Attachment

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-445 and
TEXAS UTILITIES ELECTRIC COMPANY, et al.	)	50-446
	)	
	)	(Application for
(Comanche Peak Steam Electric Station, Units 1 and 2)	)	Operating Licenses)

AFFIDAVIT OF JOHN C. FINNERAN, JR.
REGARDING INFORMATION RELATED
TO CINCHING DOWN OF U-BOLTS

I, John C. Finneran, Jr., being first duly sworn, hereby depose and state as follows:

I am the Pipe Support Engineer for the Pipe Support Engineering Group at Comanche Peak Steam Electric Station. In this position, I oversee the design work of all pipe design organizations for Comanche Peak. I have previously provided testimony in this proceeding. A statement of my professional and educational qualifications was received into evidence as Applicants Exhibit 142B.

The purpose of this Affidavit is to respond to the Board's request that Applicants provide the "raw data" concerning the torquing of U-bolts referred to in Table 2 to "Affidavit of Robert C. Iotti and John C. Finneran, Jr. Regarding Cinching Down of U-Bolts" attached to Applicants' Motion for Summary

Disposition of CASE's Allegations Regarding Cinching Down of U-Bolts (June 29, 1984). October 24, 1984 Board Memorandum (Raw Data on U-Bolts). Specifically, the Board requested the following four items:

(1) the raw data,

(2) the procedure by which the raw data was collected,

(3) the criteria for selecting the sample, and

(4) raw data on readings excluded from the sample.

The Board stated that the data provided (average torque value of the two nuts on each U-bolt) did not allow the Board to "examine the variance of readings on individual bolts [nuts]." October 24 Memorandum at 1.

Attached hereto are the raw data of the actual field inspections requested by the Board. I would note that the average torque on the two nuts of each U-bolt was reported since our intent was to determine torque that would establish a preload on the U-bolt and the pipe in the test, where an equal torque would be applied to both legs. The purpose of collecting this data was to provide us an indication of what torque values may be expected in the field in order to reasonably set some parameters for the U-bolt testing program discussed in Applicants' Motion for Summary Disposition on this issue.

The field inspections during which the data were collected were conducted by 3 PSE engineers. While no formal procedures for the inspection were written, the three engineers were given verbal instructions as to what they were to do. The instructions were to measure and record the torque of both nuts on any cinched

down U-bolts that could be found in Unit 2[1] that were unpainted. (If a U-bolt had been painted, the torque reading would have been affected.) In that torquing practice on safety and non-safety systems was the same, U-bolts on safety as well as non-safety systems were checked. The engineers were told to check torque by tightening the nut and when movement was noted to record the reading on the torque wrench. Calibrated torque wrenches were used. Each leg of the U-bolt was checked where accessible. In addition, the engineers were told to record the size of the pipe (though in a few instances this was overlooked).

The attached raw data contains numerous comments made after the raw data were collected. In that the Board requested the "raw data," we have not attempted to clean it up to make it more understandable. It should be noted that where a support had two U-bolts, the readings for both are noted. Further, where one of the nuts on a U-bolt was not accessible, it was indicated by an N/A or other such reading. Further, in some cases the supports were not included in the sample size for one of several reasons. For the Board, I have listed the reasons below and noted in the margin of the raw data the corresponding reason number for not including the data.

1. These supports were not included because at the time we summarized the data, we did not know the pipe sizes, i.e., it

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1 In that Unit 1 had already been painted, the only possible source of torque data reflecting true field conditions was Unit 2. The U-bolt configurations employed in Unit 2 are the same as those in Unit 1 and the construction process for torquing U-bolts had remained unchanged for Units 1 and 2. Accordingly, this decision would have had no impact on the adequacy of the data for the purpose needed, as stated above.

was not listed by the engineer and because the summation process was done under time constraints for filing, we did not take the time to go back and check the size at that time. Subsequently, we have checked the sizes and they are all three inch pipe.

2. Same as item 1, except the size was 16 inch pipe.

3. Same as item 1, except the size was 12 inch pipe.

4. Same as item 1, except it was a non-safety related pipe and we did not go back to check the pipe size.

5. The engineer deleted this support because the U-bolt was not cinched, and no reading should have been taken.

6. The engineer apparently wrote down the wrong hanger numbers (i.e., no such numbers existed). Accordingly, the numbers could not be verified and thus the support was not included.

7. This support was a deadweight 32 inch pipe support in the turbine building. We felt that the deadweight might effect the reading. (It should be noted that no 32 inch pipe supports were included.)

8. When this support drawing was initially examined, no U-bolt was listed. Accordingly, we thought that the engineer had made a mistake and we did not include it. Subsequently, in again reviewing the support for this filing, we found that the support had been modified and the documentation now reflects a U-bolt.

9. This support was the only 1 1/2 inch pipe inspected and it was felt that the concern was not focused on such small bore pipe supports, thus the reading was not entered.

10. This support was inadvertently not included.

John C. Finneran, Jr.

STATE OF TEXAS
COUNTY OF SOMERVELL

Subscribed and sworn to before me this 9th day of November, 1984.

Notary Public Bill J. Hodges
My Commission Expires March 28, 1988

ATTACHMENT

SAFEGUARD BLDG 2 #1

	HANGER #	TORQUE BOLT #1	TORQUE BOLT #2
1.	CS-2-012-412-S42S ?	20	20
1.	CS-2-012-411-S42K OK (2)	52	32
1.	CS-2-014-418-S42S OK (1)	30	25
1.	CS-2-014-419-S42K OK (2)	20	30
4.	HD-548-288-S62	12	11
5.	HG-549-1-DO	0	0
1.	DD-2-099-406-S46R	20	17
	CT-2-021-404-S32R 4"ϕ	17	20
2.	CT-2-013-413-S32K OK (2)	30	46
	SI2-2-018-415-S43R OK (2) 4"ϕ	48	52 ✓
	SI2-2-018-417-S43K OK (1)	30	36
3.	RH-2-004-402-S62K OK (2)	59	59
	CT-2-326-410-S56R OK C.S. (2) 6"ϕ	25	24 ✓
	CS-2-326-401-S56R OK	22	22 ✓
	CS-2318-700-S53R OK 3"ϕ	15	15
	CS-2-014-401-S52K OK 3"ϕ McMaster 913-	25	25
	CS-2-920-703-S53R OK 3"ϕ	20	N/A
•	HD-548-1289- " 1"ϕ	6	5 ✓
	CT-2-021-405-S32K OK 4"ϕ	44	45 ✓
	WP-2-226-428-S36R OK 4"ϕ	40	30
(2)	CT-2-011-403-S22R OK 10"ϕ	20	22
	WP-2-226-414-S36R OK but frozen nut needed 4"ϕ	25	20 ✓ (2)

John D. Simpson 1-21-84

HANGER NO.	TORQUE BOLT #1	TORQUE BOLT #2
CS-2-063-416-S22K OK 8" ϕ SS	20	15
CT-2-012-410-S22K OK 10" ϕ SS	35	40 ✓
CS-2-063-417-S22K OK 8" ϕ SS Ball	41	30 ✓
SI-2-037-402-S22K OK 8" ϕ	40	45
RH-2-056-401-S22K OK 8" ϕ	50	60 ✓
CT-2-083-418-S36K OK 10" ϕ	75	90 ✓
CT-2-083-417-S36K OK 10" ϕ	56	58
CC-2-068-407-S33K OK 18" ϕ	50	65 ✓
CC-2-068-402-S33S ? 18" ϕ	30	40 ✓
WP-2-226-439-S26R OK 4" ϕ	16	27 ✓
WP-2-226-407-S26R OK 4" ϕ	40	40 ✓
SI-2-044-431-S22R OK 4" ϕ	30	26 ✓
CT-2-017-440-S36K OK 10" ϕ	35	27 ✓ RG
RH-2-028-403-S32R OK 8" ϕ	10	20 ✓

John D. Sampson
1-21-84

HANGER NO.		TORQUE BOLT #1	TORQUE BOLT #2
8" ϕ C.S. PIPE FIRE PROTECTION	810 HALLWAY 12S	50	65
	2'-0"(S) 12.5S	45	35
	3'-0"(S) 13 S	20	15 ✓
	3'-0"(N) 13S	15	30 ✓
	4'-0"(S) 14S	30	32 ✓
	1'-0"(S) 11S	25	30 ✓
	10 S	8	0
	1'-0"(N) 9.5S	28	28
	5'-0"(N) 9S	48	55
6" ϕ C.S. PIPE FIRE PROTECTION	790 HALLWAY 8'-0"(S) 9.3S	40	45 ✓
	3'-0"(S) 9.3S	25	25 ✓
	1'-0"(S) 9.3S	25 / 30	25 / 40
	6'-0"(N) 9.3S	20 / 15	20 / 30 ✓
	6'-0"(S) 10S	20 / 45	20 / 25
	6'-0"(S) 11S	20 / 10	25 / 10

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HANGER NO.	TORQUE		
(F) CT-2-013-414-S32K 16"	OK? 42	110	
(F) CT-2-013-418-S33R 16"	OK 85	50	
(D) SI-2-076-404-S22K 16"	OK 25	25 ✓	
(D) CC-2-031-406-S43K 18"	OK 110	125	
(D) CC-2-159-407-S53R 12"	OK 87	87	

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CONTAINMENT

HGR. NO.	TORQUE BOLT #1	TORQUE BOLT #2
(2) CC-2-193-424-C52R OK 4"	48	35
~~CC-2-200-402-C53R 6"~~	~~27~~	~~30 RG-NC~~
6. (1) CC-2-193-423-C52R OK 4"	10	20 ✓
HD-551-RB-2 71 2½"	20	15 ✓
HD-551 RB-2 70 2½"	10	30 ✓
(2) CC-2-246-419-C53R ? 6"	10	10 ✓
(2) CC-2-246-423-C53R ? 6"	10	10 ✓
(1) MS-2-151-442-C52K OK 4"	12	15 ~~RG~~
(1) MS-2-151-419-C52R OK 4"	42	~~39~~ 38 ✓ ~~RG~~ 4-12-84
(1) MS-2-151-440-C52K OK 4"	25	30 ✓
(1) DD-2-046-404-C56R OK 3½"	9	9 ✓ ~~RG~~
~~CC-2-246-403-C53R 6"~~	~~20~~	~~25 RG~~
6. (1) MS-2-151-411-C52R ? 4"	5	10 ✓
CC-2-207-420-C53R 3"	27	25 RG
(1) CT-2-053-402-C62S ? 3"	25	~~60~~ Bad Reading
(1) SI-2-306-425-C42K OK 4"	30	21 ✓ RG
~~(1) SI~~-2-087-406-C42R OK 8"	35	45 ✓
(1) WP-2-001-416-C46R OK 3½"	22	22 ~~RG~~
(1) WP-2-001-426-C46R ? 3½"	30	N/A ✓
(2) SI-2-087-409-C42R OK 5½"	60	80
(1) SI-2-306-423-C42K OK 4"	70	50 ~~RG~~ 122 ✓
(1) SI-2-306-401-C42R OK 4"	35	35 ~~RG~~ ✓

John Summers

TREATMENT SHEET 2

HANGER NO.	TORQUE BOLT #1	TORQUE BOLT #2
① SI-2-087-405-C42R OK 55" 8"ϕ	60	50 ✓
② SI-2-306-421-C42R OK 4"ϕ	25	20 / ~~RG~~
① VD-2-053-403-C46R OK 4"ϕ	10	15 ✓ ~~RG~~
② SI-2-306-402-C42R OK 4"ϕ	30	25 ✓
① SI-2-306-418-C42R OK 4"ϕ	50	~~40 85~~ 50 ~~RG~~ 8-12-84
② SI-2-088-410-C42K OK 8"ϕ	32	60 ✓
① SI-2-~~No stick tore #~~ 010-403-C46S ~~OK 10~~	20	20 RG ✓
② SI-2-095-409-C42R OK 10"ϕ	40	50 ✓
② SI-2-171-401-C42R OK 6"ϕ	55	50 ✓
① DD-2-109-433-C43R OK 3"ϕ	20	~~75869~~ 22 ✓ ~~RG~~
② SI-2-101-408-C41R OK 6"ϕ	84	65 ✓
② SI-2-103-403-C42R OK 10"ϕ	75)	30) ✓
" " " " OK 10"ϕ	70)	45 ✓
WP-2-030-422-C46K OK 3"ϕ	25	35 ✓ ~~RG~~
② ES-2-079-411-C42K OK 3"ϕ	20	30 ✓
HD-827-25K2 2"ϕ	5	4
HD-827-23K2 2"ϕ	9	8
HD-827-24K2 2"ϕ	10	10
HD-827-28K2 2"ϕ	5	5
HD-827-27K2 2"ϕ	5	5
HD-827-26K2 2"ϕ	5	5 (22)
HD-827-29K2 2"ϕ	6	5 ✓

Sampson

HANGER NO.		TORQUE BOLT #1	TORQUE BOLT #2
HD-507-107-RB-2	7/8	5	4
HD-507-1	1	5	5
HD-507-121	2"	5	6
HD-507-108-RB-2	2"	9	6
HD-507-105	2"	4	5
HD-507-109-RB-2	2"	5	5
• HD-507-2	3/8"	5	5
• HD-507-1	3/8"	5	5
• HD-964-2	3/8"	10	7
• HD-995-3-102	3/4"	4	4

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HGR NO.	TORQUE	
	BOLT #1	BOLT #2
(1) RC-2.115-430 CS6. 1½	OK 45	35 ✓

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LINE 5.03 #2

	HANGER NO.			TORQUE BOLT #1	TORQUE BOLT #2	
7.	② MS-2-017-008-T545	32"	?	125 / 145 deadweight	130 / 165	
	① MS-2-033-001-T445	26"	OK	27	16	✓
8.	~~① [illegible]-2-035-006-T445~~	~~26"~~	~~NO~~	~~45~~	~~45~~	
	② HD-2-318-404-T455	12"ϕ	OK	50	47	✓
	② HD-2-055-407-T455	10"ϕ	OK	10	10	✓
6.	~~HD-2-318-40[illegible]-T455~~	~~12"ϕ~~		~~15 / 18~~ NO SUCH #	~~18 / 15~~	
6.	~~CC-2-020-401-T450~~	~~20"ϕ~~		~~40~~ NO SUCH #	~~25~~	
	① EX-2-030-404-T455	12"ϕ	?	25	28	✓
10.	① CO-2-010-402-T45D	30"ϕ	?	125	85	
	① EX-2-002-401-T455	14"ϕ	?	20	19	✓
	① CO-2-032-403-T45D	24"ϕ	?	25	35	✓
	① MS-2-098-402-T455	14"ϕ	?	80	110	✓
	① FW-2-001-408-T45R	20"ϕ	?	50 / 125	80 / 90	✓
	HD-2-016-405-T35R	30"		125	100	✓
	HD-2-016-404-T35R wrong #	30"		95 / 77	92 / 92	✓
	HD-2-044-402-T35S	16"		25	30	
	HD-2-045-405-T355	16"		125	125	
	HD-2-009-401-T355	16"		95	55	✓
	TW-2-099-402-T350	14"	?	46	50	✓
	VD-2-071-402-T355	40"		55	67	
	VD-2-070-403-T350	40"		90	75	

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HANGER NO.	TORQUE	
VD-2-073-402-T355	110	60 ✓
VD-2-072-402-T350 16"ϕ	95	130 ✓
FW-2-004-401-T355 24"ϕ	30	40 ✓
FW-2-004-402-T355 24"ϕ	35	33 ✓
FW-2-009-404-T355 24"ϕ	40	47 ✓
CO-2-042-439-T15D-12"ϕ	60	55 ✓
CO-2-042-438-T15D-12ϕ	95	75 ✓
HD-2-068-401-T15S-24"ϕ	75	60 ✓
HD-2-045-401-T15R-16"ϕ	73	65 ✓
HD-2-044-406-T15R 16"ϕ	60	78 ✓
HD-2-044-405-T15R 16"ϕ	70	75 ✓
HD-2-055-409-T45S 10"ϕ	18	25 ✓
HD-2-318-401-T45S-12"ϕ	70	60 ✓
EX-2-012-402-T45S-30"ϕ	50	60 ✓
HD-2-314-401-T45S-16"ϕ	65	80 ✓
EX-2-004-401-T45S-14"ϕ	55	60 ✓
HD-2-323-403-T45S-12"ϕ	37	45 ✓
EX-2-009-405-T45S-24"ϕ	45	35 ✓

John D. Sampson 1-28-94

SUPPORT #	PIPE ϕ	U-BOLT TYPE	TORQUE	ENGR.	DATE
CS-2-202-402-S52B	3"	PUS-30 (½"ϕ)	20-25 FT-lb	TR	4/14/84
CC-2-190-401-	4ϕ	PUS-040 (½"ϕ)	<25 FT-lb	TR	4/14/84
MS-2-150-450-	4ϕ	PUS-040 (½"ϕ)	<25 FT-lb	TR	4/14/84
AF-2-096-410-S33K	4"ϕ	PUS 040 (½"ϕ)	30-35 FT-LB ALL 4 NUTS ~~>25 FT-LB~~	JRM	5-2-84 ~~4-27-84~~
AF-2-103-441-S53K	4"ϕ	PUS-040 (½"ϕ)	10 FT-# 5-10 FT-# 10-15 FT-# 5-10 FT-#	JRM	5-2-84
AF-2-099-419-S53K	4"ϕ	PUS-040 (½"ϕ)	25-30 FT-# 10-15 FT-# 25-30 FT-# 5-10 FT-#	JRM	5-7-84
CS-2-079-410-C42S	3"ϕ	PUS-030 (½"ϕ)	10-15 FT-#	JRM	5-7-84
CT-2-053-444-C62K	3"ϕ	PUS-030 (½"ϕ)	5-10 FT-# 5-10 FT-# 5-10 FT-# 10-15 FT-#	JRM	5-8-84
SI-2-306-425-C42K	4"ϕ	PUS-040 ½"ϕ	32 FT-# 35 FT-#	JRM	5-10-84
AF-2-102-423-S53S	4"ϕ	PUS-040 ½"ϕ	23 FT-# 24 FT-#	JRM	5-10-84
H-SI-2-RB-049-709-1	1½"ϕ	PUH-015 5/8"ϕ	53 FT-# 54 FT-#	JRM	5-10-84
AF-2-102-422-S53K	4"ϕ	PUS-040 ½"ϕ	63 FT-# 42 FT-#	JRM	5-10-84

9.

SUPPORT #	PIPE ϕ	U-BOLT TYPE	TORQUE	ENGR.	DATE
RH-2-058-402-S22R	10"	PHH-100 (1"ϕ)	45 FT-LB 55 FT-LB 50 FT-LB 45 FT-LB	TK	5-24-84
RH-2-058-401-S23R	10"	PHS-100 (1¼"ϕ)	55 FT-LB 70 FT-LB	TR	5-24-84
CC-2-028-412-S32R	24"	PHS-240 (1"ϕ)	60 FT-LB 65 FT-LB 60 FT-LB 70 FT-LB	TR	5-24-84
CT-2-025-405-S22R	16"	PHS-160 (1⅝"ϕ)	80 FT-LB 90 FT-LB 105 FT-LB 95 FT-LB	TR	5-24-84