Test Package No. N/A

Title NCR #4966, R1 Page 12 of 12

IN-PROGRESS TEST MODIFICATION

Test Package Page No. being modified

Step No. or Other Identification

Description of Change and Reason:

NOT USED JHH 08/09/83

Initiated by Test Director: Date

APPROVED BY: Date

Shift Engineer N/A JHH 08/24/83

REVIEWED & APPROVED BY:

System Engineer

Technical Reviewer

QMO Reviewer

Construction Engineer

NUC PM N/A JHH 08/24/83

WBHP-QCI-1.12-17 R1
Attachment B
LOP

RELIEF VALVE CALIBRATION DATA SHEET

Test Package Number Fitting Qualification Testing for NCR 4866 R1

Maximum Test Pressure 1650

Set Point Pressure 1650 max. 1500 min.

Test Medium Oil

Valve ID Number 268

Designed Opening Pressure Range 2000 psi

Pressure Gauge ID Number 420165

Calibration Due Date 12-2-83

TEST DATA

Test Number		
1 Opening Pressure (psi)	2 Opening Pressure (psi)	3 Opening Pressure (psi)
1650	1650	1650

Calibration performed by: Donald E. Smith
RIU/CCF Personnel

9-2-83
Date

WBNP-QCI-1.12-8
Attachment A
LOP

Test Gauge Calibration Verification Report

System EDCW System No. 67 Pressure Test I.D. No. QUALIFICATION TEST FITTINGS NKK 4866

Test Gauge

ID No. 901053
Range 0-3000
Last Calib. Date 6-1-83
Accuracy .3 % Full Scale

Master Gauge

ID NO. 420165
Range 0-3000
Last Calib. Date 6-2-83
Accuracy 1/4% Full Scale

Pre Test Data

Test Points % Full Scale	Master Gauge Increasing Pres.	Master Gauge Decreasing Pres.	Test Gauge Increasing Pres.	Test Gauge Decreasing Pres.	Error Increasing Pres.	Error Decreasing Pres.
Zero	0	0	0	0	0	0
25	750	750	745	745	.17%	.17%
50	1500	1500	1495	1495	.17%	.17%
75	2250	2250	9-2-83 ~~2245~~ 2245	2250	.17%	0
100	3000	3000	3000	3000	0	0
Test Pres.	1650	1650	1645	1645	.17%	.17%

Post Test Data

Test Points % Full Scale	Master Gauge Increasing Pres.	Master Gauge Decreasing Pres.	Test Gauge Increasing Pres.	Test Gauge Decreasing Pres.	Error Increasing Pres.	Error Decreasing Pres.
Zero	0	0	0	0	0	0
25	750	750	750	750	0	0
50	1500	1500	1500	1500	0	0
75	2250	2250	2250	2250	0	0
100	3000	3000	3000	3000	0	0
Test Pres.	1650	1650	1650	1650	0	0

Remarks: N/A

Pretest By: D J Lavender / 9-2-83 Post-Test By: D J Lavender / 9-2-83
CCF/RIU Date CCF/RIU Date

WBNP-QCI-1.12-6 R1
Attachment A
LOP

Test Gauge Calibration Verification Report

System ERCW System No. 67 Pressure Test I.D. No. QUALIFICATION TEST FITTING NCR 1866

Test Gauge

ID No. 900123
Range 0-3000
Last Calib. Date 12-1-83
Accuracy .3 % Full Scale

Master Gauge

ID NO. 420165
Range 0-3000
Last Calib. Date 6-2-83
Accuracy 1/4% Full Scale

Pre Test Data

Test Points % Full Scale	Master Gauge Increasing Pres.	Master Gauge Decreasing Pres.	Test Gauge Increasing Pres.	Test Gauge Decreasing Pres.	Error Increasing Pres.	Error Decreasing Pres.
Zero	0	0	0	0	0	0
25	750	750	750	750	0	0
50	1500	1500	1500	1500	0	0
75	2250	2250	2250	2250	0	0
100	3000	3000	3005	3005	.17%	.17%
Test Pres.	1650	1650	1649	1649	.03%	.03%

Post Test Data

Zero	0	0	0	0	0	0
25	750	750	750	750	0	0
50	1500	1500	1500	1500	0	0
75	2250	2250	2250	2249	0	.03%
100	3000	3000	3005	3005	.17%	.17%
Test Pres.	1650	1650	1650	1650	0	0

Remarks: N/A

Pretest By: LJ Lavender / 9-2-83 Post-Test By: LJ Lavender / 9-2-83
CCF/RIU Date CCF/RIU Date

Test Gauge Calibration Verification Report

System EACW System No. 67 Pressure Test I.D. No. Qualification Test Fixture NCA 4866 R1

Test Gauge	Master Gauge
ID No. 900123	ID NO. 420165
Range 0-3000	Range 0-3000
Last Calib. Date 6-1-83	Last Calib. Date 6-2-83
Accuracy .3 % Full Scale	Accuracy 1/4% Full Scale

Test Points % Full Scale	Master Gauge Increasing Pres.	Master Gauge Decreasing Pres.	Test Gauge Increasing Pres.	Test Gauge Decreasing Pres.	Error Increasing Pres.	Error Decreasing Pres.
Pre Test Data						
Zero	0	0	0	0	0	0
25	750	750	750	750	0	0
50	1500	1500	1500	1500	0	0
75	2250	2250	2250	2249	0	.03%
100	3000	3000	3005	3005	.17%	.17%
Test Pres.	1650	1650	1650	1650	0	0
Post Test Data						
Zero	0	0	0	0	0	0
25	750	750	750	750	0	0
50	1500	1500	1500	1500	0	0
75	2250	2250	2250	2250	0	0
100	3000	3000	3000	3000	0	0
Test Pres.	1650	1650	1650	1650	0	0

Remarks: None

Pretest By: Donald E. Smith / 9-2-83 (CCF/RIU / Date) Post-Test By: Donald E. Smith / 9-8-83 (CCF/RIU / Date)

WBNP-QCI-1.12-8 F1
Attachment A
LOP

Test Gauge Calibration Verification Report

System ERCW System No. 67 Pressure Test I.D. No. Qualification Test Fittings NCR 4866

Test Gauge	Master Gauge
ID No. 901053	ID NO. 420165
Range 0-3000	Range 0-3000
Last Calib. Date 6-1-83	Last Calib. Date 6-2-83
Accuracy .3 % Full Scale	Accuracy 1/4% Full Scale

Test Points % Full Scale	Master Gauge Increasing Pres.	Master Gauge Decreasing Pres.	Test Gauge Increasing Pres.	Test Gauge Decreasing Pres.	Error Increasing Pres.	Error Decreasing Pres.
Pre Test Data						
Zero	0	0	0	0	0	0
25	750	750	750	750	0	0
50	1500	1500	1500	1500	0	0
75	2250	2250	2250	2250	0	0
100	3000	3000	3000	3000	0	0
Test Pres.	1650	1650	1650	1650	0	0
Post Test Data						
Zero	0	0	0	0	0	0
25	750	750	745	745	.17%	.17%
50	1500	1500	1495	1495	.17%	.17%
75	2250	2250	2250	2250	0	0
100	3000	3000	3000	3000	0	0
Test Pres.	1650	1650	1645	1645	.17%	.17%

Remarks: None

Pretest By: Donald E. Smith / 9-2-83 Post-Test By: Donald E. Smith / 9-8-83
OCF/RIU Date OCF/RIU Date

CSB 830701 301

Guenter Wadewitz, Project Manager, Watts Bar Nuclear Plant CONST (3)

Frank Van Meter, Chief, Construction Services Branch, 500 SPT-K

July 1, 1983

WATTS BAR NUCLEAR PLANT - ANALYSIS OF SA 403 TP 316L STAINLESS FITTINGS FROM CAPITOL PIPE (TUBE-LINE CORP)

As requested in WBN 830601 003, the eleven SA 403 type 316L stainless steel fittings from Capitol Pipe (Tube-Line Corp) have been evaluated by fluorescent X-ray analysis using a CSI model 740 compact materials analyzer. The principal elements evaluated by this instrument as related to the 316L base metal are chromium, molybdenum, and nickel. Several evaluations were made for each fitting's base metal and weld metal. A comparison with the observed statistical data scatter is given in the attached table.

The welds contained in the ells were difficult to analyze as they were located on the id curvature of the fittings. Lift-off of the instrument due to curvature tended to produce low readings as monitored by an iron analysis made with each determination. The machined weld preparation ends of the ells were more geometrically suited for analysis and were used for the ells. The total scan area of the analyzer was larger than the weld area, and thus may have masked some of the differences between the weld metal and base metal. Therefore, the differences reported here for the seven ells are considered conservative. The reducers and tee, on the other hand, allowed the analyzer to be placed parallel to the welds without base metal overlap.

On the basis of SME's analysis, the base metal and weld metal compositions exhibit significant differences for all samples except ABMG (6 in. 90° ell), ABMI (8 in. 90° ell), and ABMH (6 in. 90° ell). Confirmation of the latter three samples, conducted by TVA's Central Laboratory in Chattanooga on thin strips cut from the ends of the fittings, also show compositional differences which are considered significant. Central Lab's EDAX analysis used a very small sample area free of base metal interference. Thus, they were able to more effectively resolve the compositional differences.

Guenter Wadewitz
July 1, 1983

WATTS BAR NUCLEAR PLANT - ANALYSIS OF SA 403 TP 316L STAINLESS FITTINGS FROM CAPITOL PIPE (TUBE-LINE CORP)

Final results of chromium analyses on all eleven fittings show chromium contents higher for the weld metal than the base metal, ranging from 0.5 percent to 1.9 percent. These differences are statistically significant on the basis of repeated analyses. Chromium contents are allowed to be higher in the weld metal than in the base metal for almost all filler metals that would have been used. For example, the chromium range for SA 240 TP 316L plate is 16 to 18 percent, while SFA 5.4 E316L filler metal has a specified chromium content of 17 to 20 percent. Molybdenum and nickel analyses do not show significant differences in the evaluations.

The weld metal is a 316 type material as molybdenum contents are in the range of 2 to 2.5 percent for all welds.

Hardness measurements made with an Equotip tester (and converted to Rockwell B values) are given in the attached table.

Original signed by
Frank Van Meter

Frank Van Meter

FVG:ASY
Attachments
cc (Attachments):
C. A. Chandley, W7C126 C-K (Attention: Earl Daugherty)
W. H. Childres, SNE-K
J. C. Standifer, 204 GB-K
MEDS, W5B63 C-K

Principally prepared by Paul V. Guthrie, extension 2771.

WATTS BAR NUCLEAR PLANT

SA403 - 316L STAINLESS STEEL FITTINGS

FURNISHED BY TUBE-LINE CORP

CHEMICAL ANALYSIS

Fitting	Heat	Number of Determinations	Chromium (weld) %	Chromium (base metal) %	Molybdenum (weld) %	Molybdenum (base metal) %	Nickel (weld) %	Nickel (base metal) %
6" 45° ell	ADFX	6	17.63 ± 0.10	17.06 ± 0.07	2.10 ± 0.02	2.08 ± 0.02	12.63 ± 0.22	12.25 ± 0.33
6" 90° ell	ABMG	5	17.10 ± 0.16	17.07 ± 0.03	2.16 ± 0.04	2.06 ± 0.01	12.13 ± 0.28	12.22 ± 0.28
6" 45° ell	ABGT	4	17.54 ± 0.05	16.93 ± 0.09	2.17 ± 0.04	2.13 ± 0.04	12.18 ± 0.25	12.00 ± 0.26
6" 45° ell	AADAM	6	17.76 ± 0.12	17.22 ± 0.11	2.32 ± 0.04	2.31 ± 0.04	12.63 ± 0.33	12.61 ± 0.42
8" 45° ell	ABLAC	5	17.37 ± 0.10	16.90 ± 0.07	2.10 ± 0.05	2.09 ± 0.03	12.43 ± 0.12	12.19 ± 0.20
10" x 8" reducer	AACAQ	3	18.11 ± 0.17	17.07 ± 0.09	2.36 ± 0.06	2.29 ± 0.06	12.59 ± 0.12	12.28 ± 0.21
8" x 6" reducer	AACAP	2	18.49	16.60	2.38	2.40	13.07	13.17
6" x 3" reducer	AACBJ	4	18.64 ± 0.23	17.17 ± 0.16	2.36 ± 0.06	2.32 ± 0.10	13.02 ± 0.70	12.85 ± 0.46
8" tee	AAGK	3	18.58 ± 0.38	17.56 ± 0.28	2.35 ± 0.10	2.40 ± 0.04	12.69 ± 0.29	12.67 ± 0.80
8" 90° ell	ABMI	6	17.14 ± 0.06	16.99 ± 0.11	2.26 ± 0.03	2.16 ± 0.02	12.46 ± 0.21	12.30 ± 0.20
6" 90° ell	ABMH	4	17.19 ± 0.08	17.15 ± 0.10	2.37 ± 0.04	2.37 ± 0.04	12.61 ± 0.20	12.68 ± 0.45

WATTS BAR NUCLEAR PLANT

SA 403 - 316L STAINLESS STEEL FITTINGS

FURNISHED BY TUBE-LINE CORP

CHEMICAL ANALYSIS CHECK[a]

(As Reported by Phone)

Heat/Code	Location	Chromium %	Molybdenum %	Nickel %	Manganese %	Silicon %
ABMG	Weld	18.49	2.00	10.85	1.44	0.59
	Base metal	17.95	1.61	10.99	1.44	0.59
ABMH	Weld	18.50	2.19	11.00	1.56	0.64
	Base metal	17.96	1.95	11.50	1.25	0.63
ABMI	Weld	18.43	2.24	11.00	1.38	0.72
	Base metal	17.90	1.87	10.88	1.39	0.55

[a]From Central Laboratory, Chattanooga, using EDAX analysis not standardized. Results should be used for comparative analysis between weld and base metal only.

WATTS BAR NUCLEAR PLANT

SA 403 - 316L STAINLESS STEEL FITTINGS

FURNISHED BY CAPITOL PIPE (TUBE-LINE CORP)

HARDNESS MEASUREMENTS

Heat Code	Equotip Hardness** (Lieb Values) Weld	Equotip Hardness** (Lieb Values) Base Metal	Rockwell B (Converted) Weld	Rockwell B (Converted) Base Metal	Brinnell Hardness Values * Base	Brinnell Hardness Values * Weld
ABMG	413	371	B80	B68	172	N/A
AACAQ	391	361	B73	B64	157	
ADFX	397	373	B69	B67	183	
AADAM	397	371	B69	B68	158	
ABGT	413	374	B79	B68	167	
ABLAG	408	376	B78	B68	163	
AACBJ	368	366	B66	B65	160	
AACAP	394	380	B73	B70	163	
ADMH	409	370	B78	B67	178	
ABMI	387	362	B72	B64	183	
AAGK	391	364	B73	B65	183	175

A33180.3

* INFO FROM CARBUCHANGERS 7/21/83.

** NOT VALID HARDNESS TEST FOR SS MT'L. IGNORE THESE!!

CSB '831026 20

Quenter Wadewitz, Project Manager, Watts Bar Nuclear Plant CONST (6)

Frank Van Meter, Chief, Construction Services Branch, 500 SPT-K

October 26, 1983

WATTS BAR NUCLEAR PLANT - TUBELINE FITTINGS - NCR 4866, R1 AND 4727

As requested in WBN 830601 003, a product analysis was conducted on 23 stainless steel fittings (SA 403 TP 3166) from Tubeline Corporation representing 12 different heats. These fittings were determined to have been welded with filler metal as reported in CSB 830701 301. In addition to a chemical analysis, each fitting was evaluated for its susceptibility to intergranular attack by the etching techniques given in ASTM A 262 Practice A. A Brinell hardness evaluation was also determined for each fitting. The results are given in tables 1 and 2. All fittings met the required chemical composition limits, all exhibited step structures in the A 262 Practice A etch test indicating acceptable solution annealing, and all fittings exhibited Brinell hardness values correlating to ultimate tensile strengths of 75,000 psi or greater (estimated tensile strength = BHN x 500).

Similar laboratory evaluations were conducted on 29 Tubeline fittings which had been fabricated using resistance welding procedures. Rather than a complete product chemical analysis, only the molybdenum content was determined. These values along with A 262 Practice A etch structures and hardness values are given in table 3. Again, all molybdenum values are of the proper range with low intraheat scatter, an acceptable step structure was seen in all etch tests, and the lowest Brinell hardness value was 150 BHN. The section which follows discusses the field evaluation of both groups of fittings as requested in WBN 830921 004.

Guenter Wadewitz
October 26, 1983

WATTS BAR NUCLEAR PLANT - TUBELINE FITTINGS - NCR 4866, R1 AND 4727

Field Evaluation

Installed Tubeline fittings were analyzed using a CSI model 740 X-ray fluorescent materials analyzer. Analyses were performed between September 22 and October 7, 1983. Certified standards (AB50-3040-304-0 and AB50-3040-316-0) were run at the start, midpoint, and end of each day of analysis. Readings obtained on these standards were used to calculate the calibration line used for the molybdenum determinations. Previous checks with a larger number (approximately 15) of certified standards showed this method gives accurate molybdenum results.

The measured molybdenum content of all fittings was within specification. For each heat, comparison of the measured molybdenum content of installed fittings with that from fittings sent to SME for evaluation shows good correlation between the mean values. All values are within two standard deviations of the mean with most values within one standard deviation. Scatter seen in the data is due to fluctuations in measurement temperatures and other experimental difficulties, such as curvature of the fittings, especially the smaller diameter fittings.

Original signed by
Frank Van Meter

Frank Van Meter

PVG:CAC:ASY
Attachments
cc (Attachments):
W. H. Childres, SME-K
R. L. Daugherty, W7C158 C-K
J. C. Standifer, 204 GB-K
MEDS, W5B63 C-K

Principally prepared by Carey A. Chambers and Paul V. Guthrie, extension 2771.

Table 1

WATTS BAR NUCLEAR PLANT

LABORATORY EVALUATION OF TUBELINE FITTINGS - FILLER METAL WELDED

CHEMICAL ANALYSIS OF UNINSTALLED FITTINGS

Heat No.	Part No.	Size	Chemical Composition, %							
			Carbon	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum
ABMG	1	6 in. 90° ell	0.014	1.28	0.020	0.001	0.61	17.07	12.26	2.07
ABMG	2	6 in. 90° ell	0.016	1.30	0.034	0.001	0.69	17.00	12.34	2.07
ABMG	3	6 in. 90° ell	0.023	1.31	0.033	0.001	0.69	16.78	12.31	2.05
ABMG	4	6 in. 90° ell	0.012	1.28	0.034	0.004	0.68	16.96	12.19	2.06
ABMG	5	6 in. 90° ell	0.016	1.31	0.035	0.001	0.57	17.09	12.30	2.05
ABMH	1	6 in. 90° ell	0.027	1.18	0.028	0.003	0.65	17.15	12.68	2.37
ABMH	2	6 in. 90° ell	0.027	1.19	0.037	0.004	0.59	16.92	12.99	2.27
ABMH	3	6 in. 90° ell	0.026	1.35	0.035	0.001	0.54	16.96	13.19	2.32
ABMI	1	8 in. 90° ell	0.011	1.35	0.025	0.003	0.57	17.17	12.30	2.07
ABMI	2	8 in. 90° ell	0.014	1.19	0.035	0.001	0.53	17.08	12.49	2.07
ADFX	1	6 in. 45° ell	0.023	1.36	0.026	0.001	0.60	16.78	12.16	2.03
ACKAS	1	6 in. 90° ell	0.015	1.20	0.026	0.001	0.48	16.20	12.19	2.05

Table 1

WATTS BAR NUCLEAR PLANT

LABORATORY EVALUATION OF TUBELINE FITTINGS - FILLER METAL WELDED

CHEMICAL ANALYSIS OF UNINSTALLED FITTINGS
(Continued)

Heat No.	Part No.	Size	Chemical Composition, % Carbon	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum
AACAP	1	8x6 conc red	0.022	1.01	0.029	0.013	0.70	16.60	13.17	2.40
AAGK	1	8 in. tee	0.030	0.92	0.028	0.015	0.58	17.56	12.67	2.40
AACAQ	1	10x8 conc red	0.028	1.00	0.030	0.018	0.73	17.10	12.45	2.29
AACAQ	2	10x8 conc red	0.019	1.00	0.040	0.012	0.64	16.27	13.08	2.20
AACBJ	1	6 x 3 conc red	0.023	0.97	0.026	0.015	0.78	17.17	12.85	2.32
ABLAG	1	8 in. 45° ell	0.029	1.23	0.025	0.003	0.52	16.90	12.43	2.10
ABLAG	2	8 in. 45° ell	0.029	1.25	0.036	0.001	0.41	16.64	12.55	2.08
AADAM	1	6 in. 45° ell	0.014	0.97	0.032	0.015	0.76	17.21	12.49	2.31
AADAM	2	6 in. 45° ell	0.029	1.05	0.039	0.013	0.73	17.12	12.43	2.37
ABGT	1	6 in. 45° ell	0.018	1.37	0.024	0.001	0.55	17.36	12.04	2.11
ABGT	2	6 in. 45° ell	0.024	1.39	0.036	0.003	0.48	17.22	12.40	2.07
ASTM A 240		TP 316L	0.030 max	2.00 max	0.045 max	0.030 max	1.00 max	16.00-18.00	10.00-14.00	2.00-3.00

Tested by Carey A. Chambers Reviewed by Paul V. Hettinger

Table 2

WATTS BAR NUCLEAR PLANT

EVALUATION OF TUBELINE FITTINGS - FILLER METAL WELDED

ASTM A 262 PRACTICE A AND HARDNESS

Heat No.	Part No.	Size	ASTM A 262 Practice A Etch Structure	ASTM A 262 Practice A Acceptability	Brinell Hardness
AACAP	1	8 x 6 conc red	step	acceptable	163
AAGK	1	8 in. tee	step	acceptable	183
AACAQ	1	10 x 8 conc red	step	acceptable	157
AACAQ	2	10 x 8 conc red	step	acceptable	166
AACBJ	1	6 x 3 conc red	step	acceptable	160
ABLAG	1	8 in. 45° ell	step	acceptable	163
ABLAG	2	8 in. 45° ell	step	acceptable	160
AADAM	1	6 in. 45° ell	step	acceptable	163
AADAM	2	6 in. 45° ell	step	acceptable	179
ABGT	1	6 in. 45° ell	step	acceptable	167
ABGT	2	6 in. 45° ell	step	acceptable	189
ABMG	1	6 in. 90° ell	step	acceptable	172
ABMG	2	6 in. 90° ell	step	acceptable	174
ABMG	3	6 in. 90° ell	step	acceptable	177
ABMG	4	6 in. 90° ell	step	acceptable	158
ABMG	5	6 in. 90° ell	step	acceptable	188

Table 2

WATTS BAR NUCLEAR PLANT

EVALUATION OF TUBELINE FITTINGS - FILLER METAL WELDED

ASTM A 262 PRACTICE A AND HARDNESS

Heat No.	Part No.	Size	ASTM A 262 Practice A Etch Structure	ASTM A 262 Practice A Acceptability	Brinell Hardness
ABMH	1	6 in. 90° ell	step	acceptable	178
ABMH	2	6 in. 90° ell	step	acceptable	176
ABMH	3	6 in. 90° ell	step	acceptable	177
ABMI	1	8 in. 90° ell	step	acceptable	183
ABMI	2	8 in. 90° ell	step	acceptable	165
ADFX	1	6 in. 45° ell	step	acceptable	183
ACKAS	1	6 in. 90° ell	step	acceptable	160

Tested by Alan R. Horsley

Taban K. Chatterjee

Reviewed by Paul V. Hutchins Jr.

Table 3

WATTS BAR NUCLEAR PLANT

EVALUATION OF TUBELINE FITTINGS - RESISTANCE WELDED

MOLYBDENUM CONTENT, A 262 PRACTICE A, AND HARDNESS

Heat No.	Part No.	Size	Molybdenum %	A 262 Practice A Etch Structure	Brinell Hardness
ABLG	1	3 in. 90° ell	2.13	step - acceptable	167
ABLG	2	3 in. 90° ell	2.10	step - acceptable	167
ABLG	3	3 in. 90° ell	2.09	step - acceptable	157
ABLG	4	3 in. 90° ell	2.11	step - acceptable	160
ABLG	5	3 in. 90° ell	2.06	step - acceptable	168
ABLH	1	4 in. 90° ell	2.15	step - acceptable	167
ABLH	2	4 in. 90° ell	2.13	step - acceptable	175
AATQ	1	6 in. 90° ell	2.10	step - acceptable	155
AATQ	2	6 in. 90° ell	2.16	step - acceptable	152
AATQ	3	6 in. 90° ell	2.12	step - acceptable	155
AATR	1	6 in. 90° ell	2.09	step - acceptable	153
AATR	2	6 in. 90° ell	2.07	step - acceptable	167
AATS	1	8 in. 90° ell	2.12	step - acceptable	150
AATS	2	8 in. 90° ell	2.07	step - acceptable	155
AACAZ	1	4 in. tee	2.12	step - acceptable	155
AACAZ	2	4 in. tee	2.11	step - acceptable	152
AADAL	1	8 in. 90° ell	2.10	step - acceptable	165
AADAL	2	8 in. 90° ell	2.08	step - acceptable	172

Table 3

WATTS BAR NUCLEAR PLANT

EVALUATION OF TUBELINE FITTINGS - RESISTANCE WELDED

MOLYBDENUM CONTENT, A 262 PRACTICE A, AND HARDNESS

Heat No.	Part No.	Size	Molybdenum %	A 262 Practice A Etch Structure	Brinell Hardness
AADAZ	1	3x3x2 red tee	2.44	step - acceptable	150
AADAZ	2	3x3x2 red tee	2.44	step - acceptable	150
AABAP	1	4x2 conc red	2.24	step - acceptable	154
AABAP	2	4x2 conc red	2.22	step - acceptable	154
AAEAH	1	3 in. 45° ell	2.18	step - acceptable	174
AAEAH	2	3 in. 45° ell	2.21	step - acceptable	174
ACCL	1	4x4x2 red tee	2.16	step - acceptable	160
ACCL	2	4x4x2 red tee	2.15	step - acceptable	155
AADAL	3	4 in. 45° ell	2.08	step - acceptable	152
AADAL	4	4 in. 45° ell	2.11	step - acceptable	155
ABLE	1	2-1/2 in. 90° ell	2.08	step - acceptable	157

Tapan K. Chatterjee

Tested by Alan R. Tinsley

Reviewed by Paul V. Huthet Jr.

Table 4

WATTS BAR NUCLEAR PLANT

EVALUATION OF TUBELINE FITTINGS

SUMMARY OF MOLYBDENUM ANALYSIS FOR FILLER

METAL WELDED FITTINGS - COMPARISON OF LAB AND FIELD DATA

Heat No.	No. of Determinations	Lab Values Mean ± 1 S.D. % Mo	Field Values Mean ± 1 S.D. % Mo	Field Range % Mo	No. of Field Fittings
AADAM	6	2.31 ± .04	2.32 ± .09	2.18-2.45	9
AACBJ	4	2.32 ± .10	2.33 ± .06	2.22-2.46	17
AACAQ	3	2.29 ± .06	2.33 ± .06	2.24-2.37	4
ABLAG	5	2.09 ± .03	2.11 ± .05	2.04-2.20	12
AACAP	2	2.40	2.33	2.32-2.34	2
ACKAS	6	2.10 ± .03	2.12 ± .04	2.04-2.21	11
ABMH	4	2.37 ± .04	2.31 ± .09	2.18-2.44	45
ABMI	6	2.16 ± .02	2.10 ± .08	2.03-2.22	23
ABMG	5	2.06 ± .01	2.09 ± .05	1.99-2.25	69
AAGK	3	2.40 ± .04	2.35 ± .07	2.28-2.42	3
ABGT	4	2.13 ± .04	2.16	2.16-2.16	2

Prepared by Carey A. Chambers

Reviewed by Paul V. Smithwick.

Table 5

WATTS BAR NUCLEAR PLANT

EVALUATION OF TUBELINE FITTINGS

SUMMARY OF MOLYBDENUM ANALYSIS FOR RESISTANCE

WELDED FITTINGS - COMPARISON OF LAB AND FIELD DATA

Heat No.	No. of Determinations	Lab Values Mean ± 1 S.D. % Mo	Field Values Mean ± 1 S.D. % Mo	Field Range % Mo	No. of Field Fittings
ABLH	6	2.14 ± .07	2.14 ± .06	2.03-2.21	25
ABLG	10	2.10 ± .04	2.14 ± .06	2.11-2.26	76
AACAZ	6	2.11 ± .03	2.20 ± .08	2.12-2.29	4
AADAZ	6	2.44 ± .05	2.42 ± .06	2.30-2.51	17
AATR	6	2.08 ± .03	2.06 ± .05	2.01-2.14	7
AATQ	6	2.13 ± .05	2.14 ± .07	2.01-2.25	31
AADAL	10	2.09 ± .06	2.14 ± .04	2.07-2.20	9
AATS	6	2.10 ± .04	2.15 ± .05	2.10-2.20	3
AAEAH	6	2.19 ± .06	2.08	2.08	1
AABAP	6	2.23 ± .04	2.16	2.16	1
ABTU	*		2.13 ± .01	2.13-2.14	4
ABLX	*		2.18 ± .07	2.08-2.28	12
ABLF	7	2.08 ± .04	2.12 ± .07	2.00-2.19	15
AAEAN	*		2.28 ± .07	2.17-2.39	10
AACBA	*		2.40 ± .08	2.32-2.47	3

Table 5

WATTS BAR NUCLEAR PLANT

EVALUATION OF TUBELINE FITTINGS

SUMMARY OF MOLYBDENUM ANALYSIS FOR RESISTANCE

WELDED FITTINGS - COMPARISON OF LAB AND FIELD DATA

Heat No.	No. of Determinations	Lab Values Mean ± 1 S.D. % Mo	Field Values Mean ± 1 S.D. % Mo	Field Range % Mo	No. of Field Fittings
ACC	4	2.16 ± .03	2.17 ± .08	2.05-2.23	5
ACRO	*		2.11 ± .06	2.02-2.20	22

*Not available for laboratory evaluation.

Prepared by Gary A. Chambers

Reviewed by Paul V. Huthis Jr.

Table 6

WATTS BAR NUCLEAR PLANT

FIELD EVALUATION OF INSTALLED TUBELINE FITTINGS

MOLYBDENUM CONTENT USING CSI MODEL 740 ANALYZER

Fitting ID	Heat No.	% Mo
406	AACAQ	2.35
407		2.37
408		2.37
409		2.24
3	AACAP	2.34
16		2.32
4	ACKAS	2.04
5		2.12
6		2.18
7		2.11
8		2.13
9		2.21
10		2.14
11		2.16
12		2.09
13		2.13
14		2.10
131	ABMH	2.34
132		2.31
133		2.33
134		2.44
135		2.40
136		2.40
137		2.29
138		2.24
139		2.18
140		2.27
414		2.37
142		2.33
143		2.19
145	ABMH	2.31
146		2.38
147	ABMH	2.30
148		2.31
149		2.27
150		*
151		2.40
152		2.31
153		2.38
154		2.34
155		2.37
156		2.28
157		2.41
158		2.31
159		2.27
160		2.30
161		2.30
162		2.23
163		2.26
164		2.30
165		2.27
166		2.41
167		2.33
168		2.30
169		2.35
170		2.23
171		2.18
172		2.37
173		2.35
174		2.30
175		2.35
176		2.35

Table 6

WATTS BAR NUCLEAR PLANT

FIELD EVALUATION OF INSTALLED TUBELINE FITTINGS

MOLYBDENUM CONTENT USING CSI MODEL 740 ANALYZER

Fitting ID	Heat No.	% Mo	Fitting ID	Heat No.	% Mo
20	AEMG	2.06	59	AEMG	2.03
21		2.14	60		2.04
22		2.08	61		2.11
23		2.07	62		2.08
24		2.15	63		2.13
25		2.16	64		2.10
26		2.20	65		2.04
27		2.13	66		2.05
28		2.05	67		2.06
29		2.03	68		2.15
30		2.06	69		2.04
31		2.08	70		2.13
32		2.06	71		2.09
33		2.05	72		2.25
34		2.06	73		2.06
35		2.15	74		2.10
36		2.11	75		2.10
37		2.07	76		2.10
38		2.01	77		2.08
39		1.99	78		2.10
40		2.13	79		2.07
41		2.11	80		2.11
42		2.11	81		2.04
43		2.08	82		2.08
44		2.08	83		2.05
45		2.02	84		2.04
46		2.08	85		2.04
47		2.12	86		2.02
48		2.18	87		2.12
49		2.13	144		2.06
50		2.11			
51		2.13			
52		2.02			
53		2.05			
54		2.05			
55		2.17			
56		2.11			
57		2.10			
58		2.08			

Table 6

WATTS BAR NUCLEAR PLANT

FIELD EVALUATION OF INSTALLED TUBELINE FITTINGS

MOLYBDENUM CONTENT USING CSI MODEL 740 ANALYZER

Fitting ID	Heat No.	% Mo
238	AEMI	2.07
239		2.15
240		2.15
241		2.05
242		2.10
243		2.07
244		2.22
245		2.21
246		2.03
247		2.13
248		2.22
249		2.09
250		2.04
251		2.14
252		2.09
253		2.06
254		2.13
255		2.10
256		2.16
257		2.03
258		2.14
259		2.14
260		2.12
335	AADAM	2.45
336		2.20
337		2.34
338		2.38
339		2.33
340		2.33
341		2.38
342		2.18
343		2.32
358	ABGT	2.12
359		2.21

Fitting ID	Heat No.	% Mo
372	ABLAG	2.07
373		2.11
374		2.20
375		2.04
376		2.10
377		2.07
378		2.10
379		2.12
380		2.18
381		2.04
382		2.14
383		2.15
392	AAGK	2.36
393		2.28
394		2.42
397	AACBJ	2.33
398		2.22
399		2.31
400		2.43
401		2.35
402		2.41
403		2.30
404		2.33
405		2.39
425		2.33
426		2.31
427		2.30
428		2.31
429		2.26
17		2.34
18		2.37
19		2.27

Table 6

WATTS BAR NUCLEAR PLANT

FIELD EVALUATION OF INSTALLED TUBELINE FITTINGS

MOLYBDENUM CONTENT USING CSI MODEL 740 ANALYZER

Fitting ID	Heat No.	% Mo	Fitting ID	Heat No.	% Mo
101	ABLE	2.19	138	ABLG	2.14
102		2.00	139		2.14
103		2.15	140		2.17
104		2.16	141		2.20
105		2.11	142		2.13
106		2.19	143		2.14
107		2.12	144		2.16
108		2.19	145		2.11
109		2.00	146		2.15
110		2.14	147		2.10
111		2.06	148		2.19
112		2.13	149		2.23
113		2.04	150		2.10
114		2.18	151		2.17
115		2.07	152		2.13
			153		2.10
117	ABLG	2.03	154		2.23
118		2.02	155		2.10
119		2.09	156		2.17
120		2.13	157		2.16
121		2.10	158		2.15
122		2.11	159		2.18
123		2.19	160		2.19
124		2.03	161		2.24
125		2.17	162		2.23
126		2.05	163		2.17
127		2.10	164		2.19
128		2.08	165		2.20
129		2.14	166		2.20
130		2.13	167		2.13
131		2.15	168		2.20
132		2.12	169		2.14
133		2.16	170		2.14
134		2.26	171		2.12
135		2.20	172		2.11
136		2.10	173		2.11
137		2.20	174		2.24

Table 6

WATTS BAR NUCLEAR PLANT

FIELD EVALUATION OF INSTALLED TUBELINE FITTINGS

MOLYBDENUM CONTENT USING CSI MODEL 740 ANALYZER

Fitting ID	Heat No.	% Mo	Fitting ID	Heat No.	% Mo
175	ABLG	2.13	257	ABLH	2.21
176		2.09	258		2.15
177		2.07	271		2.16
178		2.17	272		2.11
179		2.12	279		2.19
180		2.16	280		2.15
181		2.21	273		2.06
182		2.21			
185		2.09	288	AATQ	2.09
200		2.13	289		2.16
201		2.17	290		2.11
202		2.06	291		2.14
203		2.03	292		2.18
204		2.25	293		2.25
205		2.12	294		2.17
			295		2.15
239	ABLH	2.03	296		2.10
240		2.07	297		2.06
241		2.17	298		2.15
242		2.16	299		2.20
243		2.16	300		2.11
244		2.20	301		2.07
245		2.16	302		2.14
246		2.07	303		2.14
247		2.07	304		2.14
248		2.11	305		2.09
249		2.19	306		2.12
250		2.16	307		2.11
251		2.12	308		2.24
252		2.16	309		2.01
253		2.16	310		2.14
254		2.20	311		2.09
255		2.05	312		2.19
256		2.16	313		2.13

Table 6

WATTS BAR NUCLEAR PLANT

FIELD EVALUATION OF INSTALLED TUBELINE FITTINGS

MOLYBDENUM CONTENT USING CSI MODEL 740 ANALYZER

Fitting ID	Heat No.	% Mo
315	AATQ	2.13
316		2.14
317		2.19
318		2.01
319		2.33
329	AATR	2.03
330		2.14
331		2.01
332		2.10
333		2.05
336		2.08
337		2.04
340	AATS	2.20
341		2.10
342		2.14
346	AADAL	2.18
347		2.20
374		2.07
375		2.14
376		2.11
377		2.15
378		2.20
379		2.11
380		2.12
386	AACAZ	2.29
387		2.12
388		2.24
393		2.17
398	ABTU	2.13
399		2.13
400		2.13
401		2.14

Fitting ID	Heat No.	% Mo
402	AADAZ	2.43
403		2.46
404		2.34
405		2.42
406		2.50
407		2.34
408		2.53
409		2.30
410		2.40
411		2.46
412		2.39
413		2.47
414		2.40
415		2.47
416		2.40
417		2.38
425		2.40
438	ABLX	2.08
439		2.08
440		2.22
441		2.19
442		2.12
443		2.20
444		2.28
445		2.28
446		2.15
447		2.27
451		2.12
452		*
453		*
454		*
455		*
456		2.16

Table 6

WATTS BAR NUCLEAR PLANT

FIELD EVALUATION OF INSTALLED TUBELINE FITTINGS

MOLYBDENUM CONTENT USING CSI MODEL 740 ANALYZER

Fitting ID	Heat No.	% Mo
462	AABAP	*
463		*
464		*
465		*
466		2.16
516	AAEAN	2.39
517		2.35
518		2.29
519		2.29
520		2.32
521		2.26
522		2.28
523		2.17
524		2.20
525		2.25
528	AACBA	2.42
529		2.32
530		2.47
531	ACCL	2.21
532		2.05
533		2.23
534		2.23
537		2.14
541	ACRO	2.08
542		2.14
543		2.20
544		2.13
545		*
546		2.19
547		*
548		2.05
549		2.12
550		*
551	ACRO	2.06
552		2.04
553		2.12
554		2.03
555		2.03
556		2.08
557		*
558		2.02
559		2.14
560		2.19
561		2.17
562		2.17
563		2.14
564		2.14
565		2.07
570		2.04
501	AAEAH	2.08

*Inaccessible location

Tested by Gary L. Rinn / Carlen A. Chambers

Reviewed by Paul V. Hutchins Jr.

WBNP NCR 4866, R1 PAGE 1 OF 2

ITEM #	NEAT #	PRODUCT FORM	SK-450-	REMARKS
3	AACAP	8"x6" C.R.	23-1-17	INSTALLED by UNIT 1 & COMMON FOR
4	ACKAS	6" 90° ELL	4-2	
5			21-1-29	
6				
7			21-1-30	
8				
9				
10			21-1-26	
11				
12				
13			21-1-25	
14	ACKAS	6" 90° ELL		
16	AACAP	8"x6" C.R.	17-1	
17	AACBJ	6"x3" C.R	21-1-30	
18			21-1-5	
19	AACBJ	6"x3" C.R	21-1-31	
20	ABMG	6" 90° ELL	17-2B	
21			17-2	
22			3-38	
23				
24				
25			17-6	
26				
27				
28				
29			4-2	
30				
31	ABMG	6" 90° ELL		

WBNP NCR 4866, R1 PAGE 2 OF 7

ITEM #	HEAT #	PRODUCT FORM	SK-450-	REMARKS
32	ABMG	6" 90° ELL	17-4	INSTALLED IN UNIT 1 & COMMON BRCW
33				
34				
35				
36				
37			17-3	
38				
39				
40				
41				
42			17-5	
43				
44				
45				
46				
47				
48			3-30	
49				
50				
51				
52			2-50	
53				
54				
55				
56				
57			2-46	
58				
59	ABMG	6" 90° ELL		

WBNP NCR 4-866, R1 PAGE 3 OF 7

ITEM #	HEAT #	PROJECT FORM	SK-450-	REMARKS
60	ABMG	6" 90° ELL	2-46	INSTALLED IN UNIT 1 & COMMON ERCW
61				
62			2-42	
63				
64				
65			8-9	
66			8-10	
67				
68			3-29A	
69			3-29	
70				
71				
72				
73			2-51	
74				
75				
76			2-47	
77				
78				
79				
80			2-43	
81				
82				
83			8-8	
84				
85			8-7	
86			23-1-21	
87	ABMG	6" 90° ELL	23-1-20	

WBNP NCR 4866, R1 PAGE 4 OF 7

ITEM #	NEAT #	PROJECT FORM	SK-450-	REMARKS
131	ABMH	6" 90° ELL	17-1A	Installed holiday & Coated ESCW
132				
133				
134			17-1	
135				
136				
137			17-2A	
138				
139			8-9B	
140			8-10	
141			3-29A	
142			2-51	
143	ABMH		2-47	
144	ABMG		8-8B	
145	ABMH		3-32	
146				
147			2-48	
148				
149			2-44	
150				
151				
152				
153			2-40	
154			8-4	
155				
156				
157			8-6	
158	ABMH	6" 90° ELL	2-49	

WBNP NCR 4866, R1 PAGE 5 OF 7

ITEM #	HEAT #	PRODUCT FORM	SK-430-	REMARKS
159	ABMH	6" 90° ELL	2-45	INSTALLED IN UNIT 1 CONTAIN. ERCW
160				
161				
162			3-31	
163			2-41	
164				
165			8-5	
166				
167			8-11	
168				
169			23-1-18	
170				
171			23-1-19	
172				
173			23-1-13	
174			23-1-21	
175			23-1-20	
176	ABMH	6" 90° ELL		
238	ABMI	8" 90° ELL	23-1-12	
239			9-100	
240				
241			9-50	
242				
243				
244				
245				
246				
247			23-1-17	
248	ABMI	8" 90° ELL		

WBNP NCR 4866, R1 PAGE 6 OF 7

ITEM #	NEAT #	PROJECT FORM	SK-450-	REMARKS
249	ABMI	8"90°ELL	23-1-16	INSTALLED IN UNIT 1 & COMMON. EBCW
250			23-1-15	
251			9-101	
252				
253			9-102	
254				
255				
256				
257				
258				
259				
260	ABMI	8"90°ELL		
335	AADAM	6"45°ELL	3-29A	
336			23-1-18	
337				
338			23-1-19	
339				
340			23-1-21	
341				
342			23-1-20	
343	AADAM	6"45°ELL		
358	ABGT	6"45°ELL	2-48	
359	ABGT	6"45°ELL	8-4B	
372	ABLAG	8"45°ELL	23-1-10	
373				
374				
375				
376	ABLAG	8"45°ELL	23-1-12	

WBNP NCR 4866, R1 PAGE 7 OF 7

ITEM #	NEAT #	PROJECT FORM	SK-450-	REMARKS
377	ABLAG	8" 45° ELL	23-1-12	INSTALLED IN UNIT 1 & COMMON. ERC(1)
378				
379				
380				
381				
382			9-100	
383	ABLAG	8" 45° ELL		
392	AAGK	8" STR. TEE	E-2079 IC-353	BRAND ISOMETRIC
393			9-50	
394	AAGK	8" STR. TEE	9-102	
397	AACBJ	6"X4" C.R.	8-10	
398			8-5A	
399			8-11	
400			21-1-29	
401			21-2-39	
402			21-1-30	
403				
404			21-1-26	
405	AACBJ	6"X4" C.R.	21-1-25	
406	AACAQ	10"X8" C.R.	9-100	
407				
408			9-101	
409	AACAQ	10"X8" C.R.		
425	AACBJ	6"X3" C.R.	21-1-7	
426			21-1-27	
427			21-1-3	
428			21-1-26	
429	AACBJ	6"X3" C.R.	21-1-1	

430 AND OTHER NUMBERS NOT LISTED: SHIPPING TICKET # G-227363

SHEET ____ OF ____

WBN NCR 4727

LIST OF T-L FITTINGS INSTALLED AT WBN

COMPUTED ____ DATE ____

CHECKED ____ DATE ____

THIS IS A LIST OF THE WELDED WITHOUT FILLER METAL SS FITTINGS INSTALLED IN THE UNIT 1 & COMMON PORTION OF THE SAFETY-RELATED ERCW SYSTEM

DESCRIPTION	T-L HEAT CODE	NO INSTALLED	NO. RECEIVED
3" x 2" C.RED	ACRO	26	30
4" x 2" TEE	ACCL	5	10
6" 90 LR	AATR	7	11
6" 90 LR	AATQ	31	41
3" 90 LR	ABLG	73	122
3" 45 LR	AAEAH	1	15
3" x 2" TEE	AADAZ	3	36
4" 90 LR	ABLH	25	49
2½" 45 LR	AAGG	0	40
4" 45 LR	AADAL	7	20
3" TEE	AAEAU	10	12
4" TEE	AACBA	3	3
4" x 2" C.RED	AAZAP	5	19
2½" 90 LR	ABLE	15	16
8" 90 LR	AATS	3	6
4" TEE	AACAZ	4	12
6" TEE	ABTU	4	4
3" x 2" C.RED	ABLX	16	24

~~THEX~~ THERE ARE 23 FITTINGS FROM THESE HEATS INSTALLED IN NON SAFETY-RELATED PORTIONS OF THIS SYSTEM. THE BALANCE HAVE BEEN RETURNED TO CAPITOL.

TVA 11030 (WM-7-75)

APPENDIX C TO FINAL REPORT ON NCR GENMEB8301

Table of Contents

Table BLN CS-1

Memorandum from R. M. Hodges to L. S. Cox dated October 11, 1983, disposition instructions for material covered by NCR GENMEB8301

Table BLN CS-1, Revision 0

Tube-Line (T-L) Carbon Steel Fittings and Flanges Shipped to BLN by Capitol Pipe and Steel Products

Description	Quantity Shipped	T-L Heat Code	TVA RD#/Contract No.
1/2" Sch 80, Caps	50	NGFB	821620
2-1/2" Std Wt, Tees	50	EUPA	631656
6" std Wt, 180 Ret Bend	4	EXOF	831660
3" 300 lb, Orf. Flg	1 pair	CEE	831660
4" x 3" Sch 80, Red. Tee	10	NDA	831660
3" x 2" Std Wt, Red. Tee	4	EYAC	831676
24" Std Wt, Caps	20	EXSF	831687
12" x 6" Std Wt, C. Red	14	EWH	831689
2-1/2" Sch 80, LR 90	4	EWKG	839343
2-1/2" Sch 80, 45	12	EUHZ	839343
2-1/2" Sch 80, Tee	4	EVX	839343
2-1/2" Sch 80, Cap	2	DVA	839343
2-1/2" Std Wt, Cap	10	EUYB	839346
20" Std Wt, Cap	4	EXBG	839346
6" Sch 160, 45	6	ERFL	839347
14" Std Wt, SR 90	2	EOX	839350
18" Std Wt, SR 90	6	EXAC	839350
14" Std Wt, Tee	1 only	DHK	839350
18" x 12" Std Wt, C. Red	2	DVA	839350
18" x 16" Std Wt, C. Red	2	EXON	839350
14" Std Wt, Cap	2	DVA	839350
16" 300 lb, w/n Flg	4	EXRE	839350
4" x 2" Sch 80, C. Red	4	EYAI	839358
6" Std Wt, SR 90	50	EVJF	839360
4" x 3" Std Wt, Red 90	20	EGX	839360
2-1/2" 150 lb, w/n Flg	55	EVGB	839360
6" Sch 160, 45	6	FCBB	839362
3" x 1" Std Wt, C. Red	50	EWTE	839364
4" Sch 160, LR 90	31	EXWG	839375
4" Sch 160, Tee	10	FAYN	839375
2" Sch 160, Cap	10	EWUP	839375
6" x 4" Sch 160, C. Red	18	DWN	839375
4" Sch 80, SR 90	10	FBLD	839375
6" x 4" Sch 80, Red Tee	10	NDLD	839375
2"Sch 80, Cap	8	EYJD	839375
4" Sch 80, Cap	8	EZZC	839375
6" Sch 80, Cap	10	EKD	839375
8" x 4" Sch 80, C. Red	10	EXYI	839375
1-1/2" 150 lb, SW Flg	8	EFG	839381
16" x 10" Std Wt, C. Red	19	EXYC	839374
4" 300 lb, w/n Orf Flg	8 pair	CFG	839375
16" 300 lb, w/n Flg	6	EGZ	839379

#All RDs are on contract 80KA3-825673.

TVA 65 100-0-001

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

MEB '83 10 11 019

TO : L. S. Cox, Project Manager, Bellefonte Nuclear Plant, CONST (3)

FROM : R. M. Hodges, Project Manager, Bellefonte Design Project, 1117 IBM-K

DATE : OCT 11 1983

SUBJECT: BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - DEFECTIVE MATERIAL MANUFACTURED BY TUBE-LINE (T-L) CORPORATION AND FURNISHED ON CONTRACT 80KA3-825673 - N4M-442

DISPOSITION INSTRUCTIONS FOR MATERIAL COVERED BY NCR GENMEB8301 AT WBN

MEB has determined that the material in question which was furnished on this contract is listed on the attached tables: BLN CS-1, WBN CS-1, WBN SS-1WO, and WBN SS-1WW. Although BLN material is listed on table BLN CS-1, TVA is obligated by NRC Bulletin 83-06 to ensure that we know the status of all T-L material which was furnished to TVA. Therefore, it is necessary that BLN perform the following steps in order to allow MEB to disposition this NCR:

1. Review all of the tables listed above to determine if any of the T-L heats listed are installed in a safety-related piping system (TVA class III-1, III-1S, III-2, III-2S, III-3, or III-3S). BLN shall mark on applicable heat number printouts or contract files all T-L heat codes found to be at BLN, and shall indicate that these heat codes shall not be installed in BLN safety-related piping systems.

2. Prepare a list by size, product type, heat code, and quantity, of all T-L fittings or flanges installed in a safety-related piping system. In addition, prepare a list containing the same data of all T-L material at BLN which is not installed. Send both of these lists to MEB, via a memorandum to this office, for MEB to obtain replacement material.

3. Cut out all of the T-L material which is installed in a safety-related piping system. Replace it with material which MEB will obtain from an approved manufacturer which fully complies wih ASME Section III. Note: It will not be necesary for BLN to bevel any fittings or flanges which they cut out. They will be returned to Capitol in their "square-cut-as-removed condition."

SENT OCT 12 1983

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

L. S. Cox

OCT 11 1983

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - DEFECTIVE MATERIAL MANUFACTURED BY TUBE-LINE (T-L) CORPORATION AND FURNISHED ON CONTRACT 80KA3-825673 - N4M-442

DISPOSITION INSTRUCTIONS FOR MATERIAL COVERED BY NCR GENMEB8301 AT WBN

4. All T-L fittings which are installed in nonsafety-related piping systems requiring only a COC to be furnished with the material may be left in place. No more T-L fittings shall be installed in these systems.

   All T-L flanges which are installed in nonsafety-related systems shall be removed and replaced with material from acceptable manufacturers (include these flanges on the list referenced in 2 above). This action is taken because of the consistent failures (in the area of chemical and physical properties) of the T-L flanges at WBN which have been tested as a part of the resolution of the T-L problem at WBN.

5. BLN should obtain return shipping instructions from Capitol Pipe and Steel Products Company for all noninstalled and "cut out" T-L fittings and flanges and return them to Capitol.

The target dates for completion of this work are:

1. Complete by October 19, 1983.

2. Complete by October 26, 1983. It will take approximately eight weeks to obtain new material once MEB receives the necessary lists.

3. Complete as quickly as manpower allows after receipt of acceptable fittings and flanges.

4. No specific action required except list flanges in accordance with 2 above.

3.

L. S. Cox

OCT 11 1983

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - DEFECTIVE MATERIAL MANUFACTURED BY TUBE-LINE (T-L) CORPORATION AND FURNISHED ON CONTRACT 80KA3-825673 - N4M-442

DISPOSITION INSTRUCTIONS FOR MATERIAL COVERED BY NCR GENMEB8301 AT WBN

5. Coordinate with Capitol and begin shipping as soon as Capitol authorizes and in the manner authorized by Capitol (partial shipments or wait for one complete one, etc.). However, all return shipments should be completed no later than December 30, 1983, if at all possible.

ORIGINAL SIGNED BY
R.R. HOESLY

R. M. Hodges

CAC:ELD:PL
Attachments
cc: C. Bonine, E7B24 C-K
W. R. Brown, 102 ESTA-K
C. A. Chandley, W7C126 C-K
I. W. Jones, 930C CUBB-C
MEDS, W5B63 C-K, w/1
J. A. Raulston, W10C126 C-K, w/1
M. N. Sprouse, W11A9 C-K

Principally Prepared By: E. L. Daugherty, Extension 3165

W7C157 C-K

G63273.04