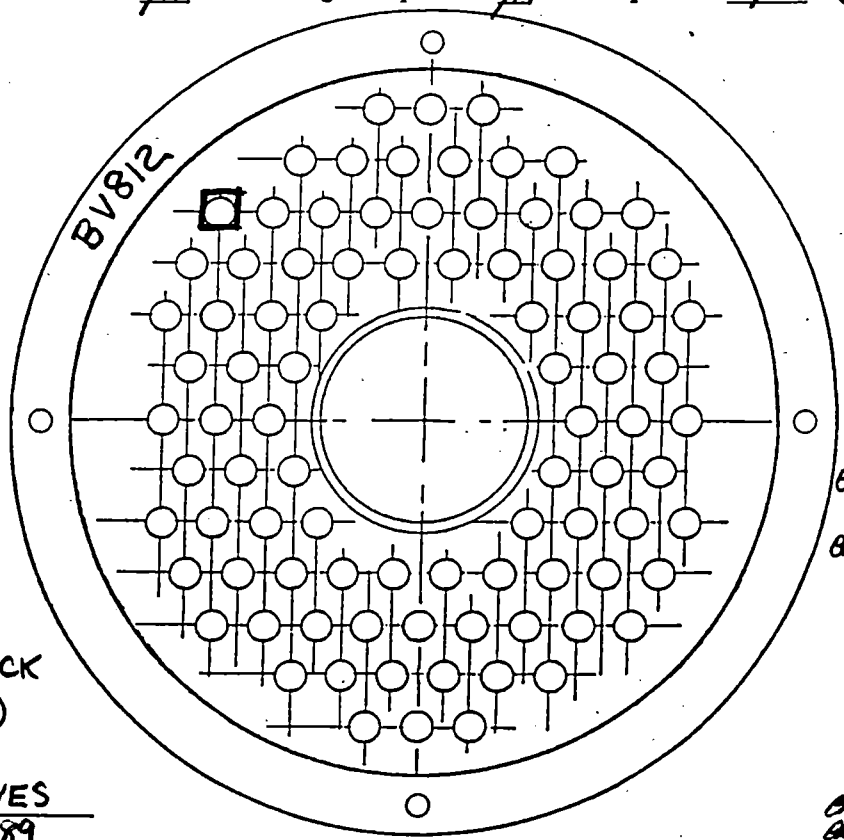
SQ 10.1.(8.1.2) Coating - Complete N/A Incomplete N/A Lgth. of Air Pocket N/A EB 10/6/87

SQ 10.1 (8.2.1) Wire - Condition N/A Coating Complete N/A Incomplete N/A EB 10/6/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
- ⊠ = Discontinuous-Removed
- ⊗ = Removed for Testing
- ● = Previously Missing Protruding
- □ = Broken/Missing
- ◑ = Offsize(Malformed)
  - B = Bisecting Crack
  - A = 45° Angle Slip
  - K = Cracked (over 0.060")
  - S = 2 Inclined Splits
  - X = Intersecting Cracks

(8.3.5) Locate Anchorage Heat Code on Sketch



EB 10/6/87
EB 10/6/87

(8.3.6) Offsize Totals

B = 0
A = 0
K = 0
S = 0
X = 0

SHIM STACK .5" (½)

(8.3.7.2) Buttonheads Found YES EB 10/6/87
(8.3.7.3) Total Effective BH 89 EB 10/6/87
(8.4.1) Protruding BH 0 Missing BH 1 Total BH 1 EB 10/6/87
(8.4.1.2.1) Continuity Test Required NO Wires Identified/Marked YES EB 10/6/87
Bushing Thread Joint Line EB 10/6/87

● Reporting: Accept [Unacceptable] Engineer Notified NCR NO. _____ _____

Q.C. Review _____ Level _____ Date _____

Title _____

NONCONFORMANCE/CORRECTIVE ACTION REPORT FORM

PSC Precision Surveillance Corporation

HOLD TAG NO. N/A NC/CA NO. F-7N314-004

NONCONFORMANCE: PER PROCEDURE SQ12.1 SECTION 10.2 "THE REPLACEMENT OF GREASE SHALL NOT EXCEED 21 CALENDAR DAYS FROM DATE OF REMOVAL TO THE DATE OF REPLACING THE GREASE." ALSO, PER SECTION 10.3 STATES "IF THE ELAPSED TIME EXCEEDS 21 DAYS, A NON-CONFORMANCE REPORT SHALL BE DRAFTED AND SUBMITTED IN ACCORDANCE WITH PSC PROCEDURE QA 9.0." TENDON V14 HAS EXCEEDED THIS 21 DAY REQUIREMENT.

APPARENT CAUSE KNOWN ☒ YES ☐ NO - If yes, describe: TENDON V14 ~~WAS~~ CB 10/15/87 HAD ITS FIELD END CAN REMOVED ON 9/22/87 ITS SHOP END CAN ON 9/28/87. THE TENDON WAS REGREASED ON 10/6/87. ELAPSED DAYS 14. THE GREASE CAN GASKET ON THE FIELD END PUSHED OUT AND GREASE WAS LOST. GASKET REPAIRED ON 10/12/87. TENDON NEEDS RE-GREASING STILL.

RECOMMENDED CORRECTIVE ACTION: GREASE TENDON AS SOON AS REASONABLY POSSIBLE. OWNERS' EVALUATION AND OR ACCEPTANCE.

NOTE: BOTH ENDS OF TENDON V14 HAD ANCHORAGE ASSEMBLIES COATED WITH GREASE BEFORE CAN REPLACEMENT

NOTE: SECTION 10.2 ALSO STATES THE 21 DAY REQUIREMENT "... IS OF LESS IMPORTANCE IF THE TENDON ANCHORAGES HAVE BEEN LIGHTLY COATED WITH GREASE AND SUITABLY PROTECTED FROM WEATHER, MOISTURE AND DIRT."

Any nonconforming item to be repaired shall have an approved repair procedure.

CORRECTIVE ACTION TO PREVENT RECURRENCE: GREASE TENDONS WITHIN ALOTTED TIME FR[redacted].

Initiator [signature] Title MGR, Q.C./PSC Date 10/15/87

SIGNIFICANT CONDITION: ☐ YES ☒ NO - If yes, refer QAM Section 4 Criteria XV.

APPROVAL COMMENTS: Both ends of Tendon V-14 have been re-greased and grease cans installed. Condition acceptable "as-is".

R W Lee
Ken Ulrich 10/15/87

PSC APPROVAL SIGN & DATE	QC	QA	Engineering
	[signature] 10/15/87	H. F. Hendrickson 10/15/87	D. BRONARS CB PER TELEPHONE CONVER CB ON -10-15-87

OWNER/AGENT APPROVAL REQUIRED ☒ YES ☐ NO

Engineer [signature] Date 10/15/87

QA [signature] Date 10/15/87

COMMENTS:

DISTRIBUTION

☐ QA Section ☐ QE Section ☐ Engineering
☐ Vice President ☐ Contr. Mgmt. ☒ Owner/Agent
☐ Vendor ☐ _____ ☐ _____

DISPOSITION COMPLETED ACCEPTED AS IS

Signed [signature]
Title MGR, Q.C./PSC
Date 10/15/87

NONCONFORMANCE/CORRECTIVE ACTION REPORT FORM

PSC Precision Surveillance Corporation

HOLD TAG NO. N/A NC/CA NO. F-7N314-005

NONCONFORMANCE: PER PROCEDURE SQ8.0. SECTION 9.7 "WHEN AN ADDITIONAL MISSING OR BROKEN WIRES/BUTTONHEADS IS DETECTED FOR A QUANTITY OF 1 OR MORE SINCE THE ORIGINAL INSTALLATION OR PREVIOUS SURVEILLANCE, THE OWNER SHALL BE NOTIFIED BY A NONCONFORMANCE REPORT" TENDON 74BF -FIELD (END) HEAD WAS FOUND TO HAVE TWO MISSING WIRES NOT PREVIOUSLY RECORDED.

APPARENT CAUSE KNOWN ☐ YES ☒ NO - If yes, describe: UNKNOWN

RECOMMENDED CORRECTIVE ACTION: OWNERS' EVALUATION AND/OR ACCEPTANCE

REFER DATA SHEET SQ8.0 FOR TENDON 74BF -FIELD END

Any nonconforming item to be repaired shall have an approved repair procedure.

CORRECTIVE ACTION TO PREVENT RECURRENCE: N/A

Initiator [signature] Title MGR, Q.C./PSC Date 10/28/87

SIGNIFICANT CONDITION: ☐ YES ☒ NO - If yes, refer QAM Section 4 Criteria XV.

APPROVAL COMMENTS: Inspection of the removed broken wires has indicated that one wire broke right behind the button head and the other wire had undersized buttonhead pulled through the hole in the bushing, both determined to occur right after the original installation. Wire samples of broken end were tested and meet acceptance. Test results support the inspection conditions.

PSC APPROVAL SIGN & DATE	QC	QA	Engineering
	[signature] 10/28/87	H.F. Hendrickson 10/28/87	CWC 11/3 eb D. BRONARS PER TELEPHONE CONVER eb 10/28/87

OWNER/AGENT APPROVAL REQUIRED ☒ YES ☐ NO

Engineer [signature] Date 11/3/87

QA [signature] Date 11/4/87

COMMENTS:

DISTRIBUTION

☐ QA Section ☐ Vice President ☐ Vendor
☐ QE Section ☐ Contr. Mgmt. ☐ _____
☐ Engineering ☒ Owner/Agent ☐ _____

DISPOSITION COMPLETED ACCEPTED AS IS

Signed [signature]
Title MGR, Q.C./PSC
Date 11/4/87

F13

PSC PROCEDURE SQ 8.0
ANCHORAGE INSPECTION
DATA SHEET 8.0
MAY 20, 1987

Revision 0

ANCHORAGE INSPECTION DOCUMENTATION

PROJECT PALISADES SURVEILLANCE NO. 5 YEAR 87

TENDON NO. 74BF TENDON END/BUTTRESS NO. FIELD / B BUTT UNIT 1

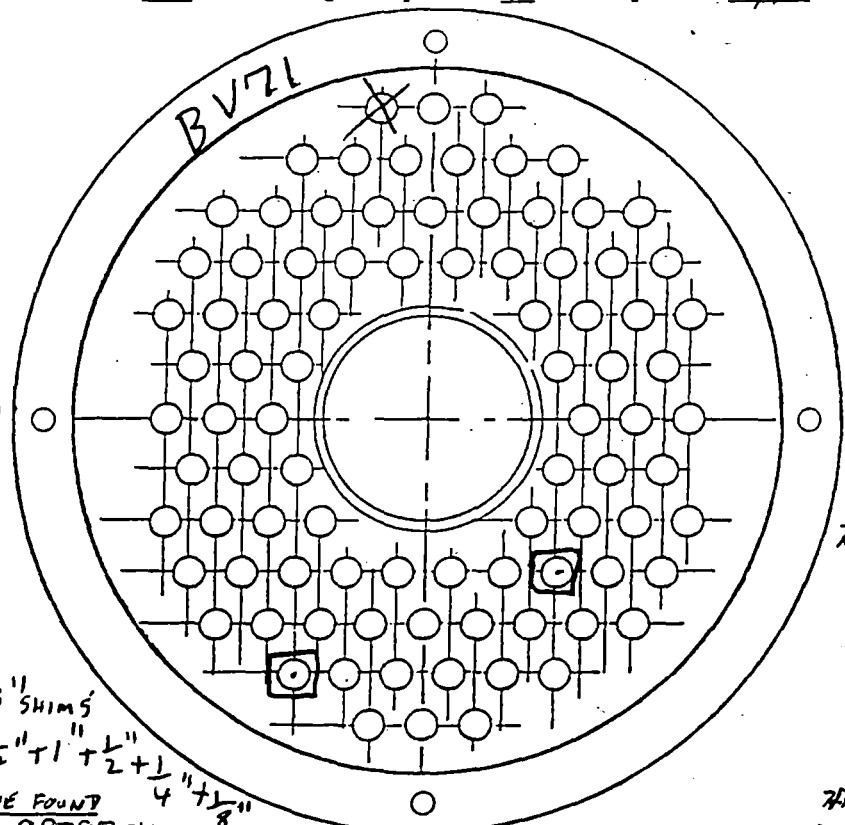
(8.3.5) ANCHORHEAD I.D. BV71 BUSHING I.D. N/A Q.C. Signoff

(8.1) CORROSION INSPECTION (For Corrosion Levels & Condition refer to Proc.SQ 8.1)

(8.1.1) Buttonheads Condition A N.N. 10/28/87
(8.1.2) Anchorage Head Level 1 (8.2) Cracks NONE
(8.1.2) Bushing Level N/A (8.2) Cracks N/A
(8.1.2) Shims Level 2 (8.2) Cracks NONE
(8.1.2) Bearing Plate Level 2 (8.2) Cracks NONE N.N. 10/28/87
SQ 10.1.(8.1.2) Coating - Complete ✓ Incomplete N/A Lgth. of Air Pocket N/A N.N. 10/28/87
SQ 10.1 (8.2.1) Wire - Condition A Coating Complete ✓ Incomplete N/A N.N. 10/28/87

(8.3) BUTTONHEAD INSPECTION

(8.3.4) BUTTONHEAD DATA
☒ = Discontinuous-Removed
⊗ = Removed for Testing
● = Previously Missing
Protruding
▢ = Broken/Missing
◑ = Offsize(Malformed)
B = Bisecting Crack
A = 45° Angle Slip
K = Cracked (over 0.060")
S = 2 Inclined Splits
X = Intersecting Cracks
(8.3.5) Locate Anchorage Heat Code on Sketch



N.N. 10/28/87
N.N. 10/28/87

(8.3.6) Offsize Totals
B = 0
A = 0
K = 0
S = 0
X = 0

0.45" SHIMS
4½" + 1" + ½" + ¼" + ⅛"

(8.3.7.2) Buttonheads Found NONE FOUND N.N. 10/28/87
(8.3.7.3) Total Effective BH 88 87 N.N. 10/29/87 N.N. 10/29/87
(8.4.1) Protruding BH 0 Missing BH 2 Total BH 2 N.N. 10/28/87
(8.4.1.2.1) Continuity Test Required YES * Wires Identified/Marked YES N.N. 10/28/87
*SCHEDULED FOR CONTINUITY Bushing Thread Joint Line N/A N.N. 10/28/87

Reporting: Accept Unacceptable Engineer Notified NCR NO. F-7N314-005 N.N. 10/28/87

Q.C. Review _____ Level ____ Date _____

Title _____

NONCONFORMANCE/CORRECTIVE ACTION REPORT FORM

PSC Precision Surveillance Corporation

HOLD TAG NO. N/A NC/CA NO. F-7N314-006

NONCONFORMANCE: PER PROCEDURE SQ12.1 SECTION 11.2.10.2 "THE TOTAL QUANTITY (OF GREASE) REPLACED SHALL NOT BE LESS THAN THE TOTAL GREASE LOSS. IF GREASE CANNOT BE ADDED IN SUFFICIENT QUANTITIES TO MEET THE TOLERANCE, IT SHALL BE NECESSARY TO DRAFT A NONCONFORMANCE REPORT AND SUBMIT IT TO THE OWNER" TENDON V62 HAD A TOTAL ESTIMATE OF 31 1/2 GALS LOST - COULD ONLY REPLACE 27.9 GALS DIFFERENCE OF 36 GALS

APPARENT CAUSE KNOWN ☒ YES ☐ NO - If yes, describe: POSSIBLE OVER-ESTIMATE OF TOTAL GREASE LOSSES.

RECOMMENDED CORRECTIVE ACTION: OWNER'S EVALUATION AND/OR ACCEPTANCE

REFER DATA SHEET SQ12.1

Any nonconforming item to be repaired shall have an approved repair procedure.

CORRECTIVE ACTION TO PREVENT RECURRENCE: N/A

Initiator [signature] Title MGR, Q.C./PSC Date 11/3/87

SIGNIFICANT CONDITION: ☐ YES ☒ NO - If yes, refer QAM Section 4 Criteria XV.

APPROVAL COMMENTS: Grease replacement was performed from the top of containment. The grease replaced displaces any air voids therefore accurate grease input can be determined as opposed to the grease loss estimate. WC 11/5/87

PSC APPROVAL SIGN & DATE	QC	QA	Engineering
	[signature] 11/3/87	H.F.H. 11/13/87 H. HENDRICKSON PER TELEPHONE CONVER ON 11-3-87 eb	D. BRONARS PER H. HENDRICKSON TELEPHONE CONVER 11-3-87 eb

OWNER/AGENT APPROVAL REQUIRED ☒ YES ☐ NO

Engineer [signature] Date 11/5/87

QA [signature] Date 11/6/87

COMMENTS:

DISTRIBUTION

☐ QA Section ☐ Vice President ☐ Vendor
☐ QE Section ☐ Contr. Mgmt. ☐ _____
☐ Engineering ☒ Owner/Agent ☐ _____

DISPOSITION COMPLETED ACCEPT AS IS

Signed [signature]
Title MGR Q.C./PSC
Date 11/5/87

NONCONFORMANCE/CORRECTIVE ACTION REPORT FORM

PSC Precision Surveillance Corporation

HOLD TAG NO. N/A NC/CA NO. F-7N314-007

NONCONFORMANCE: PER PROCEDURE SQ 12.1 SECTION 11.2.10.2 "THE TOTAL QUANTITY (OF GREASE) REPLACED SHALL NOT BE LESS THAN THE TOTAL GREASE LOSS. IF GREASE CANNOT BE ADDED IN SUFFICIENT QUANTITIES TO MEET THE TOLERANCE, IT SHALL BE ~~NECESSA~~ NECESSARY TO DRAFT A NON-CONFORMANCE REPORT AND SUBMIT IT TO THE OWNER" eb 11/3/87
TENDON V86 HAD A TOTAL ESTIMATE OF 52 3/4 GALS LOST, - COULD ~~ON~~ ONLY REPLACE 48 GALS DIFFERENCE OF 4 3/4 GALS eb 11/5/87

APPARENT CAUSE KNOWN ☒ YES ☐ NO – If yes, describe: POSSIBLE OVER-ESTIMATE OF TOTAL GREASE LOSSES

RECOMMENDED CORRECTIVE ACTION: OWNER'S EVALUATION AND/OR ACCEPTANCE

REFER DATA SHEET SQ 12.1

Any nonconforming item to be repaired shall have an approved repair procedure.

CORRECTIVE ACTION TO PREVENT RECURRENCE: N/A

Initiator [signature] Title MGR, Q.C./PSC Date 11/3/87

SIGNIFICANT CONDITION: ☐ YES ☒ NO – If yes, refer QAM Section 4 Criteria XV.

APPROVAL COMMENTS: Grease replacement was performed from the top of containment. The grease replaced displaces any air voids therefore accurate grease input can be determined as opposed to the grease loss estimate.

KNC 11/5/87

PSC APPROVAL SIGN & DATE	QC	QA	Engineering
	[signature] 11/3/87	H.F.H. 11/13/87 H. HENDRICKSON PER TELEPHONE CONVER ON 11-3-87 eb	D. BRONARS PER H. HENDRICKSON TELEPHONE CONVER 11-3-87 eb

OWNER/AGENT APPROVAL REQUIRED ☒ YES ☐ NO

Engineer [signature] Date 11/5/87

QA [signature] Date 11/3/87

COMMENTS:

DISTRIBUTION

☐ QA Section ☐ QE Section ☐ Engineering
☐ Vice President ☐ Contr. Mgmt. ☒ Owner/Agent
☐ Vendor ☐ _____ ☐ _____

DISPOSITION COMPLETED

ACCEPT AS IS

Signed [signature]
Title MGR QC/PSC
Date 11/5/87

FIFTEENTH YEAR PHYSICAL SURVEILLANCE OF THE PALISADES NUCLEAR PLANT

APPENDIX G

Calibrations

QUALITY ASSURANCE DOCUMENTATION

CERTIFICATE OF COMPLIANCE

Precision Surveillance Corporation

Project PALISADES NUCLEAR PLANT Contract 7N314 Date 9/8/87

Material Identification RAMS, INSPECTION GAUGES & SAFETY RELATED MATERIAL.

Purchase Order No. N/A

Specification and Revision No. N/A

Drawing and Revision No. N/A

Procurement Requirements OK

(met by material)

Deviations NONE

Resolution N/A

Disposition N/A

Non-Conformance NONE

Q.A. Release for NCR N/A

Deviations and Non-Conformances shall be attached to this form.
N/A to be written in for Not Applicable; all blanks shall be filled in.

This is to certify that the above material has been fabricated and inspected in compliance with the specified drawings, procedures, specifications, codes, purchase order requirements, PSC Quality Assurance Manual Revision 0 Dated 7-1-86 and the attendant quality programs.

Vendor PSC Authorized Agent H. F. Hendrickson

Date 9/8/87 Title MGR., Q.A.

PSC QUALITY CONTROL ACCEPTANCE

Name & Title H. F. Hendrickson Date 9/8/87

OWNER OR AUTHORIZED AGENT INSPECTION WAIVER

Shipment Final Inspection Waived By N/A Date N/A

Agency N/A Title N/A

Supplier's Authorized Representative N/A

RETURNED

GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
POCKET THERMOMETER	PK 45	8/19/85	8/19/86	-0-	CALIBRATED AND ASSIGNED I.D.#
0° TO 220° F					
1" DIAL W/5" PROBE	PK45	1-10 86	1-10-87	1-10-86	Sent to WOLFCREEK NURU VOID
	PK45	——	——	2-21-86	Returned to STOCK VOID
		8/21/87	8/21/88		TO PALISADES

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THERMOMETER CALIBRATION RECORD

PSC Formerly Inryco Surveillance

Customer: CONSUMERS POWER Project Name: PALISADES Contract Number: 7N314

Thermometer I.D. #: PK45 Date of calibration: 8/21/87

Manufacture: TAYLOR Recalibration due date: 8/21/88

Type or model: POCKET Master thermometer I.D.: 63F, 64F

Range: 0°-220° Master calibration due date: DUE 2-21-91

Location: N/A

CALIBRATION DATA	
Master Actual Temperature	Test Reading Temperature
32°	32°
86°	86°
138°	138°

Calibration Method:

Master and test thermometer to be immersed in agitated liquid for at least 3 minutes, and at least 3 inches of sensing or sending unit to be submerged in liquid. Comparison will be made at 3 temperature variances of no less than ~~2~~ 5 degrees F. SC 8/21/87

Accuracy must be within one graduation of the smallest reading on the scale. If not, adjust to same reading as master. If there is no adjustment, thermometer will be returned to Quality Assurance for repair or destruction.

NOTE: Accuracy will be within 5% of the total guage face value or one unit of the smallest scale graduation whichever is smaller.

Condition:

Remarks:

Calibrated By: [signature] Date: MGR, QC 8/21/87 Page of Pages

GUAGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
Pocket Thermometer	PK42	4/12/82	4/12/83		Wolf Creek
					stock EB 1/10/83
	PK42	12-12-83	6-12-84	-0-	RE-CALIBRATED AND ASSIGNED TO PALO VERDE SURV.
	PK42	——	——	3-26-84	REC'D FROM SURV. PLACED IN STOCK - JWK
	PK42	7/11/85	7/11/86	-0-	CAL'D & PLACED INTO STOCK JWK
	PK42	——	——	9-3-85	SENT TO FT. CALHOUN SURV. JWK
	PK42	——	——	11/14/85	RETURNED AND PLACED INTO STOCK JWK
	PK42	5/8/86	5/8/87	Ø	CALIBRATED AND SENT TO BYRON SURV. JWK
					returned in stock EB 9/22/86
		5/7/87	5/7/88		TO BRAID. SURV. EB 5/7/87 returned EB 8/20/87
		8/20/87	8/20/88		TO BYRON EB 8/20/87 returned EB 9/1/87
	PK42	9/8/87	9/8/88	-0-	TO PALISADES' SURV. J.W. 9/8/87

THERMOMETER CALIBRATION RECORD

PSC Formerly Inryco Surveillance

Customer: CONSUMERS POWER | Project Name: PALISADES SURV. | Contract Number: 7N314

Thermometer I.D. #: PK42 | Date of calibration: 9/8/87

Manufacture: WEKSLER | Recalibration due date: 9/8/88

Type or model: POCKET | Master thermometer I.D.: 63F, 64F

Range: 0°-220°F | Master calibration due date: DUE 2-21-91

Location: N/A

CALIBRATION DATA

Master Actual Temperature	Test Reading Temperature
33°	33°
88°	88°
139°	139°

Calibration Method:

Master and test thermometer to be immersed in agitated liquid for at least 3 minutes, and at least 3 inches of sensing or sending unit to be submerged in liquid. Comparison will be made at 3 temperature variances of no less than ~~20~~ degrees F.
50 W.N. 9/8/87

Accuracy must be within one graduation of the smallest reading on the scale. If not, adjust to same reading as master. If there is no adjustment, thermometer will be returned to Quality Assurance for repair or destruction.

NOTE: Accuracy will be within 5% of the total guage face value or one unit of the smallest scale graduation whichever is smaller.

Condition:

Remarks: per. Q12.8D.

Calibrated By: H.F. Hendrickson | Date: 9/8/87 | Page 1 of 1 Pages

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INRYCO
an INLAND STEEL co.

GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
POCKET THERMOMETER	PK 48	8/19/85	8/19/86	-0-	CALIBRATED AND ASSIGNED I.D.#
0° TO 220° F	PK 48	9/20/85	9/20/86	-0-	RE-CAL'D AND SENT TO V.C. SUMMER SURV. VCW
1" DIAL W/5" PROBE	PK 48	———	———	11/26/85	RETURNED AND PLACED INTO STOCK JWK
	PK 48	1-7-86	1-7-87	1-7-86	SENT TO WOLFCREEIC SURV. VCW
	PK 48	3/6/86	3/6/87	ø	RETURNED FROM SURV. - RECALIBRATED - SENT TO ZION SURV. JWK
	PK 48	—	—	6/20/86	RETURNED FRIM ZION - RETURNED TO STOCK W.T.H.
		5/7/87	5/7/88		TO BRAID. SURV. EB 5/7/87 returned EB 8/20/87
		8/20/87	8/20/88		TO BYRON EB 8/20/87 returned EB 9/1/87
	PK48	9/8/87	9/8/88	-0-	TO PALISADES' SURV. W.H. 9/8/87

THERMOMETER CALIBRATION RECORD

PSC Formerly Inryco Surveillance

Customer Name: CONSUMERS POWER | Project Name: PALISADES SURV. | Contract Number: 7N314

Thermometer I.D. #: PK48 | Date of calibration: 9/8/87

Manufacture: ~~ITALY~~ ## 9/8/87 TAYLOR | Recalibration due date: 9/8/88

Type or model: POCKET | Master thermometer I.D.: 63F, 64F

Range: 0°-220°F | Master calibration due date: DUE 2/21/91

Location: N/A

CALIBRATION DATA	
Master Actual Temperature	Test Reading Temperature
33°	33°
88°	88°
139°	139°

Calibration Method:

Master and test thermometer to be immersed in agitated liquid for at least 3 minutes, and at least 3 inches of sensing or sending unit to be submerged in liquid. Comparison will be made at 3 temperature variances of no less than ~~20~~ degrees F. 50 N.N. 9/8/87
Accuracy must be within one graduation of the smallest reading on the scale. If not, adjust to same reading as master. If there is no adjustment, thermometer will be returned to Quality Assurance for repair or destruction.

NOTE: Accuracy will be within 5% of the total guage face value or one unit of the smallest scale graduation whichever is smaller.

Condition:

Remarks: per Q12.8.D.

Calibrated By: A. F. Henderickson | Date: 9/8/87 | Page 1 of 1 Pages

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GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
SURFACE THERMOMETER	SM-2	3/12/86	3/12/87	Ø	PURCHASED NEW, ASSIGNED I.D.#, CALIBRATED AND SENT TO ZION
W/MAGNETS	SM-2	—	—	6/20/86	RETURNED FROM ZION - RETURNED TO STOCK W.T.W
MODEL PTC-312 F		5/7/87	5/7/88		to braidwood eb 5/7/87 returned eb 8/20/87
0° TO 250°		8/20/87	8/20/88		TO BYRON eb 8/20/87 returned eb 9/1/87
	SM-2	9/8/87	9/8/88	-0	TO PALISADES SURV. W.W 9/8/87

THERMOMETER CALIBRATION RECORD

PSC Formerly Inryco Surveillance

Customer Name: CONSUMERS POWER | Project Name: PALISADES' SURV. | Contract Number: 7N314

Thermometer I.D. #: SM-2 | Date of calibration: 9/8/87

Manufacture: PTC | Recalibration due date: 9/8/88

Type or model: 312F | Master thermometer I.D.: 63F; 64F

Range: 0°-250°F | Master calibration due date: DUE: 2/21/91

Location: N/A

CALIBRATION DATA

Master Actual Temperature	Test Reading Temperature
33°	33°
88°	88°
139°	139°

Calibration Method:

Master and test thermometer to be immersed in agitated liquid for at least 3 minutes, and at least 3 inches of sensing or sending unit to be submerged in liquid. Comparison will be made at 3 temperature variances of no less than ~~20~~ 50 degrees F. 9/8/87

Accuracy must be within one graduation of the smallest reading on the scale. If not, adjust to same reading as master. If there is no adjustment, thermometer will be returned to Quality Assurance for repair or destruction.

NOTE: Accuracy will be within 5% of the total guage face value or one unit of the smallest scale graduation whichever is smaller.

Condition:

Remarks: Per Q12.8.D.

Calibrated By: H. F. Hendrickson | Date: 9/8/87 | Page 1 of 1 Pages

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GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
SURFACE THERMOMETER	ST-68	7/11/85	7/11/86	-0-	NEW ASSIGNED I.D.# & CAL'D / TO CALLAWAY % D.W.W. JWK
-50 to +250°	ST-68	———	———	8/6/85	RETURNED TO STOCK - OK JWK
		8/21/87	8/21/88		TO PALISADES EB 8/21/87

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THERMOMETER CALIBRATION RECORD

PSC Formerly Impco Surveillance

Customer Name: CONSUMERS POWER Project Name: PALISADES Contract Number: 7,U314

Thermometer I.D. #: ST68 Date of calibration: 8/2.187

Manufacture: PTC Recalibration due date: 8/21/88

Type or model: SURFACE THER. Master thermometer I.D.: 63F, 64F

Range: -50° to 250° Master calibration due date: DUE 2-21-91

Location: N/A

CALIBRATION DATA

Master Actual Temperature	Test Reading Temperature
32°	32°
86°	86°
138°	138°

Calibration Method:

Master and test thermometer to be immersed in agitated liquid for at least 3 minutes, and at least 3 inches of sensing or sending unit to be submerged in liquid. Comparison will be made at 3 temperature variances of no less than ~~20~~ 50 degrees F. CB 8/21/87

Accuracy must be within one graduation of the smallest reading on the scale. If not, adjust to same reading as master. If there is no adjustment, thermometer will be returned to Quality Assurance for repair or destruction.

NOTE: Accuracy will be within 5% of the total guage face value or one unit of the smallest scale graduation whichever is smaller.

Condition:

Remarks:

Calibrated By: [signature] Date: MGR, Q.C. 8/21/87 Page of Pages

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GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
SURFACE THERMOMETER	ST-69	8-19-85	8-19-86	-0-	CALIBRATED & ASSIGNED I.D.# JWK
-50° TO 250° F		8/21/87	8/21/88		TO PALISADES ON 8/21/87

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THERMOMETER CALIBRATION RECORD

PSC Formerly Inryco Surveillance

Customer Name: CONSUMERS POWER Project Name: PALISADES Contract Number: 7N314

Thermometer I.D. #: ST69 Date of calibration: 8/21/87

Manufacture: PTC Recalibration due date: 8/21/88

Type or model: SURFACE THER Master thermometer I.D.: 63F, 64F

Range: -50° TO 250° Master calibration due date: DUE 2-21-91

Location:

CALIBRATION DATA

Master Actual Temperature	Test Reading Temperature
32°	32°
86°	86°
138°	139°

Calibration Method:

Master and test thermometer to be immersed in agitated liquid for at least 3 minutes, and at least 3 inches of sensing or sending unit to be submerged in liquid. Comparison will be made at 3 temperature variances of no less than ~~20~~ 50 degrees F. ~~28~~ 8/21/87

Accuracy must be within one graduation of the smallest reading on the scale. If not, adjust to same reading as master. If there is no adjustment, thermometer will be returned to Quality Assurance for repair or destruction.

NOTE: Accuracy will be within 5% of the total guage face value or one unit of the smallest scale graduation whichever is smaller.

Condition:

Remarks:

Calibrated By: [signature] Date: 8/21/87 Page of Pages

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GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
DIAL INDICATOR	ECC 21	12-12-83	12-12-84	NEW	CALIBRATED AND ASSIGNED I'D# 1ST ISSUE
(ECCENTRICITY)		—	—	12-12-83	ASSIGNED TO PALO VERDE SURV.
	ECC21	—	—	3-26-84	RECID FROM SURV. PLACED IN STOCK - JWK
				7-5-84	TO BYRON SURV. CB
	ECC21	—	—	9-28-84	RETURNED TO STOCK JWK NOTE: NOT USED ON BYRON SURV.
		1-16-85	1-16-86		TO CALLAWAY CB 1/16/85
	ECC 21	—	—	7/8/85	RETURNED TO STOCK JWK
	ECC21	9-19-85	9-19-86	0	CAL. & SENT TO VC SUMMER SURV.
	ECC21	—	—	1-10-86	Returned to stock VCW
	ECC 21	5/8/86	5/8/87	ø	CALIBRATED AND SENT TO BYRON SURV. JWK
					RETURNED IN STOCK CB 9/22/86
		5/7/87	5/7/88		to Braidwood surv. CB 5/7/87 returned CB 8/20/87
		8/20/87	8/20/88		TO PALISADES CB 8/20/87

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QUALITY CONTROL "EXHIBIT A"

CALIBRATION FORM

PSC Formerly Inryco Surveillance

Project: Palisades Contract: 7N314 Date: 8/20/87

CALIBRATION DATA Recall Date: 8/20/88

Gauge or Device Name: Dial Indicator Number: ECC21

Manufacturer: Yuasa Type or Model: 300-005 Range: .000 TO 1.0"

Master Calibration Device: Indicator Calib Block Number: ICB-1

Master Device Calibration Date: DUE 12/8/88

Test Range	Reading	Error
.002	.002	Ø
.005	.005	Ø
.010	.010	Ø
.020	.020	Ø

Method of Calibration (Procedure number or describe other): _____

Comments: _____

Calibrated By: _____ Title: MGR, Q.C. Date: 8/20/87

EFFECTIVE DATE	PREV.REV. △	REVISION △	PAGE

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" EXHIBIT B"

GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
OPTICAL COMPARATOR	OC-C	8/21/87	8/21/88		TO PALISADES 8/21/87

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QUALITY CONTROL "EXHIBIT A"

CALIBRATION FORM

PSC Formerly Inryco Surveillance

G17

Project: Palisades Contract: 7N314 Date: 8/21/87

CALIBRATION DATA

Recall Date: 8/21/88

Gauge or Device Name: Optical Comparator Number: OC-C

Manufacturer: MITUTOYO Type or Model: #183 Range: .005 To .500

Master Calibration Device: Prec. Glass Reticle Calib-Scale Number: GRCS-1

Master Device Calibration Date: due 1-5-95

Test Range	Reading	Error
.100	.100	Ø
.200	.200	Ø
.300	.300	Ø
.400	.400	Ø
.500	.500	Ø
.010 THRU .500 AT .010 GRADS	SAME	Ø
.005 THRU .500 AT .005 GRADS	SAME	Ø

Method of Calibration (Procedure number or describe other)

Comments:

Calibrated By: [signature] Title: MGR, Q.C. Date: 8/21/8

EFFECTIVE DATE	PREV. REV. △	REVISION △	PAGE

GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
OPTICAL COMPARATOR	OC-BB	12-8-83	12-8-84	NEW ∅	CALIBRATED & CERTIFIED BY MIDWEST
		—	—	12-12-83	ASSIGNED ID # (1ST ISSUE) ASSIGNED TO PALO VERDE SURV
	OC-BB	—	—	3-26-84	RECID FROM SURV. PLACED INTO STOCK-JWK
	OC-BB	—	—	7-5-84	TO BYRON SURV. EB
	OC-BB	—	—	9-28-84	RETURNED TO STOCK JWK
		1-21-85	1-21-86		TO CALLAWAY SURV. EB 1/21/85 Not used.
		—	—	4/24/85	to TMI EB 4/24/85
	OC-BB	—	—	7/8/85	RETURNED TO STOCK JWK
	OC-BB	9-19-85	9-19-86	-0-	CALIBRATED AND SENT TO V.C. SUMMER SURV. VCW
	OC-BB	—	—	11/22/85	RETURNED AND RESENT TO WOLFCREEK SURV. JWK
	OC-BB	3/7/86	3/7/87	∅	RETURNED FROM SURV. — RE-CALIBRATED SENT TO ZION SURV. JWK
	OC-BB	—	—	6/20/86	RETURNED FROM ZION - RETURNED TO STOCK X.T.X.
		9/22/86	9/22/87		OMAHA SURV. EB 9/22/86 RETURNED IN STOCK EB 9/23/86
		5/7/87	5/7/88		TO BRAID. SURV. EB 5/7/87 returned EB 8/20/87
		8/20/87	8/20/88		TO PALISADES EB 8/20/87

QUALITY CONTROL "EXHIBIT A"

CALIBRATION FORM

PSC Formerly Inryco Surveillance

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Project: Palisades Contract: 7N314 Date: 8/20/87

CALIBRATION DATA Recall Date: 8/20/88

Gauge or Device Name: Optical Comparator Number: OCBB

Manufacturer: Fowler Type or Model: 7X Range: .005 TO .500

Master Calibration Device: Prec-Glass Reticle Calib-Scale Number: GRCS-1

Master Device Calibration Date: due 1/5/95

Test Range	Reading	Error
.100	.100	Ø
.200	.200	Ø
.300	.300	Ø
.400	.400	Ø
.500	.500	Ø
.010 THRU .500 AT .010 GRADS	SAME	Ø
.005 THRU .500 AT .005 GRADS	SAME	Ø

Method of Calibration (Procedure number or describe other): _____

Comments: _____

Calibrated By: _____ Title: MGR, Q.C. Date: 8/20/87

EFFECTIVE DATE	PREV.REV. △	REVISION △	PAGE

GUAGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
STN. STL. 24" RULER	R 21	11-17-80	11-17-81	0	STOCK
	~~R 20~~	~~4-1-81~~	~~4-1-82~~		~~STOCK STARTED SERVICE 4-1-81~~ eb 5/3/82
	R21	11-17-80	5-3-82		STARTED SERVICE 5-3-82
					IN STOCK eb 7/16/82 OUT OF SERVICE
		11-17-80	7-12-83		PUT IN SERVICE 1-12-83 to Ark Surv eb
		7-6-83	7-6-84		STOCK
		—	—	—	to V.C. Summer eb 8/30/83
	R21	—	—	3-26-84	REC'D FROM SURV. PLACED IN STOCK c JWK
		4/24/85	4/24/86		to Calloway eb 4/24/85
	R21	—	—	7/8/85	RETURNED TO STOCK JWK
		5/7/87	5/7/88		to Braid surv. eb 5/7/87 returned eb 8/20/87
		8/20/87	8/20/88		TO PALISADES eb 8/20/87

QUALITY CONTROL "EXHIBIT A"

CALIBRATION FORM

PSC Formerly Inryco Surveillance

G21

Project: Palisades Contract: 7W314 Date: 8/20/87

CALIBRATION DATA

Recall Date: 8/20/88

Gauge or Device Name: 24" Ruler Number: R21

Manufacturer: Starrett Type or Model: C303SR Range: 0-24"

Master Calibration Device: Master Ruler MR1 due 12/9/88 Number:
Opt. Comp. OCAA due 8/20/88
Master Device Calibration Date:

Test Range	Reading	Error
Ruler compared to MR1 on tenth of an inch scale using an optical comparator checked at 1.00", 4.00", 12.00", 18.00" + 23.00" all reading within .005		

Method of Calibration (Procedure number or describe other):

Comments:

Calibrated By: [signature] Title: MGR, Q.C. Date: 8/20/87

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GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
STN. STL. 24" RULER	R17	11-17-80	11-17-81	~~0~~	STOCK
					FORT CALHOUN - STARTED SERVICE
					IN STOCK
	R17	12-8-83	12-8-84	~~0~~	CALIBRATED + CERTIFIED BY MIDWEST
				12-12-83	ASSIGNED TO PALO VERDE SURV.
				3-26-84	REC'D FROM SURV. PLACED IN STOCK
				7-5-84	TO BYRON SURV.
	R17			9-28-84	RETURNED TO STOCK
		12-8-83	~~12-8-85~~ EB 1/16/85	1-16-85	TO CALLAWAY SURV. EB 1/16/85
	R17	4/24/85	4/24/86		to Callaway EB 4/24/85
	R17	——	——	7/8/85	RETURNED TO STOCK JWK
	R17	——	——	9/19/85	SENT TO V.C. SUMMER SURV. JWK
	R17			1-31-86	Returned to stock VCW
		5/7/87	5/7/88		to Braid surv. EB 5/7/87 returned EB 8/20/87
		8/20/87	8/20/88		TO PALISADES EB 8/20/87

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QUALITY CONTROL "EXHIBIT A"

PSC Formerly Inryco Surveillance

G23

CALIBRATION FORM

Project Palisades Contract 7N314 Date 8/20/87

CALIBRATION DATA Recall Date 8/20/88

Gauge or Device Name 24" Ruler Number R17

Manufacturer Starrett Type or Model C303SR Range 0-24"

Master Calibration Device Ruler Master MR-1 due 12/9/88 Number
OPT Comp. OCAA due 9/20/88
Master Device Calibration Date:

Test Range	Reading	Error
Ruler compared to MR-1 on tenth on an inch scale using an optical comparator. Checked at 1.00" 4.00" 12.00", 18.00" + 23.00" all reading within .005		

Method of Calibration (Procedure number or describe other)

Comments:

Calibrated By: [signature] Title: MGR, Q.C. Date: 8/20/87

EFFECTIVE DATE	PREV. REV. △	REVISION △	PAGE

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R23 GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
24" STN. STL. RULER	F1	2/20/85	2/20/86	-0-	REC'D @ FARLEY
	F1	—	—	7/8/85	RESENT TO FARLEY % C.B. JWK
	F1	—	—	7-29-85	RETURN TO STOCK dcw 7-29-85
	R23	~~~~~	~~~~~	8-19-85	CHANGED I.D. # TO FIT GAGE SEQUENCE JWK
	R23	—	—	9-3-85	SENT TO FT. CALHOUN SURV. JWK
	R23	—	—	11/14/85	RETURNED AND PLACED INTO STOCK JWK
		8/21/87	8/21/88		TO PALISADES CB 8/21/87

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QUALITY CONTROL "EXHIBIT A" | PSC Formerly Ingyco Surveillance | G25

CALIBRATION FORM

Project: Palisades Contract: 7V314 Date: 8/21/87

CALIBRATION DATA Recall Date 3/21/88

Gauge or Device Name: 24" Ruler Number: R23

Manufacturer: Starrett Type or Model: C-303SR Range: 0-24"

Master Calibration Device: Master Ruler, MR-1 due 12/9/88 Number:
OPT Comparator OCAA due 9/20/88
Master Device Calibration Date:

Test Range	Reading	Error
Ruler compared to MR-1 on tenth of an inch scale using an optical comparator. Checked at 1.00", 2.00", 4.00", 6.00", 12.00", 18.00" + 23.00" all readings within .005"		

Method of Calibration (Procedure number or describe other):

Comments:

Calibrated By: [signature] Title: MGR, Q.C. Date: 8/21/87

EFFECTIVE DATE	PREV. REV. △	REVISION △	PAGE

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GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
FEELER GAUGE	F4-0	8/19/85	2/19/85	-0-	ASSIGNED I.D.# & CALIBRATED JWK
.002 THRU .025	F40	11/5/85	5/5/86	-0-	CAL'D AND SENT TO WOLFCREEK SURV. JWK
(13 BLADES)	F40	——	——	2/24/86	RETURNED FROM SURV. PLACED INTO STOCK JWK
	F4-0	3/25/86	9/25/86	4	RE-CAL AND SENT TO FARLEY JWK RETURNED AND PLACED INTO STOCK JWK 5/19/86
		5/7/87	11/7/87		TO BRAID. SURV. EB 5/7/87 returned EB 8/20/87
		8/20/87	~~8/20/88~~ 2 EB 8/20/87		TO PALISADES EB 5/20/87

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QUALITY CONTROL "EXHIBIT A"	PSC Formerly Inryco Surveillance	627
CALIBRATION FORM		

Project: Palisades Contract: 7.U314 Date: 8/20/87

CALIBRATION DATA Recall Date: 2/20/88

Gauge or Device Name: Feeler Gauge Number: F40

Manufacturer: N/A Type or Model: N/A Range: .002 To .025

Master Calibration Device: O.D. Mic Master Number: M1C100

Master Device Calibration Date: due: 11/7/87

Test Range	Reading	Error
.002	.0020	∅
.003	.0030	∅
.004	.0040	∅
.006	.0060	∅
.008	.0080	∅
.011	.0110	∅
.012	.0120	∅
.013	.0130	∅
.014	.0140	∅
.016	.0160	∅
.018	.0180	∅
.020	.0200	∅
.022	.0211	+.0001
.025	.0251	+.0001

Method of Calibration (Procedure number or describe other): _____

Comments: _____

Calibrated By: _____ Title: MGR, Q.C. Date: 8/20/87

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GAUGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
FEELER GAUGE	F37	8-19-85	2-19-86	0	ASSIGNED I.D# & CALIBRATED JWK
.002 THRU .025	F37	11/5/85	5/5/86	0	CAL'D AND SENT TO WOLFCREEK SURV. JWK
	F37	———	———	2/24/86	RETURNED FROM SURV. PLACED INTO STOCK JWK
	F37	3/25/86	9/25/86	0	CALIBRATED AND SENT TO ZION SURV. JWK
	F37	—	—	6/20/86	RETURNED FROM ZION - RETURNED TO STOCK H.F.K.
		5/7/87	11/7/87		TO BRAID. SURV. EB 5/7/87 returned EB 8/20/87
		8/20/87	2/20/88		TO BYRON EB 8/20/87 returned EB 9/1/87
	F37	9/8/87	3/8/88	0	TO PALISADES H.F. 9/8/87

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QUALITY CONTROL "EXHIBIT A"

CALIBRATION FORM

PSC Formerly Inryco Surveillance

Project: PALISADES I.S.I. Contract 7N314 Date 9/8/87

CALIBRATION DATA Recall Date 3/8/88

Gauge or Device Name FEELER GAUGE Number F37

Manufacturer K-D TOOLS Type or Model #162 Range .002"-.025"

Master Calibration Device 1" O.D. MIC MASTER Number MIC 100

Master Device Calibration Date: DUE 11/7/87

Test Range	Reading	Error
.002	.0020	ø
.003	.0030	ø
.004	.0040	ø
.005	.0050	ø
.008	.0080	ø
.011	.0110	ø
.012	.0120	ø
.013	.0130	ø
.014	.0140	ø
.006	.0060	ø
.016	.0160	ø
.018	.0180	ø
.020	.0200	ø
.022	.0220	ø
.025	.0251	+.0001

Method of Calibration (Procedure number or describe other)

per Q.A. 12.8.E

Comments:

Calibrated By: H. F. Hendrickson Title: MGR., Q.A. Date: 9/8/87

EFFECTIVE DATE	PREV. REV. △	REVISION △	PAGE

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GUAGE CALIBRATION RECORD

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
MICROMETER 0-1"	Q.C.19	11/20/80	2/20/81	-0-	TO BRAIDWOOD C/O J. KORKOSZ CB 11/20/80
					RETURNED CB 2/13/81
		2/20/81	8/20/81	-0-	TO BRAIDWOOD CB 2/20/81 return TERMINATION 12-5-81 RSK
					SENT FOR REPAIR CB 5/18/82
	Q.C.17	———	———	———	returned OK CB 6/29/82
	QC19	6-19-85	12-19-85	0	Pesco Farley Tendon Fab. JWJ 6-19-85
					Also 1" Master Standard
	Q.C.19	———	———	7/8/85	RETURNED TO STOCK JWK
	QC19	9-17-85	3-17-86	0	CALIBRATED & SENT TO VC SUMMER SURV
	QC19	———	———	1-10-86	Returned to stock VCS using for Calibration
	QC19	———	———	2-7-86	To HANK G FOR ITS USE VCS
	Q.C 19	3/11/86	9/11/86	0	RECALIBRATED AND PLACED INTO STOCK JWK
	Q.C19	———	———	5/8/86	SENT TO BYRON SURV. JWK
					returned in stock
		10/23/86	4/23/87		For V.C. Summer tendon fab. CB 10/23/86 returned CB in stock 11/4/86
		5/7/87	11/7/87		to Braidwood surv. CB 5/7/87 returned CB 8/29/87
		8/20/87	2/20/88		TO PALISADES CB 8/20/87

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QUALITY CONTROL "EXHIBIT A"

CALIBRATION FORM

PSC Formerly Inryco Surveillance

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ject Palisades Contract 74314 Date 8/20/87

CALIBRATION DATA Recall Date 2/20/88

Gauge or Device Name O.D. Micrometer Number Q.C. 19

Manufacturer Starrett Type or Model 436-1 Range 0-1"

Master Calibration Device Gage Kit Number #654

Master Device Calibration Date: due 9-29-91

Test Range	Reading	Error
.14009	.140	.000
.34010	.346	.000
.55211	.552	.000
.75811	.758	.000
.96407	.964	.000

Method of Calibration (Procedure number or describe other)

Comments:

Calibrated By: [signature] Title: MGR, Q.C. Date: 8/20/87

EFFECTIVE DATE	PREV. REV. △	REVISION △	PAGE

INRYCO
an INLAND STEEL company

GAUGE CALIBRATION RECORD

S7-8462

GAUGE/INSTRUMENT	IDENTIFICATION	DATE CAL	RE-CAL DUE	ERROR	REMARKS (PROJECT, PART NO., REPAIR, ETC.)
HEISE UNIT	S7-8462	1-30-82	1-30-85	-0-	BOUGHT NEW W/CERT. TO V.C. SUMMER CB.
MODEL 710A		—	—	9-14-82	RETURNED TO STOCK CB.
DIGITAL		—	—	8-30-83	TO V.C. SUMMER CB
S/N #S7-8462		—	—	4-6-84	RETURNED TO STOCK CB.
	S7-8462	—	—	11-30-84	SENT TO DRESSER INDUSTRIES FOR CALIBRATION JWK
	S7-8462	2/2/85	2/2/88	-0-	CALIBRATED, RETURNED TO STOCK
	S7-8462	—	—	4/25/85	TO T.M.I. SURV. CB.
	S7-8462	—	—	7/18/85	RETURNED TO STOCK JWK (MAINTAINANCE)
	S7-8462	—	—	9/19/85	SENT TO V.C. SUMMER SURV. C/O R. HOUGH JWK RETURNED TO STOCK
	S7-8462	—	—	3/31/86	IN STOCK UNDER Q.C. CONTROL JWK
	S7-8462	—	—	11/25/86	IN SHOP FOR USE CB 11/25/86
		5/7/87	5/7/90		IN SHOP CB 5/7/87
					TO BRAIDWOOD CB 5/7/87

4322

PSC Precision Surveillance Corporation

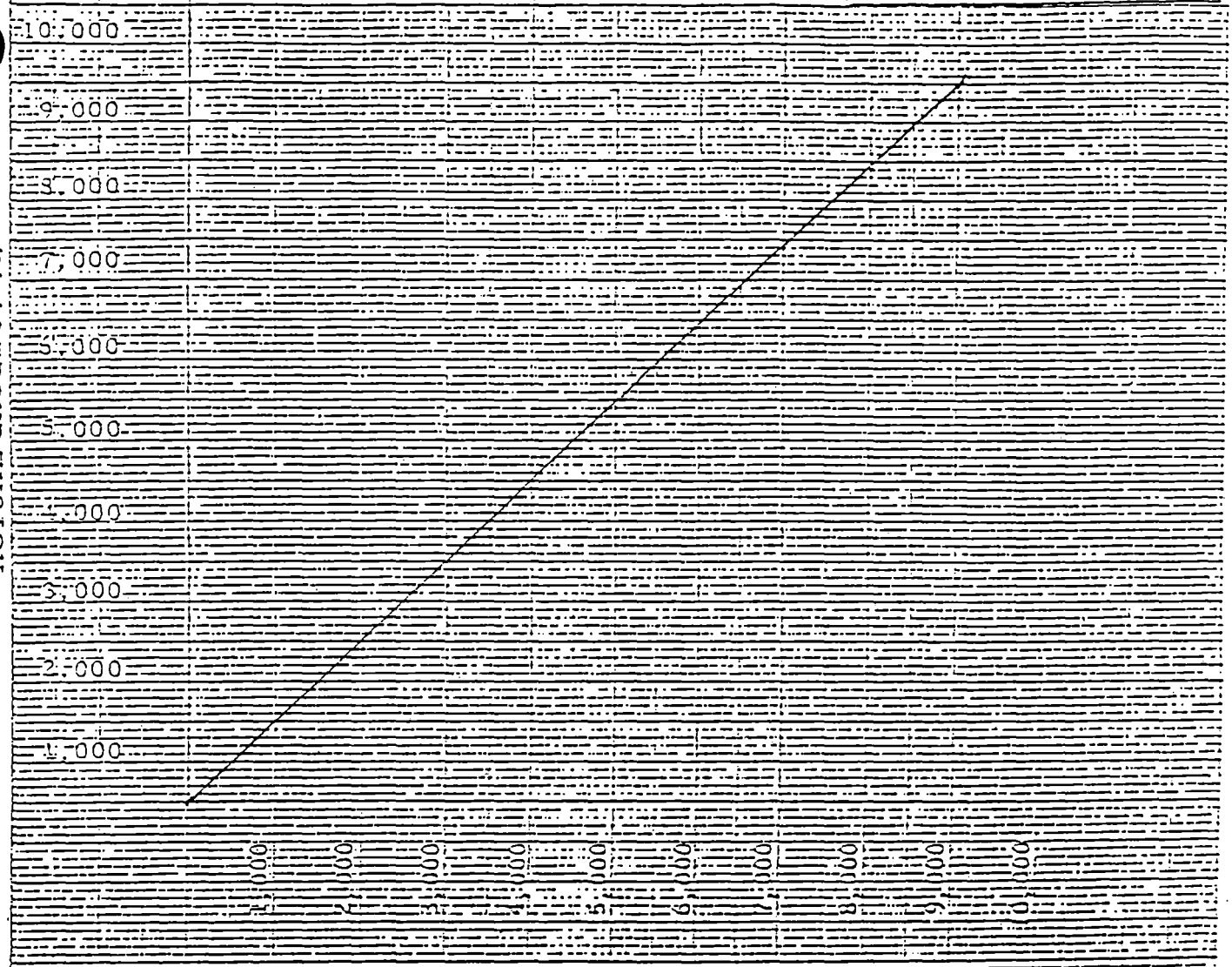
"EXHIBIT A"

Calibration Record Sheet JOB NO. N/A

G33

GAUGE NO. 57-8462

DATE 5-7-87



THEORETICAL PSI TESTER WEIGHTS

Weights	Gauge P.S.I.
1,000	997
2,000	1997
3,000	2999
4,000	3996
5,000	4997
6,000	5997
7,000	6998
8,000	7998
9,000	8999
10,000	

Mansfield & Green

Dead Weight Pressure

Model R100 Serial #1422

Calibrated By: [signature]

G34

DRESSER
INDUSTRIAL INSTRUMENT OPERATIONS
NEWTOWN, CONNECTICUT 06470

CALIBRATION CERTIFICATION REPORT

PRODUCT INFORMATION

CUSTOMER-INRYCO
CUSTOMER ORDER NO.-
DRESSER ORDER NO.-3GH-10132
RANGE-0-10000 PSI
SERIAL NO.-S7-8462

CALIBRATION CERTIFICATION

APPLIED PRESSURE PSI	INDICATED VALUES & % F.S. ERROR			
	UPSCALE READINGS	% ERROR	DOWNSCALE READINGS	% ERROR
0.0	0	0.00	0	0.00
1000.0	1000	0.00	1000	0.00
2000.0	1999	-0.01	2000	0.00
3000.0	2999	-0.01	2999	-0.01
4000.0	3999	-0.01	3999	-0.01
5000.0	4997	-0.03	4998	-0.02
6000.0	5998	-0.02	5998	-0.02
7000.0	6999	-0.01	6999	-0.01
8000.0	7998	-0.02	7999	-0.01
9000.0	9000	0.00	9001	0.01
10000.0	10000	0.00		

THIS INSTRUMENT HAS BEEN CALIBRATED WITH A PRESSURE STANDARD WHOSE ACCURACY IS TRACEABLE TO THE NATIONAL BUREAU OF STANDARDS, TEST NUMBER 38126.

THIS CERTIFICATION WAS RECORDED AT 70 DEGREES F.(21 DEGREES C.) AMBIENT TEMPERATURE.

CERTIFIED BY- [signature] DATE- 2/28/85

SUPERVISOR FINAL ASSEMBLY

G35

PSC Precision Surveillance Corporation

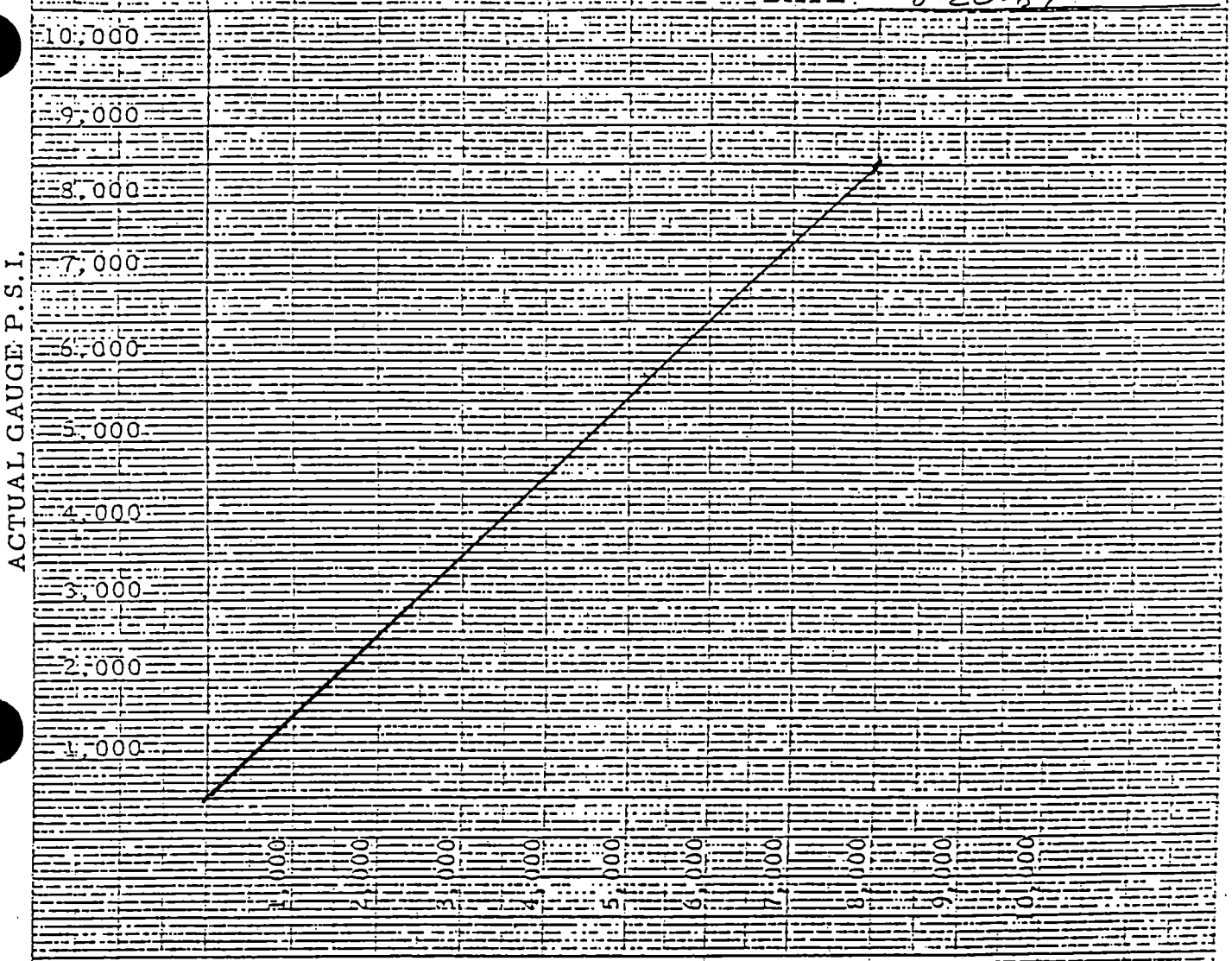
"EXHIBIT A"
Calibration Record Sheet

JOB NO. 7N 314

AMBIENT ° 84

GAUGE NO. FORNEY #1

DATE 8-20-87



HEISE cc 8/20/87

Weights	Gauge P.S.I.
1,000	1000
2,000	2000
3,000	2990
4,000	3990
5,000	4990
6,000	6000
7,000	6990
8,000	7990
9,000	
10,000	

Mansfield & Green

Dead Weight Pressure

Model R100 Serial #1422

HEISE

57-8462 8/20/87

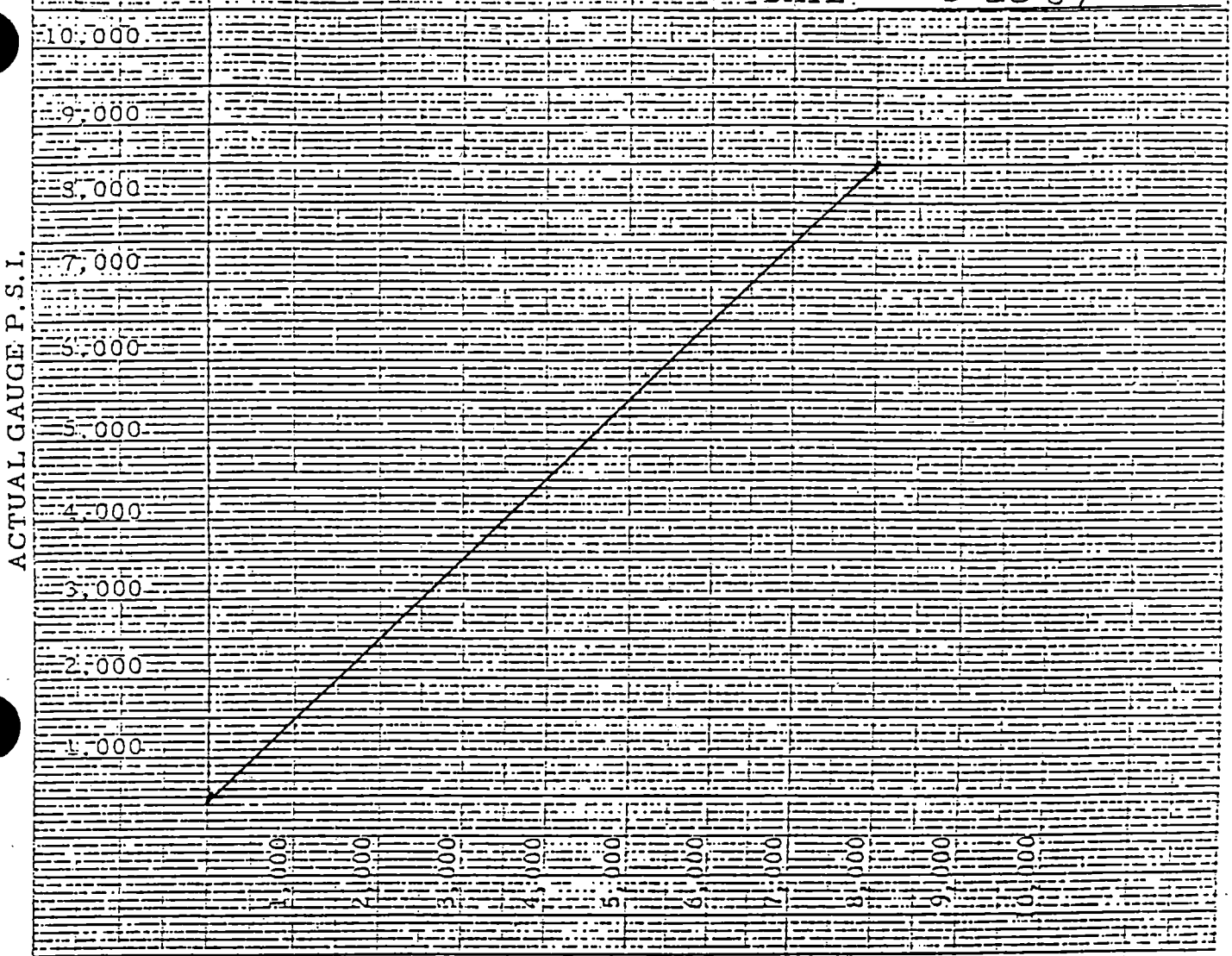
Calibrated By: [signature]

PSC Precision Surveillance Corporation

"EXHIBIT A"
Calibration Record Sheet JOB NO. 7N314

AMBIENT ° 84 GAUGE NO: FORNEY #2

DATE: 8-20-87



THEORETICAL PSI TESTER WEIGHTS

HEISE ~~8-20-87~~

Weights	Gauge P.S.I.
1,000	1000
2,000	2000
3,000	2990
4,000	3990
5,000	4990
6,000	6000
7,000	7000
8,000	7990
9,000	
10,000	

~~Mansfield & Green~~
Dead Weight Pressure
Model R100 Serial #1422
HEISE
57-8462
~~8-20-87~~

Calibrated By: Brooks

FORM NBS-443
(REV. 12-45)

G37

U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON, D.C. 20234

REPORT OF CALIBRATION

National Bureau of Standards Force Calibration

Test No. 737.04/232100
Calibration completed on April 25, 1984

Order No. 41P01862, dated January 10, 1984

Brewer Load Cell No. 418
Capacity 2,400,000 lbf Compression
BLH Indicator No. 1130
BLH Standardizer No. 3358

Submitted by

Inryco, Incorporated
Bedford Park, Illinois

The above force measuring device was calibrated in accordance with procedures specified by the submitter. The attached calibration data applies only when this device is used in a manner consistent with those procedures.

Three NBS load cells were individually calibrated to one-million lbf using deadweights. The device being calibrated was compared by loading in series, with the three NBS load cells positioned in parallel. Errors in the applied loads, as measured by the NBS load cells, are estimated to be no greater than $\pm$164 lbf.

The calibration data for a temperature of 22.4 degrees celsius are enclosed.

For the Director,
National Engineering Laboratory

Albert L. Hedrich
Calibrations Manager
Mechanical Production Metrology Division
Center for Manufacturing Engineering

Enclosures

737.04/232100

BREWER LOAD CELL NO. 418
CALIBRATED TO 1600000 LBF COMPRESSION
BLH INDICATOR NO. 1130, BLH STANDARDIZER NO. 1406

****
* *
* C O M P R E S S I O N *
* *
****

DATA FOR 23 DEGREES C

APPLIED LOAD IN LBF	NET SYSTEM RESPONSE			DEVIATIONS FROM FITTED CURVE			VALUES FROM FITTED CURVE	CHANGE FROM PREVIOUS CALIBRATION
	RUN 1	RUN 2	RUN 3	RUN 1	RUN 2	RUN 3		
160000.	9.97	10.02	9.97	-.01	.04	-.01	9.98	.04
320000.	20.00	20.04	19.99	-.01	.03	-.02	20.01	.05
480000.	30.05	30.02	30.01	.00	-.03	-.04	30.05	.07
640000.	40.03	40.14	40.07	-.05	.06	-.01	40.08	.09
800000.	50.12	50.13	50.12	.01	.02	.01	50.11	.11
960000.	60.11	60.13	60.12	-.02	.00	-.01	60.13	.14
1120000.	70.10	70.23	70.15	-.06	.07	-.01	70.16	.17
1280000.	80.18	80.23	80.21	.00	.05	.03	80.18	.21
1440000.	90.15	90.19	90.22	-.05	-.01	.02	90.20	.25
1600000.	100.15	100.27	100.26	-.07	.05	.04	100.22	.30

THE FOLLOWING CALIBRATION EQUATION WAS FITTED TO THE CALIBRATION DATA BY THE METHOD OF LEAST SQUARES.

RESPONSE = (A) + (B)(LOAD) + (C)(LOAD SQUARED)

WHERE A = -.595512-001
B = .627377-004
C = -.374842-013

THE FOLLOWING VALUES, AS DEFINED IN ASTM E 74-83, WERE DETERMINED FROM THE CALIBRATION DATA

UNCERTAINTY = 1400. LBF

INDICATOR SET TO 120 OHMS AND 2.0 MV/V
STANDARDIZER SET ON 0-2 SCALE

STANDARDIZER SETTING	INDICATOR READING
0.4	20.02
0.8	40.05
1.2	60.10
1.6	80.10
2.0	100.20

NATIONAL BUREAU OF STANDARDS FORCE CALIBRATION

DATE 050284

737.04/232100

BREWER LOAD CELL NO. 418
CALIBRATED TO 2400000 LBF COMPRESSION
BLH INDICATOR NO. 1130, BLH STANDARDIZER NO. 1406

****
*
* C O M P R E S S I O N *
*
****

DATA FOR 23 DEGREES C

APPLIED LOAD IN LBF	NET SYSTEM RESPONSE			DEVIATIONS FROM FITTED CURVE			VALUES FROM FITTED CURVE	CHANGE FROM PREVIOUS CALIBRATION
	RUN 1	RUN 2	RUN 3	RUN 1	RUN 2	RUN 3		
240000.	9.95	9.99	9.98	-.01	.03	.02	9.96	.02
480000.	20.06	20.01	19.98	.05	.00	-.03	20.01	.02
720000.	30.00	30.01	30.01	-.04	-.03	-.03	30.04	.03
960000.	40.01	40.03	40.08	-.04	-.02	.03	40.05	.03
1200000.	50.00	50.05	50.08	-.04	.01	.04	50.04	.03
1440000.	59.98	60.05	60.04	-.04	.03	.02	60.02	.04
1680000.	69.93	70.00	70.03	-.04	.03	.06	69.97	.04
1920000.	79.85	79.95	79.96	-.06	.04	.05	79.91	.05
2160000.	89.76	89.87	89.87	-.08	.03	.03	89.84	.05
2400000.	99.67	99.77	99.77	-.07	.03	.03	99.74	.06

THE FOLLOWING CALIBRATION EQUATION WAS FITTED TO THE CALIBRATION DATA BY THE METHOD OF LEAST SQUARES.

RESPONSE = (A) + (B)(LOAD) + (C)(LOAD SQUARED)

WHERE A = -.100551+000
B = .419666-004
C = -.152129-012

THE FOLLOWING VALUES, AS DEFINED IN ASTM E 74-83, WERE DETERMINED FROM THE CALIBRATION DATA

UNCERTAINTY = 2300. LBF

INDICATOR SET TO 120 OHMS AND 3.0 MV/V
STANDARDIZER SET ON 0-5 SCALE

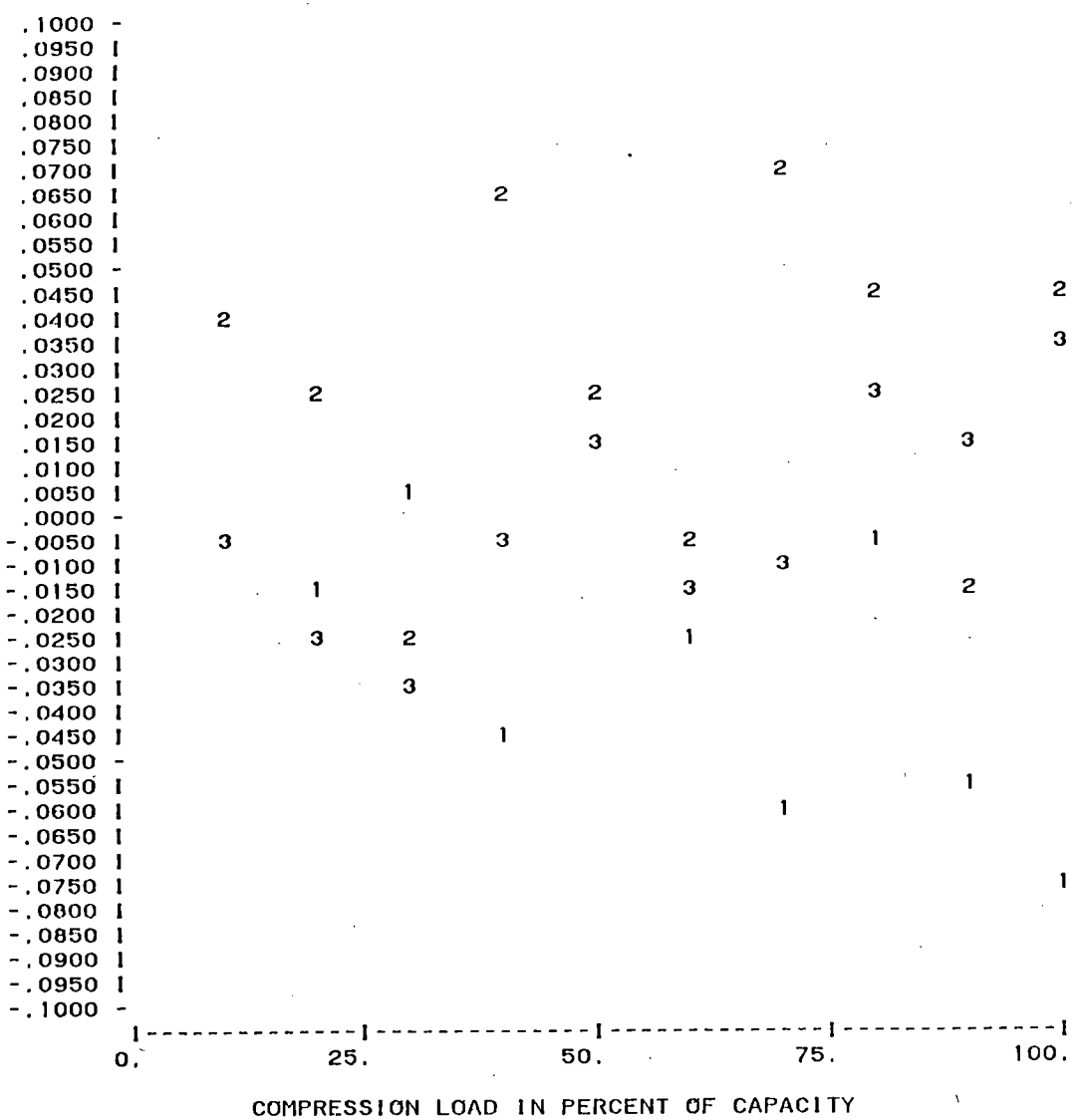
STANDARDIZER SETTING	INDICATOR READING
0.5	16.70
1.0	33.35
1.5	50.02
2.0	66.70
2.5	83.40
3.0	100.10

N[redacted]AL BUREAU OF STANDARDS FORCE CALIBRATION

DATE 050284

737.04/232100

BREWER LOAD CELL NO. 418
CALIBRATED TO 1600000 LBF COMPRESSION
BLH INDICATOR NO. 1130, BLH STANDARDIZER NO. 1406



COMPRESSION LOAD IN PERCENT OF CAPACITY

641

QUALITY ASSURANCE DOCUMENTATION

PSC Formerly Inryco Surveillance

INSPECTION REPORT FORM QC 14.4.2

Contract 7N315 Project BRAIDWOOD Report No. N/A

Specification N/A Drawing N/A Date 6/9/87

Other NONE Shipment No. N/A

Purpose and Type of Inspection:

RECEIVE INSPECTION OF 40 DRUMS 55 GALS EACH 2090P-4

Results of Inspection: ☒ Accept ☐ Hold ☐ Reject

40 DRUMS BATCH # 7-6242 (55 GALS EACH) WERE CHECKED FOR CORRECT BATCH #, BROKEN SEALS AND DAMAGE TO THE OUTSIDE OF THE DRUMS. ALL WERE FOUND IN AN ACCEPTABLE CONDITION.

Inspection By: [signature]

Title: MGR, Q.C. Date: 6/9/87

G42

Viscosity Oil
A Tenneco Company

3200 South Western
Chicago, Illinois 60608
(312) 847-0224
TWX: 910-221-0245

PSC
APPROVED:
CONFORMS TO
VISCONORUST 2090P-4
6/9/87

Job Order No. PSC PO#515

Lot No. 7-6242

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	ACTUALLY 135 TO 145 EB 6/9/87 135 (57)min.
Flash Point °F (°C)	ASTM D-92	410	420 (215)min
Viscosity SUS @ 210°F (98.9°C)	ASTM D-88	157	150-300
ASTM Consistency (cone penetration) @ 77°F (25°C)	ASTM D-937	170	170-200
Total Base No.(Modified)	ASTM D-974	61	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 [signature]
CONTROL CHEMIST

DATE 5/29/87

VISCOR
LUBRICANTS SINCE 1892

06A490
091586

QUALITY ASSURANCE DOCUMENTATION

PSC Formerly Inryco Surveillance

643

INSPECTION REPORT FORM QC 14.4.2

Contract N/A Project N/A Report No. N/A

Specification N/A Drawing N/A Date 10-2-86

Other IN-HOUSE MAT'L INSPECTION REPORT Shipment No. N/A

Purpose and Type of Inspection: TO CONTROL AND MAINTAIN TRACEABILITY TO MATERIAL IN-HOUSE. MATERIAL WAS PURCHASED BY PSC FROM INRYCO, INC. MATERIAL IS NOW BEING MAINTAINED UNDER PSC's Q.A. PROGRAM. INSPECTION PERFORMED ON 10-1-86 eb THIS IS TO DOCUMENT THE ACCEPTABILITY OF THE MAT'L AND THAT TRACEABILITY HAS BEEN MAINTAINED

Results of Inspection: ☒ Accept ☐ Hold ☐ Reject

170 WIRE SHIMS:
INRYCO P.O.# 41T791-1420A+B
1 SKID 2" HT 801N25060 1 SKID 1/4" HT 41895
1 SKID 4" HT 801P01030 + 803P62120 1 SKID 1/8" HT 11563
1/2" HT 43867
INRYCO PO# 45T859-63
1 SKID 3" HT 803K81010

INRYCO PO# 41T2441-9 eb 10/2/86
1 SKID 1/4" HT 15140 1 SKID ~~1/8~~ 1" HT 60147
1 SKID 1/8" HT 68515 1 SKID 3/4" HT 27094
1 SKID 1/2" HT 16105

2090P-4
9 DRUMS - BATCH 6-7099, 1 DRUM BATCH 5-8081
⇒ 4 OF WHICH SHALL BE SHIPPED TO OMAHA SURV.

---

90 WIRE SHIMS
INRYCO PO# 41T2522-11
SIZES
1" HT 39238 1/4" HT 18476
1/2" HT 38402 1/8" HT. 18476

Inspection By: [signature]

Title: MGR, Q.C. Date: 10/2/86

QUALITY ASSURANCE DOCUMENTATION

PSC Formerly Inryco Surveillance

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INSPECTION REPORT FORM QC 14.4.2

PAGE 2 of 2

Contract N/A Project N/A Report No. N/A

Specification N/A Drawing N/A Date 10-2-86

Other IN-HOUSE MAT'L INSPECTION REPORT Shipment No. N/A

Purpose and Type of Inspection: PAGE 2 of 2 SEE PAGE 1

Results of Inspection: ☒ Accept ☐ Hold ☐ Reject

INRYCO P.O.# 41T2516-3

1/8 HT 16403 1" HT 42608

1/4 HT 16403 2" HT W04051

1/2 - HT#62697

170AC5 - NEOPRENE WASHERS
1 3/4" x 5/8" x 1/8

90WAC14 + 90WAC10 GREASE CAN GASKETS

90WAC15 - LASALLE GASKETS 170W18C - TM1 5/8" THICK GASKETS.

Inspection By: [signature]

Title: MGR, Q.C. Date: 10/2/86

QUALITY ASSURANCE DOCUMENTATION

PSC Formerly Inryco Surveillance 645

INSPECTION REPORT FORM QC 14.4.2

Contract N/A Project SHOP Report No. N/A

Specification VISCOR #16 Drawing N/A Date 8/21/87

Other — Shipment No. N/A

Purpose and Type of Inspection: RECEIPT INSPECTION

Results of Inspection: ☒ Accept ☐ Hold ☐ Reject

RECEIVED 5 DRUMS (55 GAL) EACH VISCOR #16 SOLVENT BATCH #08077 - BATCH # MATCHES TEST CERT RECEIVED

Inspection By: [signature]

Title: MGR, Q.C. Date: 8/21/87

Viscosity Oil
A Tenneco Company

3200 South Western
Chicago, Illinois 60608
(312) 847-0224

TENNECO

946

PSC - APPROVED
BATCH # 08077
VISCOR IND. # 16
Chuck 8/21/87

CUSTOMERS PURCHASE ORDER NO. 521

BATCH NO. 08-07-7

QUALITY CONTROL SPECIFCATION SHEET
VISCOR INDUSTRIAL NO. 16

PHYSICAL PROPERTIES		TEST RESULTS	REQUIRED
Pounds per Gallon @ 60°F		6.46	6.3 - 6.6
Specific Gravity @ 60°F	ASTM D-287	0.775	0.75 - 0.79
Flash Point	ASTM D-56	105	100 -106
Residual Odor		mild	mild
Sulfur H_2S/Doctor	ASTM D-130	10	18 max
Aromatics Volume %		<1.0	7.5 max

CHEMICAL PROPERTIES			
Water Soluble Chlorides	ASTM D-512	< 2	2 ppm Max.
Water Soluble Nitrates	ASTM D-992	< 4	4 ppm Max.
Water Soluble Sulfides	APHA No. 427C (15th Edition)	< 2	2 ppm Max.

This certifies compliance with the specifications or requirements used by customer's Purchase Order.

BY Brian K. Rogers
CONTROL CHEMIST

DATE 8/21/87

VISCOR
LUBRICANTS SINCE 1888

TELEPHONE VIctory TWO - ONE - SEVEN - FOUR - FOUR

Phone (312) 842-1744

Cable Address — "CLARGASK"

Clark Gasket Company INC.

SINCE 1893

500 WEST 31st STREET
CHICAGO, ILLINOIS 60616 U.S.A.

August 16, 1985

Inryco Concrete Systems Division
7200 S. Narragansett Ave.
Bedford Park, IL 60631

Attn: Don Waitkus

Gentlemen:

This is to certify that; to the best of our knowledge, all pieces of part numbers listed on Purchase Order Number 41T2516-4 listed below; have been fabricated using the materials, specifications and procedures shown on the Blueprints and pertinent specifications.

Order No.	Part No.	Quantity shipped	Date shipped
41T2516-4	90WAC10	50 pcs.	8/16/85
"	90WAC14	100 pcs.	"
"	1-3/4 x 5/8 I.D. x 1/8" tk Neoprene	100 pcs.	"

CLARK GASKET CO.
J. B. Clark, President

Subscribed and sworn to before me this 15th day of August, 19 85

APPROVED INRYCO
QUALITY ASSURANCE SECTION
BY
DATE 9-6-85

MEMBER

F26

TELEPHONE VIctory TWO - ONE - SEVEN - FOUR - FOUR • G48

Phone (312) 842-1744

Cable Address — "CLARGASK"

Clark Gasket Company INC.

SINCE 1893

500 WEST 31st STREET
CHICAGO, ILLINOIS 60616 U.S.A.

February 6, 1986

Inryco Concrete Systems Division
7200 S. Narragansett Ave.
Bedford Park, IL 60631

Gentlemen:

This is to certify that; to the best of our knowledge, all pieces of part numbers listed on Purchase Order Number 41T2522-7 listed below; have been fabricated using the materials, specifications and procedures shown on the Blueprints and pertinent specifications.

Order No.	Part No.	Quantity shipped	Date shipped
41T2522-7	90WAC10	50	2/6/86
"	90WAC14	20	"
"	1-3/4 x 5/8 x 1/8" Neoprene Washers	200	"

CLARK GASKET CO.
J. B. Clark, President

Subscribed and sworn to before me this 6th day of February, 19 86

APPROVED INRYCO
QUALITY SECTION
BY
DATE 2/21/86

SHIPPING RELEASE AND PACKING LIST

QUALITY CONTROL DOCUMENTATION

PSC Formerly Inryco Surveillance

Customer: CONSUMERS' POWER | Shipment No. N/A

Project: PALISADES NUCLEAR PLANT | Contract: 7N314

Prepared by: H. HENDRICKSON | Fabricator: N/A

Inspected by: H. Hendrickson | Date: 10/8/87 | Page 1 of 1

Documentation to satisfy the Quality Assurance requirements have been reviewed and found acceptable.

SIGNED H. H. Hendrickson DATE 10/8/87

INRYCO QUALITY ASSURANCE REPRESENTATIVE

QUANTITY	~~PART NO~~ H.H. 10/8/87	DESCRIPTION
5	PAIRS'	STRESSING SHIMS' 2" X 5 3/4" I.D. X 8 1/4" O.D.
10	〃	〃 1" 〃 〃 〃 〃 〃
10	〃	〃 1/2" 〃 〃 〃 〃 〃
5	PAIRS'	STRESSING SHIMS' 1/4" X 5 3/4" I.D. X 8 1/4" O.D.

30 Total ~~Pieces~~ PAIRS' H.H. 10/8/87

547 lbs. Total Weight

G50

SHIPPING RELEASE AND PACKING LIST

QUALITY CONTROL DOCUMENTATION

PSC Formerly Inryco Surveillance

Customer: CONSUMERS' POWER	Shipment No. N/A
Project: PALISADES NUCLEAR PLANT	Contract: 7N314
Prepared by: H. HENDRICKSON	Fabricator: N/A
Inspected by: H. Hendrickson	Date: 10/8/87 Page 1 of 1

Documentation to satisfy the Quality Assurance requirements have been reviewed and found acceptable.

SIGNED H. H. Hendrickson DATE 10/8/87
INRYCO QUALITY ASSURANCE REPRESENTATIVE

QUANTITY	~~PART NO~~ H.H. 10/8/87	DESCRIPTION
5	PAIRS	STRESSING SHIMS 2" X 5 3/4" I.D. X 8 1/4" O.D.
10	〃	〃 1" 〃
10	〃	〃 1/2" 〃
5	PAIRS	STRESSING SHIMS 1/4" X 5 3/4" I.D. X 8 1/4" O.D.

30 Total ~~Pieces~~ PAIRS H.H. 10/8/87

547 lbs. Total Weight

G51

QUALITY ASSURANCE DOCUMENTATION

PSC Formerly Inryco Surveillance

INSPECTION REPORT FORM QC 14.4.2

Contract 7N314 Project PALISADES 1.5.1 Report No. P.O.# 527 N/A

Specification AISI 1045 Drawing N/A Date 10/8/87

Other _____ Shipment No. N/A

Purpose and Type of Inspection: RECEIVING INSPECTION OF STRESSING SHIMS F/RYERSON P.O.# 527 AISI 1045 MATERIAL

5 PAIRS 2" x 5 3/4" I.D x 8 1/4" O.D.

10 PAIRS 1"

10 PAIRS 1/2"

5 PAIRS 1/4" x 5 3/4" I.D. x 8 1/4" O.D.

Results of Inspection: ☒ Accept ☐ Hold ☐ Reject

1.) Material count - acceptable
2.) Heat # painted on each piece - acceptable
3.) Thicknesses and Radius - acceptable
4.) Deburred - acceptable
5.) Test reports & Material certification - acceptable.

Inspection By: W. F. Hendrickson

Title: MGR., Q.A. Date: 10/8/87

material certification

652

Ryerson
a subsidiary of
Inland Steel Industries, Inc.

PSC Q.A. Reviewed & acceptable
F.F. Hendrickson 10/8/87

PRECISION SURVEILLANCE CORP
3468 WATLING ST
EAST CHICAGO IN 46312

DATE	OUR ORDER NO.	YOUR ORDER NO.
10/7/87	WS-378610 WS-19914B1	527

ITEM DESCRIPTION	HEAT NUMBER
10 PCS PLT 1045 1/4 4-1/8 0'8-1/4"	51508
20 PCS PLT 1045 1/2 4-1/8 0'8-1/4"	65910
20 PCS PLT 1045 1 4-1/8 0'8-1/4"	28671
10 PCS PLT 1045 2 4-1/8 0'8-1/4"	T42707

THIS ORDER WAS PROCESSED THROUGH THE RYERSON QUALITY SYSTEM PROGRAM
IN ACCORDANCE WITH CRITERIA OF: 10CFR PART 50,APPENDIX B
ANSI N45/2
AISI 1045

A survey of our material sources has indicated that neither mercury nor radioactive substances is introduced into their products, or is used in any of their processes. While we make no independent tests for mercury or radiation, there is nothing in Ryerson's system which could be expected to introduce contamination of either type.

This document certifies that the material described above was shipped on your order and that the attached data is a true copy of the test report furnished by the producer with said material.

JOSEPH T. RYERSON & SON, INC.

By [signature] (Authorized Agent)

CS

COPYRIGHT 1983, JOSEPH T. RYERSON & SON, INC.
FORM 230.44-2 Rev. 9-86

...lar tee
a subsidiary of
Inland Steel Industries, Inc.

REG., JOB, CONTRACT NO.

PURCHASE ORDER NO.
A72260

INLAND STEEL COMPANY
QUALITY CONTROL CENTER 2-106
3210 WATLING STREET
EAST CHICAGO, INDIANA 46312

SHIPPER'S NO.	...R NO.
100 MILL	2984 U
INVOICE DATE	INVOICE NO.
30/09 3	9/30,1987 286427,001

VEHICLE IDENTIFICATION
WILLETT 719

We hereby certify that the ... analysis and/or test results shown are correct as contained in the records of the company.

Robert R. Shawver
Robert R. Shawver
Supervisor

PAGE 1 OF 1

STATE OF INDIANA
COUNTY OF LAKE
Subscribed and sworn to before me this
day of A.D., 19

Notary Public
MY COMMISSION EXPIRES:

P.1

SOLD TO
JOSEPH T RYERSON & SON INC.
TEST REPORT DESK
BOX 8263

CHICAGO IL 60680

SHIP TO
J T RYERSON & SON INC
C SPAN SOUTH
PINK SECTION
323 W 83RD ST
CHICAGO IL 60620

SPECIFICATION INLAND STEEL PLATES, AISI 1045 JTR-3142-F, C .420/ .500 MN .60/.90
.000/.040 S .000/.050 SI .150/.350, KILLED STEEL,SHEARED EDGE / 20000
BEARING PCS YELLOW STRIPE 1 END EA.PC

MATERIAL DESCRIPTION	QUANT.	WEIGHT	HEAT NO.	TEST OR PC. ID. NO.
PL 1/4 IN X 84 IN X 360 IN	5	10720	51508	
	5	10899	51508	
	8	17724	51508	
UST CD-CC 343115				

TEST RESULTS
BEND TEST * * * * * HEAT ANALYSIS REPORT * * * * *

PSC Q.A. Reviewed
& acceptable
H.T. Hendrickson 10/8/87

CERTIFIED MATERIAL
TEST REPORT
OCT 0 3 1987
BY R. A.

...D.
743-000

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	Mo	Cr	Cb	V	Al	
51508	.46	.87	.016	.023	.24								

OCT 05 '87 01:30

A

653

Inland Steel
a subsidiary of Inland Steel Industries, Inc.

METALLURGICAL DEPARTMENT TEST REPORT

INV. #28[redacted],001

MFR., PRO. CONTRACT NO.

PURCHASE ORDER NO. 1A72260

ORDER

INLAND STEEL COMPANY
QUALITY CONTROL CENTER 2-108
3210 WATLING STREET
EAST CHICAGO, INDIANA 46312

SHIPPER'S NO.	MILL ORDER NO.
100 MILL	22987 U
INVOICE DATE	INVOICE NO.
8/09 1	9/08,1987 286091,001

VEHICLE IDENTIFICATION
WILLETT 38727

We hereby certify that the heat analysis and/or test results shown are correct as contained in the records of the company.

Robert R. Shawver
Robert R. Shawver
Supervisor

PAGE 1 OF 1

STATE OF INDIANA
COUNTY OF LAKE
Subscribed and sworn to before me this
day of A.D. 19
Notary Public
MY COMMISSION EXPIRES:

SOLD TO
JOSEPH T RYERSON & SON INC.
TEST REPORT DESK
BOX 8263
CHICAGO IL 60680

SHIP TO
J T RYERSON & SON INC
C SPAN SOUTH
PINK SECTION
323 W 83RD ST
CHICAGO IL 60620

SPECIFICATION INLAND STEEL PLATES, AISI 1045 JTR-3142-F, C .420/ .500 MN .60/.90
P .000/.040 S .000/.050 SI .150/.350, KILLED STEEL, SHEARED EDGE / 20000
BEARING PCS YELLOW STRIPE 1 END EA.PC

TEST RESULTS

ITEM NO.	MATERIAL DESCRIPTION	QUANT.	WEIGHT	HEAT NO.	TEST OR PC. ID. NO.
	PL 1/2 IN X 84 IN X 360 IN	5	22155	65910	
	CUST CD-CC 343193				
	I.D. 2743-000				

BEND TEST * * * * * HEAT ANALYSIS REPORT * * * *

PSC A.A. Reviewed + acceptable
H.H. Hendrickson 10/8/87

CERTIFIED MATERIAL TEST REPORT

SEP 12 1987
BY H. K.

SEP 12 '87 08:45

HEAT ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	Mo	Cr	Cb	V	N	
65910	.46	.86	.012	.009	.24								

654

MATERIAL CERTIFICATION TEST REPORT

Inland Steel
a subsidiary of Inland Steel Industries, Inc.

REQ., JOB, CONTRACT NO.

PURCHASE ORDER NO. 1A74156

INLAND STEEL COMPANY
QUALITY CONTROL CENTER 2-106
3210 WATLING STREET
EAST CHICAGO, INDIANA 46312

SHIPPER'S NO. 100 MILL

ORDER NO. 23613 U

	INVOICE DATE	INVOICE NO.
11/06 1	6/11/1987	193197.002

VEHICLE IDENTIFICATION: WILLETT T 27

We hereby certify that the heat analysis and/or test results shown are correct as contained in the records of the company.

Robert R. Shawver
Robert R. Shawver
Supervisor

PAGE 1 OF 1

SOLD TO
JOSEPH T RYERSON & SON INC.
TEST REPORT DESK
BOX 8263
CHICAGO IL 60680

SHIP TO
JOSEPH T RYERSON & SON INC
C SPAN SOUTH
PINK SECTION
323 W 83RD ST
CHICAGO IL 60620

STATE OF INDIANA
COUNTY OF LAKE
Subscribed and sworn to before me this
day of A.D., 19
Notary Public
MY COMMISSION EXPIRES:

SPECIFICATION INLAND STEEL PLATES, AISI 1045 JTR-3142-F, C .420/ .500 MN .60/.90 P .000/.040 S .000/.050 SI .150/.350, KILLED STEEL, SHEARED EDGE / 20000
BEARING PCS YELLOW STRIPE 1 END EA.PC

ITEM NO.	MATERIAL DESCRIPTION	QUANT.	WEIGHT	HEAT NO.	TEST OR PC. ID. NO.	TEST RESULTS
	PL 1 IN X 84 IN X 360 IN	2	17724	28671		BEND TEST * * * * * HEAT ANALYSIS REPORT * * * *
		2	17724	59278		
	CUST CO-CC 354141					

PSC Q.A. Reviewed + acceptable
H.F. Tendickson 10/8/87

I.D.
2743-000

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	Mo	Cr	Cb	V	Al	
28671	.50	.77	.015	.025	.23								
59278	.48	.79	.017	.018	.24								

955

G56

USS United States Steel Corporation — LOAD TALLY

REPORT OF TESTS AND ANALYSIS

PURCHASE ORDER DATE	PURCHASE ORDER NO.

PICKUP NO.

U.S.S. ORDER NO.	PAGE
CL10028	

U.S. STEEL CORP.
GARY WORKS
GARY, IN 46402

INV# 154-74461

SHIPPER'S NO.
705116

JOSEPH T RYERSON & SON INC
P O BOX 8000-A
ATTN ACCOUNTS PAYABLE
CHICAGO ILL 60680

JOSEPH T RYERSON & SON INC
A SPAN GREEN SECTION
323 W 83RD ST
CHICAGO ILL

CUST NO: PT#CC354254--

SHIPPED	FROM	ROUTE/CARRIER
10 1 87		

CODE	MINIMUM WEIGHT	VEHICLE IDENT.	PPD/COL
		64A IN	

PLATE CARBON JT RYERSON SPEC 3142-F DID 11/20/86 C.42/.50 MN .60/.90 P.040 MAX S.050 MAX 51.187.85 RLST FLATNESS TOL 1/2 SLD

01 MILL CERTIFIED T/R WITH LOAD & T/R TO JT RYERSON & SON INC ATTN TEST RPT DEPT PO BOX 8263 CHICAGO ILLINOIS 60680 & T/R WITH SHIPMENT

THICKNESS SECT	WIDTH OR FT.WT.	DIA NO.	HEAT IDENTITY	TEST OR PIECE	YLD PT 8-IN 2-IN AREA	TNSL STR	ELONG A 2 IN GRED BLND
2.0000	84.0000		T42707				

"USS,A DIVISION OF USX, HEREBY CERTIFIES THAT ALL MANUFACTURING PROCESSES INVOLVED IN THE PRODUCTION OF USS STEEL MILL PRODUCTS OCCUR ENTIRELY IN THE UNITED STATES

END OF DATA

PSC QA Reviewed & acceptable
J.T. Hendrickson 10/8/87

HEAT	TYPE	C	MN	P	S	SI	CU	NI	CR	MO	SN	AL	N
T42707	HEAT	.44	0.75	.009	.013	.21							

END OF DATA

79310

CONFIRMING TEST REPORT WILL BE MAILED

[redacted]

[illegible] TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MFD., SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS REQUIREMENTS IN RESPECT. PREPARED BY THE OFFICE OF: J.J.HARRINGTON Q.A.MGR

CUSTOMER LOAD TALLY — CONSIGNEE, REPORT SHORTAGE OR DAMAGES TO CARRIER & RECORD ON DELIVERY RECEIPT

PSC Formerly
Inryco Surveillance

G57

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO S7-8462

DATE CHECKED 9-22-87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2990
4000	3990
5000	4990
6000	3990

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO S7-8462

DATE CHECKED 9-25-87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1980
3000	2980
4000	3980
5000	4980
6000	5980

PSC Formerly
Inryco Surveillance

G58

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO S7-8462

DATE CHECKED 9/29/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2980
4000	3980
5000	4980
6000	5980

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

ACK GAUGE NO FORNEY #1

MASTER GAUGE NO S7-8462

DATE CHECKED 9/30/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	2000
3000	3000
4000	3990
5000	4990
6000	5980

PSC Formerly
Inryco Surveillance

G59

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO S7-8462

DATE CHECKED 10/1/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2990
4000	3990
5000	4990
6000	6000

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/5/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	2000
3000	3010
4000	4010
5000	5010
6000	6000

PSC Formerly
Inryco Surveillance

G60

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/8/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	2000
3000	2990
4000	4000
5000	4990
6000	6000

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/9/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	1990
3000	2990
4000	3990
5000	4990
6000	5990

PSC Formerly
Inryco Surveillance

G61

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/12/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1010
2000	2010
3000	3010
4000	4010
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/13/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	2000
3000	3000
4000	4000
5000	5000
6000	5990

PSC Formerly
Inryco Surveillance

G62

GAUGE CALIBRATION RECORD

JOB 7N314 PALISADES I.S.I

JACK GAUGE NO ~~FZ~~ H.H. 10/14/87 FORNEY NO. 2

MASTER GAUGE NO S7-8462

DATE CHECKED 10-14-87

CHECKED BY H. F. Hendrickson

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2990
4000	4000
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/15/87

CHECKED BY H. F. Hendrickson

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2990
4000	4000
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

G63

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/16/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	2010
3000	3010
4000	4000
5000	5010
6000	6010

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/17/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1010	1020
2000	2010
3000	3010
4000	4000
5000	5010
6000	6000

PSC Formerly
Inryco Surveillance

666

GAUGE CALIBRATION RECORD

JOB PALISADES 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO HEISE DIGITAL S7-8462

DATE CHECKED 10-22-87

CHECKED BY H.F. Hendrickson

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	1990
3000	2990
4000	4000
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB PALISADES 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO HEISE DIGITAL S7-8462

DATE CHECKED 10-22-87

CHECKED BY H.F. Hendrickson

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2990
4000	4000
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

G67

GAUGE CALIBRATION RECORD

JOB PALISADES 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO 57-8462

DATE CHECKED 10-23-87

CHECKED BY H.F. Hendrickson

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2990
4000	4000
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB PALISADES 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO 57-8462

DATE CHECKED 10-23-87

CHECKED BY H.F. Hendrickson

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	2000
3000	3000
4000	4000
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

G68

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10/27/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	2000
3000	3000
4000	4000
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB

JACK GAUGE NO

MASTER GAUGE NO

DATE CHECKED

CHECKED BY

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO 87-8462

DATE CHECKED 10/28/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1010
2000	2020
3000	3020
4000	4010
5000	5010
6000	6010

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO 87-8462

DATE CHECKED 10/28/87

CHECKED BY [signature]

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1010
2000	2010
3000	3000
4000	4000
5000	5000
6000	5990

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB PALISADES 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO ~~FORNEY #2~~ S7-8462 x.x. 10/29/87

DATE CHECKED 10-29-87

CHECKED BY W.F. Hendrickson

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	2000
3000	3000
4000	4000
5000	5000
6000	6000

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB PALISADES 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO S7-8462

DATE CHECKED 10-29-87

CHECKED BY W.F. Hendrickson

REMARKS

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2990
4000	3990
5000	4990
6000	5990

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #1

MASTER GAUGE NO S7-8462

DATE CHECKED 10-30-87

CHECKED BY [signature]

REMARKS POST-CALIB

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	990
2000	1990
3000	2990
4000	3990
5000	4990
6000	5990

PSC Formerly
Inryco Surveillance

GAUGE CALIBRATION RECORD

JOB 7N314

JACK GAUGE NO FORNEY #2

MASTER GAUGE NO S7-8462

DATE CHECKED 10-30-87

CHECKED BY [signature]

REMARKS POST-CALIB

MASTER GAUGE (PSI)	JACK GAUGE (PSI)
1000	1000
2000	2000
3000	3000
4000	4000
5000	5000
6000	6000