

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WEST MASSACHUSETTS ELECTRIC COMPANY
MILSTONE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 665-5000

September 10, 1992

Docket No. 50-423
B14236

Re: ASME Section XI
GL 90-05
10CFR50.55a(g)(6)(i)

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Relief Request From ASME Code Section XI Requirements

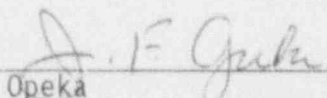
The purpose of this letter is to request, in response to NRC Generic Letter 90-05, relief from ASME Boiler and Pressure Vessel Code Section XI requirements pursuant to 10CFR50.55a(g)(6)(i). Attachment 1 provides a description of actions taken by Northeast Nuclear Energy Company (NNECO) to make interim repairs to the leak in this piping as an alternative to an IWA-7000 repair/IWA-7000 replacement.

Consistent with the provisions of the generic letter, NNECO is submitting this relief request for an interim noncode repair. The Resident Inspector at Millstone Unit No. 3 has been informed of this planned interim repair and, as has been our practice, we will keep the Resident Inspector fully informed on all future repairs. NNECO plans to replace this flawed section of piping within the next 60 days.

Please contact us if you have any questions.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY



J. F. Opeka
Executive Vice President

cc: T. T. Martin, Region I Administrator
V. L. Rooney, NRC Project Manager, Millstone Unit No. 3
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

9209150415 920910
PDR ADDOCK 05000423
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1/1

Docket No. 50-423
B14236

Attachment 1

Millstone Nuclear Power Station, Unit No. 3
Relief Request From ASME Code Section XI Requirements

September, 1992

NORTHEAST UTILITIES

FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

UNIT: Millstone Unit 3 NCR # 392-189 DATE: 8/10/92
TIME: 1100

1.0 ORIGINATOR

1.1 DESCRIPTION OF FLAW

Leak in 1 1/2" 90/10 Cu-Ni piping, Line #3-SWP-150-072-03 (A-) at FW 3, SWP outlet from 3CCI*E1A.

Piping/Component Drawing No.: CP319008 Line 3SWP-150-072-3

PSID No.: EM 133B

1.2 IMPRACTICALITY OF CODE REPAIR

Leak is isolable, code repair practical. NUSCO is currently preparing to modify the outlet piping from the "A" CCI cooler. This work will restore Code compliance and is designed to improve flow and reduce turbulence. This work will be completed within 90 days.

1.3 DESCRIPTION OF PROPOSED TEMPORARY REPAIR

Wrap with rubber tape, secure with hose clamp.

1.4 SAFETY SIGNIFICANCE: System Interaction Evaluation

Flooding: Pinhole leak, fluid loss handled by floor drains.

Jet Spray: Spray direction poses no threat, no electrical equipment close by.

Loss of Flow: Minimal, located on cooler discharge.

Other Interactions: None

Failure Consequences? None - isolate train

Impact to Safe Shutdown Capability? Total loss of cooler function would result in loss of 1 train of SIH. Redundant train would supply safe shutdown capability.

1.5 ROOT CAUSE INVESTIGATION

Root Cause Description: Erosion corrosion of solid 90/10 copper nickel due to turbulent flow at elbow.

Other Systems Affected: None

NORTHEAST UTILITIES

FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

1.6 AUGMENTED INSPECTION (must be completed within 15 days of flaw detection)

Assessment of overall degradation of the affected system: Leak is typical of erosion/corrosion in service water piping. Leaks result from localized wall loss and an augmented ISI inspection program for small bore piping is currently in place.

Description of areas selected for augmented inspection: Redundant "B" train piping components and "A" train cooler inlet piping. 1 1/2" solid 90/10 Cu-Ni piping downstream of tees and elbows.

Additional examinations required (based on root cause) -- specify number of inspection locations -- also specify frequency of inspections: [ten most susceptible and accessible locations for high energy piping system and five for moderate energy piping system.]

Five additional locations were chosen, as listed below:

- a) FW6-1 "A" train inlet
- b) FW8-1 "A" train inlet
- c) FW12 "A" train inlet
- d) FW17 "B" train outlet
- e) FW27 "B" train outlet

Back-up Locations

- i) FW54 "A" train outlet
- ii) FW 6-1/8-1 "B" train outlet

These areas will be follow-up inspected at 30 day intervals initially, followed by every two weeks unless erosion rates indicate otherwise.

Forward augmented inspection results to NUSCO Supervisor, Stress Analysis Engineering Unit when completed.

2.0 STRESS ANALYSIS UNIT

2.1 DESIGN DETAILS

System: Service Water (SWP) "A" train return from safety injection pump lube oil cooler 3CCI*E1A.

Component: Piping adjacent to 90° elbow

Piping Size & Schedule: 1 1/2" NPS

Nominal Wall Thickness: 0.150

Safety Code Class: 3

Material: 90/10 Copper Nickel

Design Pressure: 100 psig

NORTHEAST UTILITIES

FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

Design/Operating Temperature: 95°F/95°F

Code Minimum Wall Thickness: 0.011"

2.2 FLAW CHARACTERIZATION

Flaw Description/Size: (i.e., flaw size, adjacent wall thickness, single/multiple flaw, total area examined, etc.)

Pin hole leak with adjacent wall outside the affected area > 0.100". Entire circumference examined for 3 1/2" downstream of the fitting in 1/2" grids.

Flaw Location: In pipe at field weld 3 to elbow at the bottom (180°-190° from TDC) of the horizontal run.

Examination Method: UT

Flaw Type: Thru-wall

Reference UT Measurement Report: Attached to NCR 392-189

2.3 PRELIMINARY FLAW EVALUATION SUMMARY

Preliminary Operability Assessment Details:

Method Used: Limits on hole size and wall based on global and local pipe stresses, revised x-section properties, area reinforcement rule and Code stress allowables.

Limiting Flaw Size: 3/4" hole with minimum 0.100" wall outside the hole.

Period of Time to Reach Limiting Flaw Size: Expected to be >90 days.

Evaluation Reference: NUSCO calculation, Reference B.

2.4 END OF CYCLE FLAW EVALUATION SUMMARY

Final Operability Assessment Details: Limits established in preliminary evaluation (Section 2.3) govern until permanent Code repair.

Method Used: (i.e., LEFM, area reinforcement, wall thinning, ASME Code Case) See Section 2.3

Estimated Wall Erosion Rate: Piping is to be replaced with engineering modifications designed to improve flow and reduce turbulence. Work to be completed within 90 days of flaw detection. It is expected that limiting flaw size will not be reached during this 90 day period.

Projected Flaw Size: To be monitored to the limits specified in Section 2.3.

NORTHEAST UTILITIES

FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

Period of Time to Permanent Repair/Replacement: Within 90 days of discovery date (8/10/92).

Provide a Discussion of Evaluation of Design Loading Conditions:

All primary loads were considered and shown to meet Code stress allowables assuming unreinforced tee geometry. Stresses calculated with reduced piping x-section. Area reinforcement criteria is also met.

Evaluation Reference: Reference 2.8B and attached calculation.

Discussion of Augmented Inspection Results: Field welds FW 6-1, 8-1 and 12 on inlet to "A" train CCI cooler and FW 27 on the "B" train outlet have experienced wall loss with low readings below 0.100". The remaining wall is above the Code minimum and will be monitored. NUSCO is currently pursuing a permanent piping modification for both the "A" cooler inlet and outlet piping. These areas are structurally acceptable based on the criteria for the current leak. See attached sketches for a description of past and future repairs of A & B train CCI service water piping.

Expanded Augmented Inspection Requirements: None.

2.5 FLAW MONITORING

Walkdown Frequency: (for leak monitoring) Minimum of once per shift.

Frequency of Follow-up NDE: (for erosion rate assessment) Within 30 days of flaw detection then every two weeks unless erosion rate dictates greater frequency.

2.6 ADDITIONAL COMMENTS (scope, limitations, and specific considerations)

This relief request is submitted for a thru-wall flaw at FW3 on the "A" train outlet piping. FWs 6-1 and 8-1 on Line 3-SWP-150-071-03 on the "A" train inlet piping exhibit remaining wall thicknesses less than 0.075". Due to these low readings, preparations for modification of the "A" cooler inlet piping is underway. This change will be implemented following completion of the modification to the "A" cooler outlet piping, which contains the thru-wall flaw.

2.7 EXCEPTIONS TO GL-90-05/DRAFT ASME CODE CASE

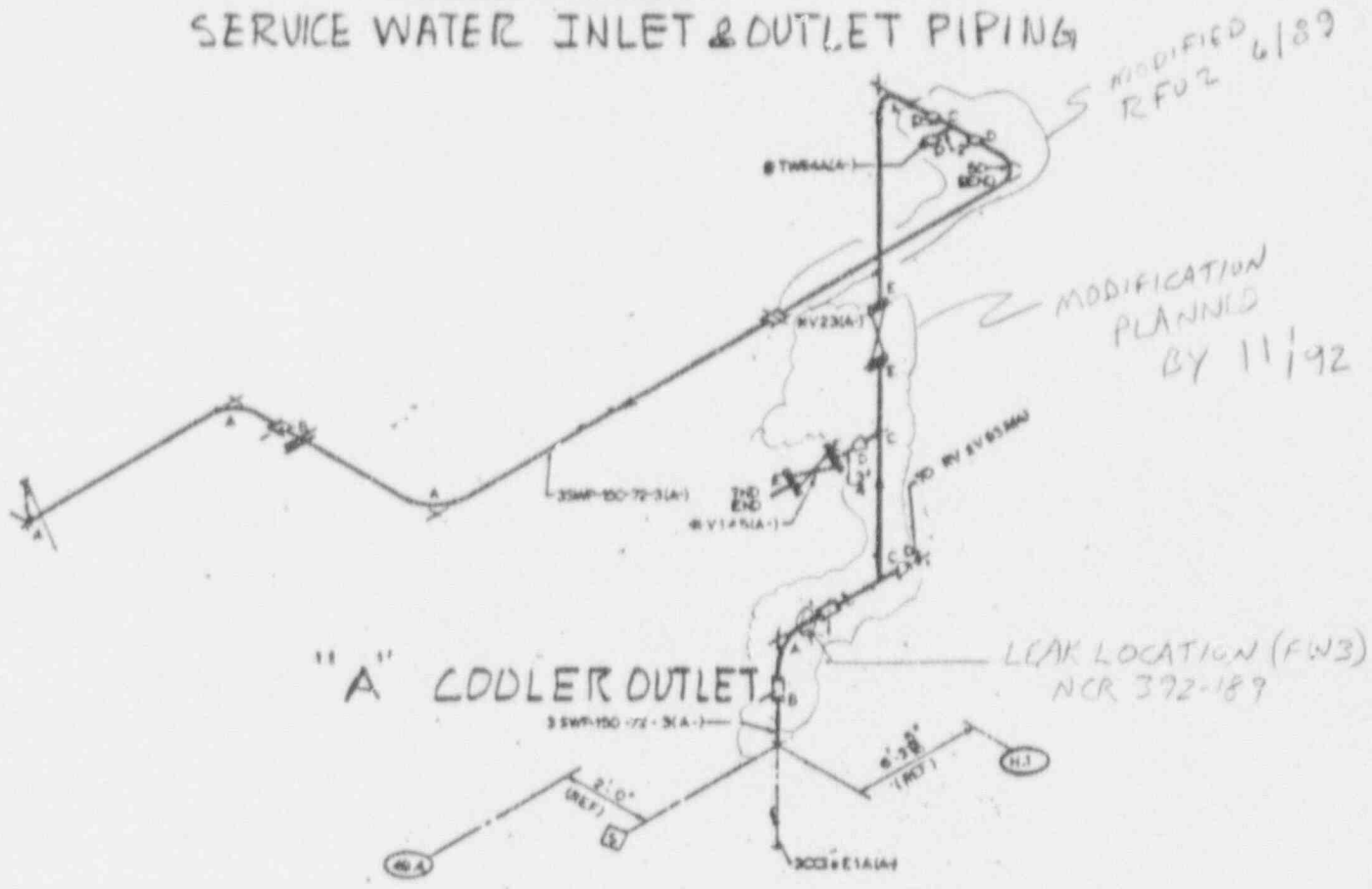
Evaluation uses area reinforcement rules and unreinforced tee SIF approach.

2.8 REFERENCES/INPUTS

- A) S & W Calculation 12179-NP(F)-687-XD, Rev. 3
- B) NUSCO Calculation 85-127-1013GP Rev. 0

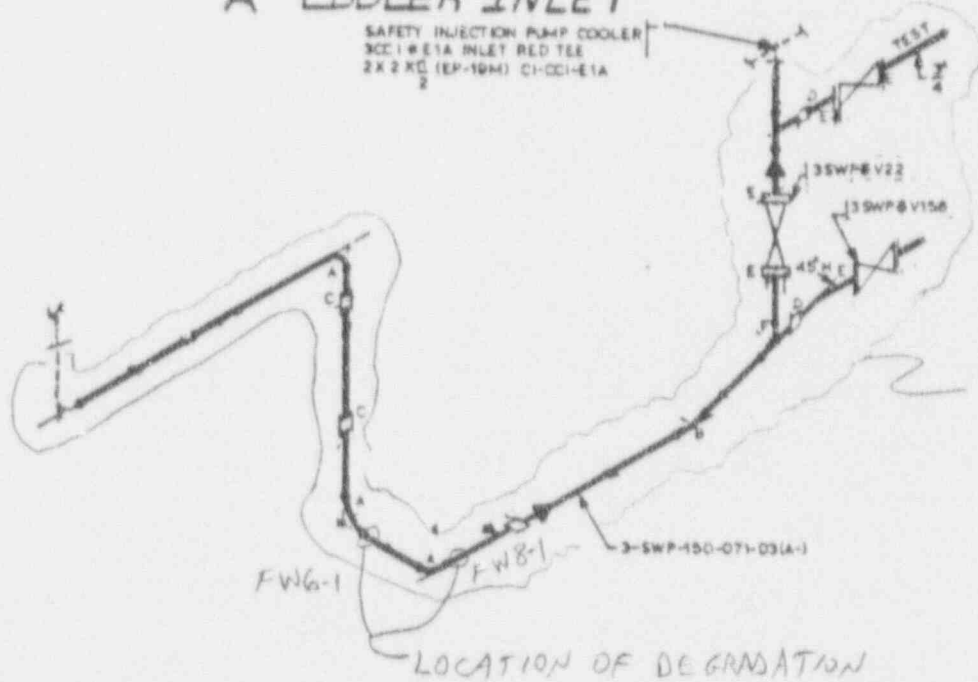
3CCI*E1A

SERVICE WATER INLET & OUTLET PIPING



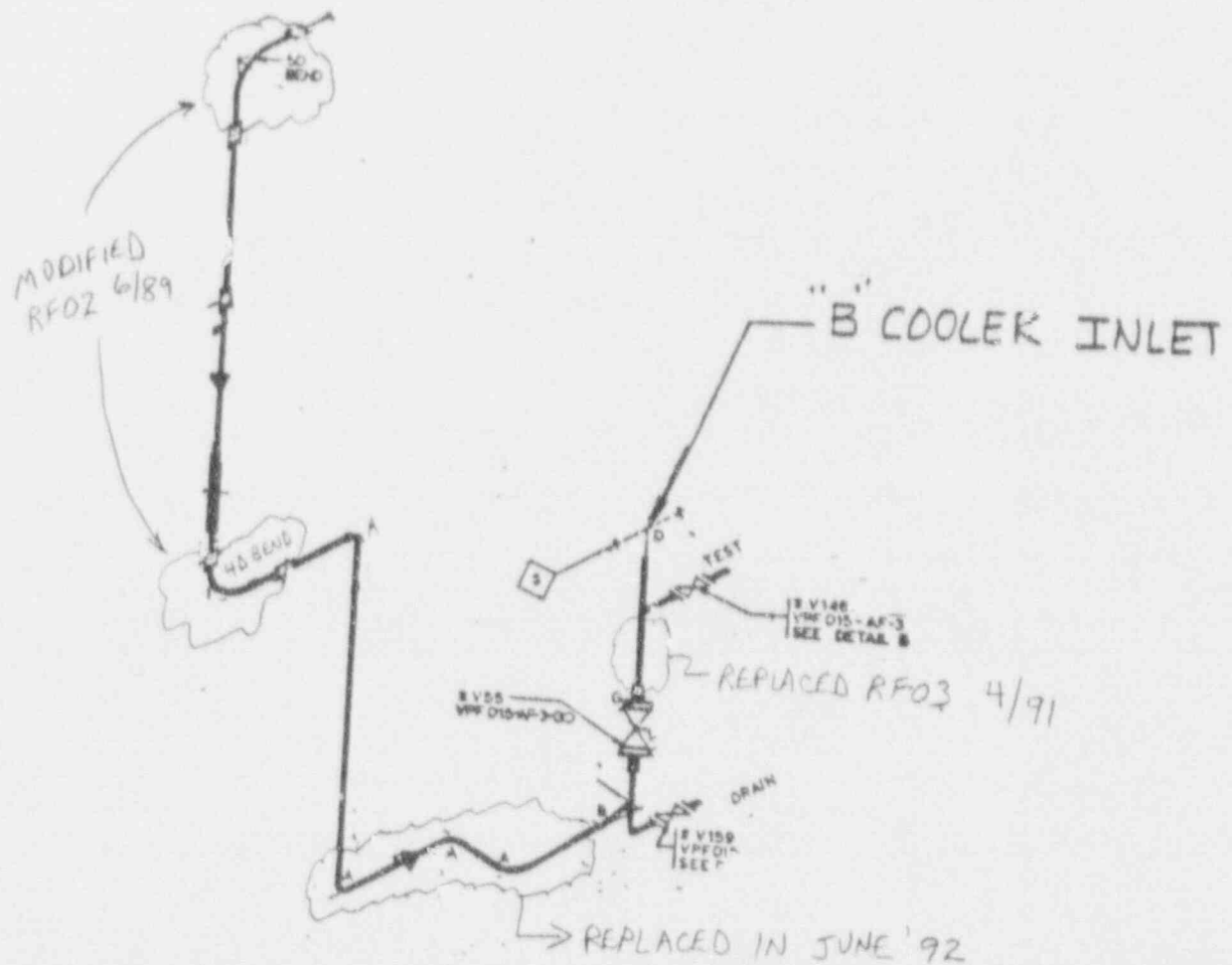
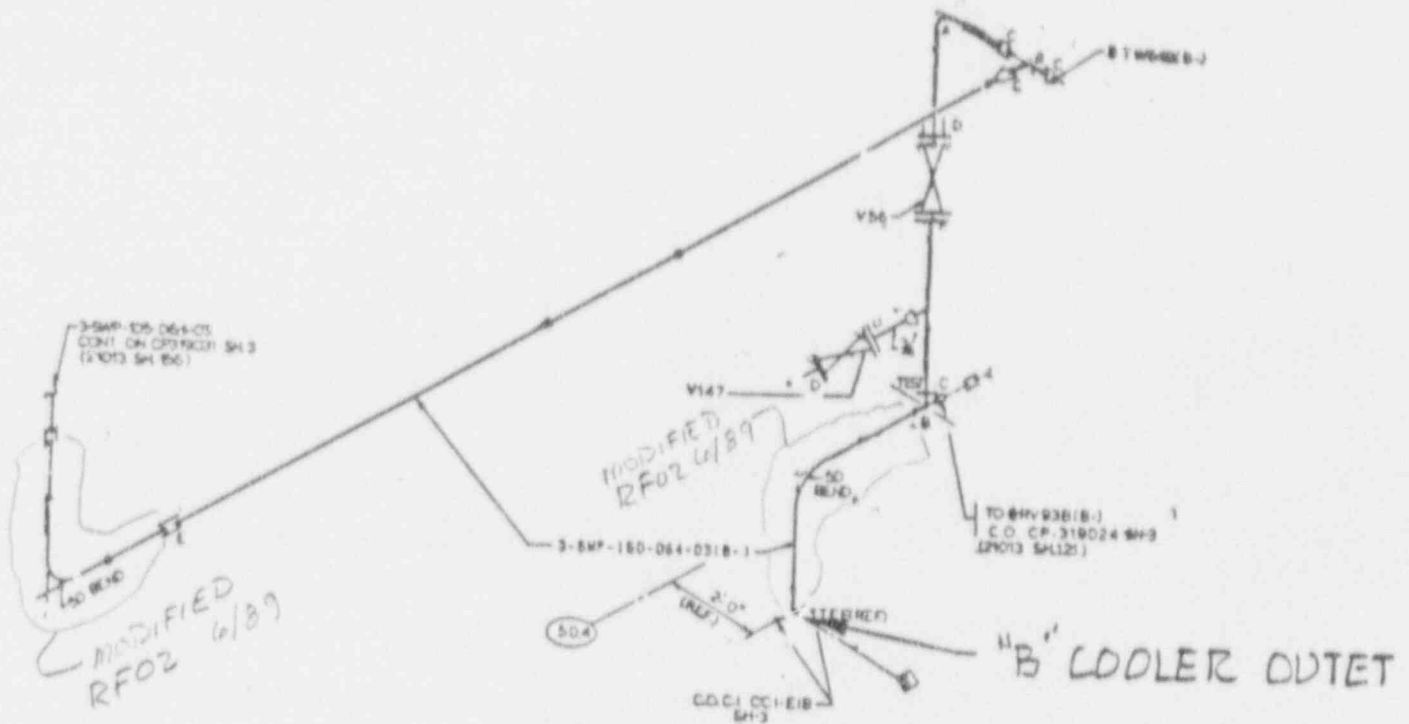
"A" COOLER INLET

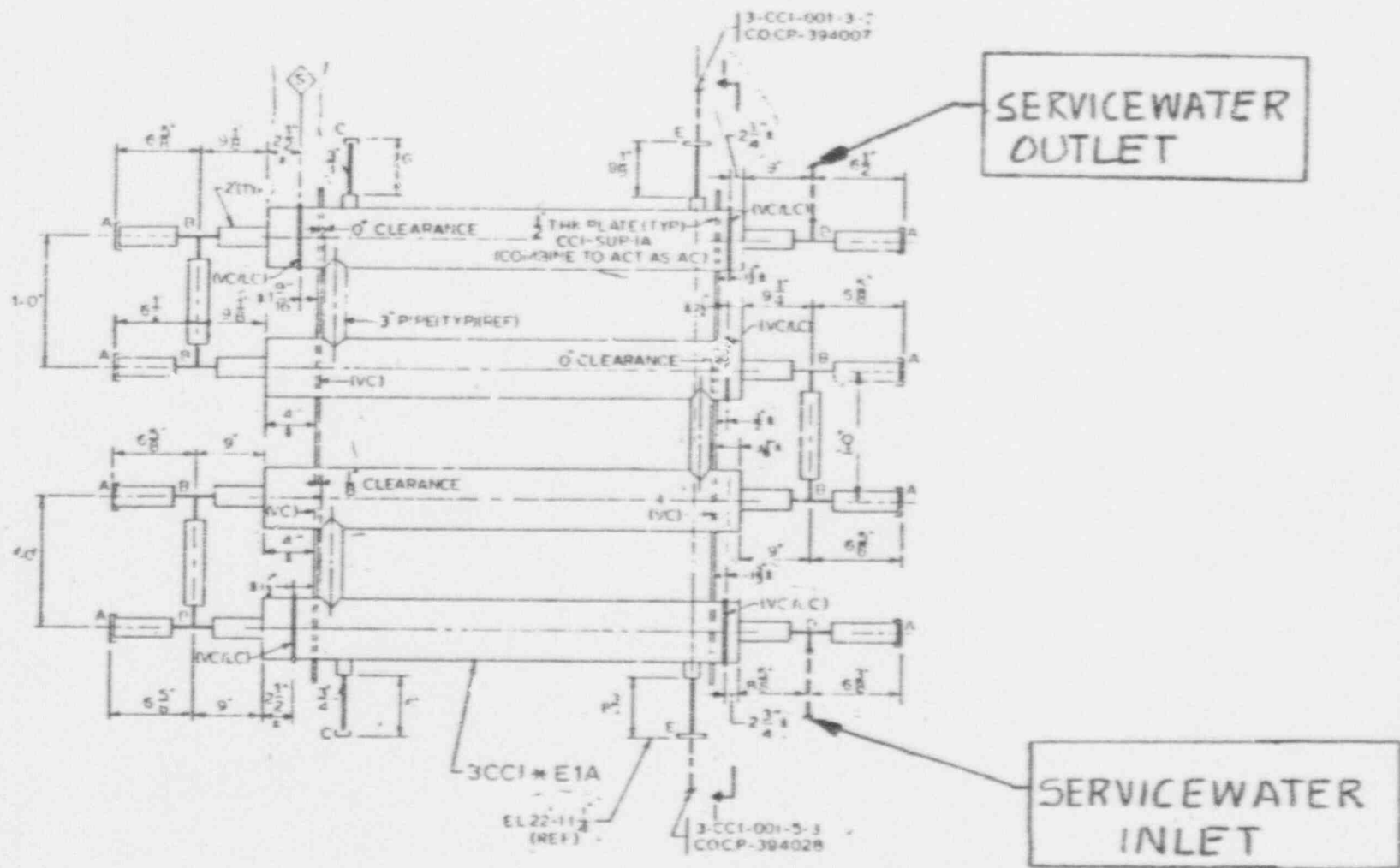
SAFETY INJECTION PUMP COOLER
 3CCI-E1A INLET RED TEE
 2 X 2 X₂ (EP-10M) C1-CCI-E1A



3CCI * EIB

SERVICE WATER INLET & OUTLET PIPING





3CCI * E1A (SHOWN)
 3CCI * E1B (SIMILIAR)

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
 WESTERN MASSACHUSETTS ELECTRIC COMPANY
 NEW YORK WATER POWER COMPANY
 NORTHEAST UTILITIES SERVICE COMPANY
 NORTHEAST NUCLEAR ENERGY COMPANY

M
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September 2, 1992
 MP3-E-92-355

To: S. Dumas
 PSE

From:

D. MacNeill
 Un. 3 Engineering

Gay Swider for

Subject: Accuracy of Ultrasonic Measurement Systems Used on Service Water Piping

The ultrasonic thickness measurements on Service Water piping (line nos 3-SWP-150-064-03, 3-SWP-150-071-003, and 3-SWP-150-072-03) referenced on NCR 392-189 and AWOs M3-92-16145 and M3-92-16346 were taken using the following ultrasonic instrumentation:

For FW 6-1, 8-1, 17, and 27 on line 3-SWP-150-064-03(B-) and FW-54 on line 3-SWP-150-072-03(A-), a Panametrics Model 5000 with a 10MHz probe was used. This inspection had an accuracy of +/- 0.003 over the entire inspection range of 0.098" to 0.164".

For FW 6-1, 8-1, and 12 on line 3-SWP-150-072-03(A-), a Frautiger Model USK-7D with a 10MHz probe was used. This inspection had an accuracy of +/- 0.008 over the entire inspection range of 0.051" to 0.164".

Calibration sheets documenting the above accuracies and calibrations have been filed with the AWOs.

If you have any questions, please call me at MP3 extension 5511.

cc: G. Swider
 W. Dietz
 T. Lyons
 File

EROSION/CORROSION ULTRASONIC CALIBRATION DATA SHEET

(2) Plant MILLSTONE (3) Unit III (5) Component Designation FW 3
 (4) System PCE (8) Iso. No. CP 319008 (331) Line No. 35WP-154-072-03
 (337) Diameter 1 1/2 (338) Grid Size 1/2" (339) T_{nom} .156 (340) T_{scr} _____
 (341) Component Description SOCKET TO PIPE *(63) Temp N/A
 (344) Surface OD UNPAINTED

Instrument:

(16) Model No. PANAMETRICS 26DL PLUS (17) S/N 91034208 (124) Freq. 10 MHz

Transducer:

(132) Mfg. PANAMETRICS (133) S/N 69124 (131) Size .2 (134) Freq. 10 MHz

Cal. Block:

(332) S/N N/A (333) Type COPPER NICKEL PIPE STD.

(335) Block Thickness	(336) Instrument Reading	(136) Calibration Checks	
.043/.086/.151	.045/.086/.153	Initial Cal.	0945
N	A	Intermediate	A
		Intermediate	
		Intermediate	
		Intermediate	
.043/.086/.151	.045/.086/.153	Final Cal.	1040

(342) Instrument Tolerance \pm 0.001

(345) Calibration Tolerance \pm 0.002

(343) Grid Verified as correct Scott Hall

(49) Examiner:

(Print) Scott Hall (Sign) Scott Hall Level II Date 8-10-92

(50) Reviewer:

(Print) DR Muel (Sign) DR Muel Level III Date 8-14-92

*(Refer to Appendix B of NU NDE Procedure Manual to fill in each block)
 **For extreme temperatures only.

FIGURE 4

A	B	C	D	E	F	G	H	I	J	K	L	M	N
.148	.147	.155	.149	.152	.126	.100	.058	.140	.143	.146	.143	.147	.149
.147	.147	.150	.149	.152	.126	.128	.086	.148	.148	.148	.157	.149	.149
.145	.147	.149	.150	.150	.118	.128	.126	.149	.147	.150	.149	.150	.150
.148	.150	.149	.147	.150	.118	.138	.136	.150	.150	.151	.153	.151	.152
.148	.149	.149	.150	.152	.119	.133	.130	.148	.151	.150	.152	.149	.151
.150	.150	.151	.150	.151	.118	.141	.140	.148	.151	.150	.152	.150	.152
.149	.150	.151	.152	.152	.137	.150	.149	.150	.150	.151	.150	.151	.153

- COMPONENT : FW3, ISO CP 319008, LINE # 35WP-150-072-03 (A-)

Scott II

8-10-92

- 1/2" GRIDS

- HIGH READING: .153

- LOW READING: .058

* MAJOR WALL LOSS OCCURS AT APPROX. 180° TO 195° CW FROM TDC AT THE TOE (AIRWAYS), COLUMNS 6 & H.

EROSION/CORROSION ULTRASONIC CALIBRATION DATA SHEET

(2) Plant Millstone (3) Unit III (5) Component Designation C40 (FWG-1)
 (4) System Service Unit (8) Iso. No. 25212-2103 (331) Line No. 3-SWP-150-021-03(A)
 (337) Diameter 1/2" (338) Grid Size 1" (339) T_{nom} NA (340) T_{scr} NA
 (341) Component Description Horizontal Straight ** (63) Temp. NA
 (344) Surface Unpainted

Instrument:

(16) Model No. USK7D (17) S/N 32810-941 (124) Freq. 2-10 MHz

Transducer:

(132) Mfg. KBA (133) S/N E22263 (131) Size .25" (134) Freq. 10 MHz

Cal. Block:

(332) S/N NA (333) Type Copper Nickel *Provided By Gary Sunder*
.0865" - .2295"

(335) Block Thickness	(336) Instrument Reading	(136) Calibration Checks	
.0865" - .2295"	.087" - .230"	Initial Cal.	0949
NA	NA	Intermediate	NA
		Intermediate	
		Intermediate	
		Intermediate	
.0865" - .229"	.087" - .230"	Final Cal.	1009

(342) Instrument Tolerance $\pm 0.004"$

(345) Calibration Tolerance $\pm 0.0005"$

(343) Grid Verified as correct JJ

(49) Examiner:

(Print) John Jacobsen (Sign) [Signature] Level II Date 9-1-92

(50) Reviewer:

(Print) D.R. MacNeill (Sign) [Signature] Level III Date 9-2-92

*(Refer to Appendix B of NU NDE Procedure Manual to fill in each block)
 **For extreme temperatures only.

FIGURE 4

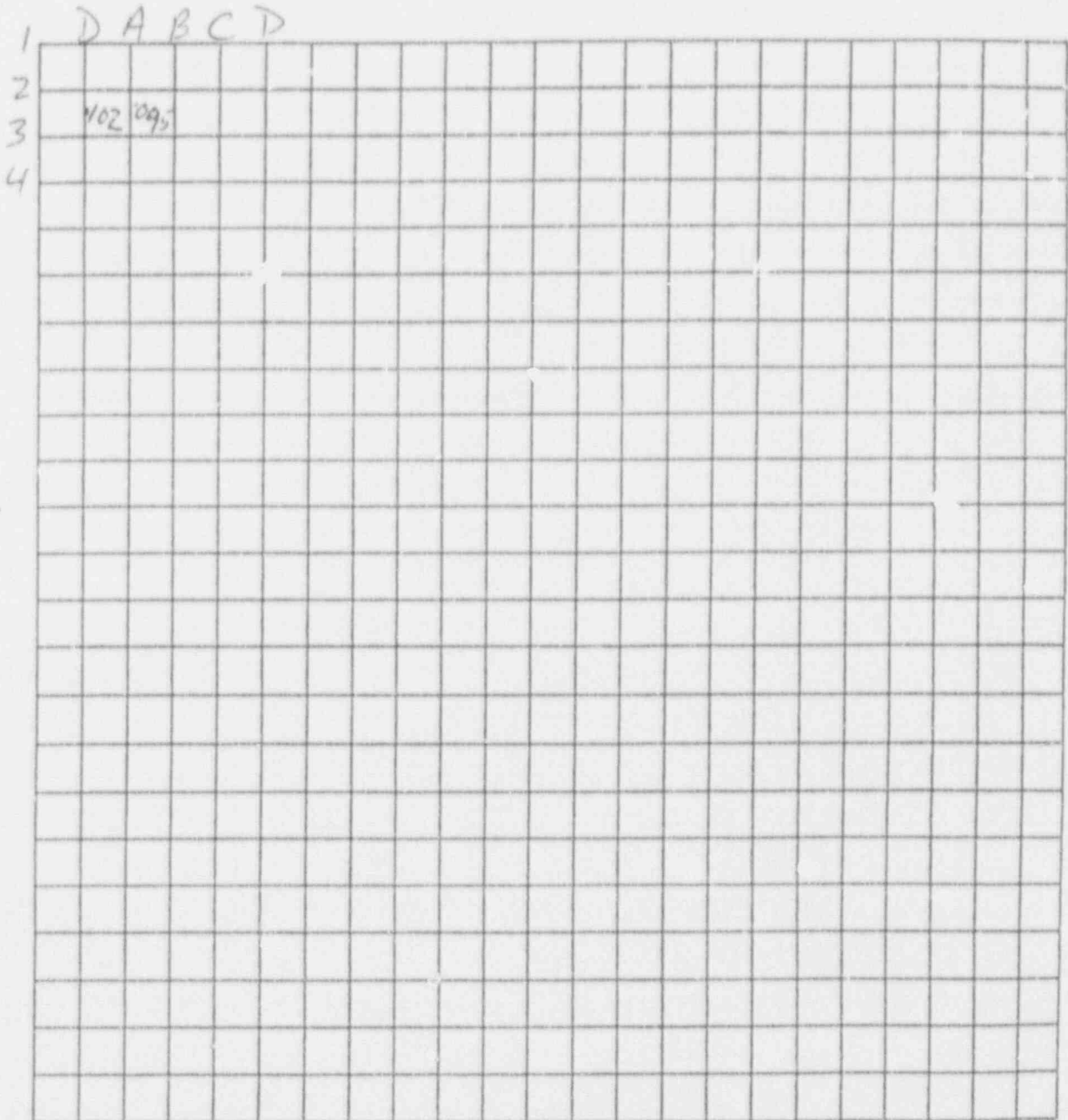
FIGURE 3

3-SWP-150-071-03(A-)

COMPONENT ID C 40 (FW 6-1) EXAMINER J. Jacobson DATE 9-1-92

PLANT/UNIT Millstone III SYSTEM Service Water

GRID SIZE 1" COLUMN - CIRCUMFERENTIAL LOCATION



ROW - AXIAL LOCATION

SKETCH OF COMPONENT SHOWING GRID LOCATIONS FOR THE EXTENT OF THE REDUCED THICKNESS AREAS

Notes

FILE NAME: SH.21 C40 HSTRT
DOS FILE NAME: SH21C401.DAT
FILE TYPE: GRID
DATE & TIME CREATED: 09/01/92 09:38
DATE & TIME LAST MODIFIED: 09/01/92 10:02
FILE DESCRIPTION: 25212.21013
ALLOW MANUAL READINGS: Y
UPPER LEFT LOCATION: A1
LOWER RIGHT LOCATION: D6
OPERATOR ID: J.JACOBSON
INSTRUMENT ID: 32810.941
PROBE ID: B22263
MATERIAL VELOCITY:
INCHES OR MM: I

READINGS

Main Section (#)

Rows : 6 Cols : 4 Direction : Clockwise Offset : 0

	A	B	C	D	RowMx	RowMn	Delta	Ave
1	0.153	0.164	0.157	0.157	0.164	0.153	0.011	0.158
2	0.073	0.150	0.146	0.150	0.150	0.073	0.077	0.130
3	0.073	0.150	0.135	0.150	0.150	0.073	0.077	0.127
4	0.157	0.139	0.142	0.146	0.157	0.139	0.018	0.146
5	0.157	0.146	0.142		0.157	0.142	0.015	0.148
6								
ColMx	0.157	0.164	0.157	0.157				
ColMn	0.073	0.139	0.135	0.146				
Delta	0.084	0.025	0.022	0.011				
Ave	0.123	0.150	0.144	0.151				

Section Summary

Maximum Reading = 0.164 (1, B) Average = 0.141
 Minimum Reading = 0.073 (2, A) Standard Deviation = 0.025
 Total Readings = 19

MILLSTONE II ULTRASONIC INSPECTION

DATA SHEET

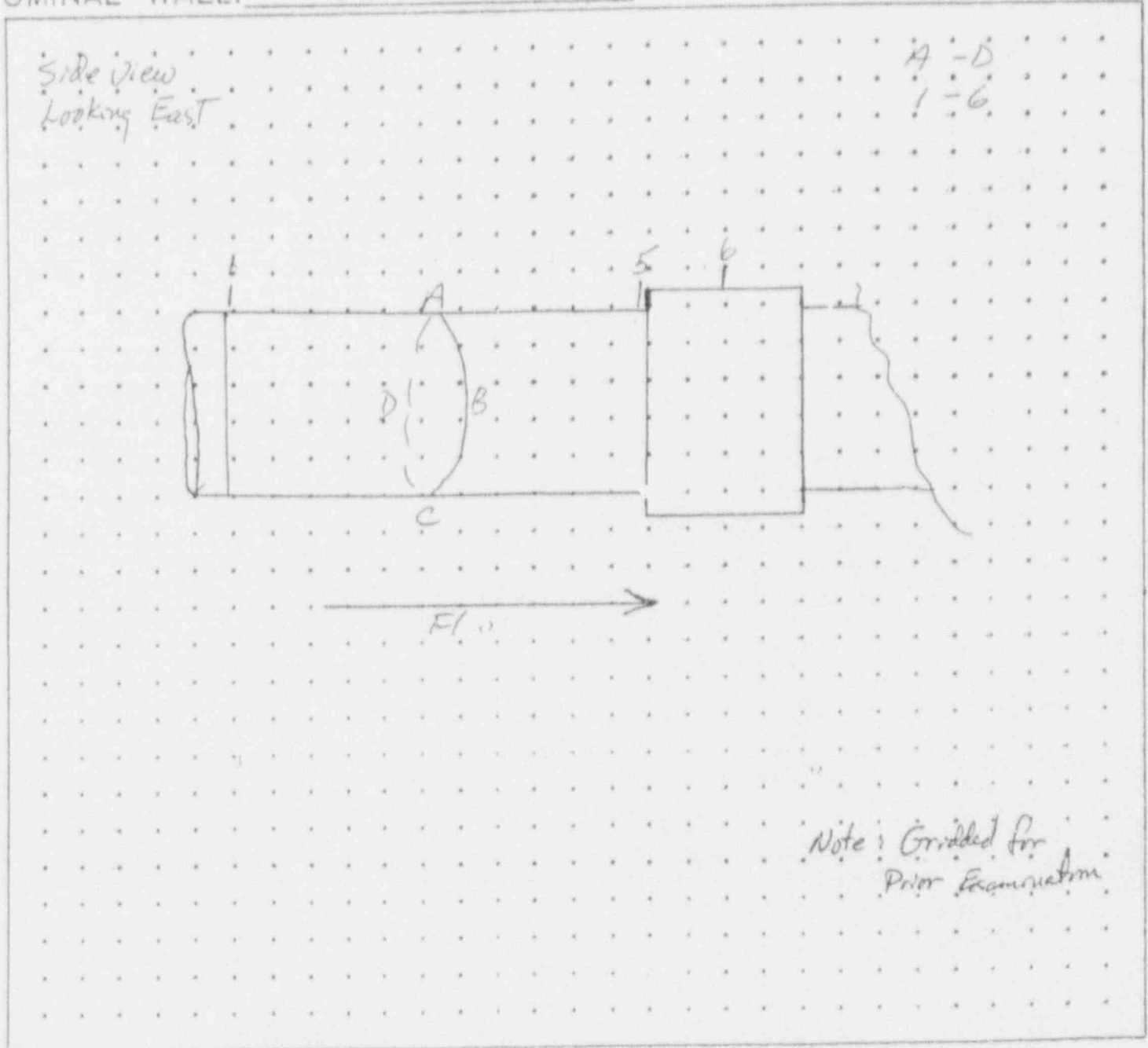
DRAWING NUMBER: 25212 - 21013 SH21

LINE NUMBER: 3-SWP-150-071-03(A)

COMPONENT TYPE: Horizontal Straight T COMPONENT NUMBER: C40/FW
₆₋₁

SIZE: 1 1/2" SCHEDULE: Copper Wickle

NOMINAL WALL: NA



INSPECTOR: John Johnson

DATE: 9-1-92

EROSION/CORROSION ULTRASONIC CALIBRATION DATA SHEET

(2) Plant Millstone (3) Unit III (5) Component Designation C43(FWB-1)
 (4) System Service Water (8) Iso. No. 25212-21013 (331) Line No. 3-SWP-150-071-03(A-)
 (337) Diameter 1 1/2" (338) Grid Size 1" ^{SAZI} (339) T_{nom} NA (340) T_{scr} NA
 (341) Component Description Horizontal Straight ** (63) Temp. NA
 (344) Surface unpainted
 * Substance on surface restricting scan

Instrument:

(16) Model No. USK7D (17) S/N 32810-941 (124) Freq. 2-10MHz

Transducer:

(132) Mfg. KBA (133) S/N E22263 (131) Size .25" (134) Freq. 10MHz

Cal. Block:

(332) S/N NA (333) Type Copper Nickel *Provided By Gary Swider*
.0865" - .2295"

(335) Block Thickness:	(336) Instrument Reading	(136) Calibration Checks	
<u>.0865" - .2295"</u>	<u>.087" - .230"</u>	Initial Cal.	<u>1009</u>
<u>NA</u>	<u>NA</u>	Intermediate	<u>NA</u>
		Intermediate	
		Intermediate	
		Intermediate	
<u>.0865" - .2295"</u>	<u>.087" - .230"</u>	Final Cal.	<u>1025</u>

(342) Instrument Tolerance \pm 0.004"

(345) Calibration Tolerance \pm 0.0005"

(343) Grid Verified as correct 55

(49) Examiner:

(Print) John Jacobson (Sign) John Jacobson Level III Date 9-1-92

(50) Reviewer:

(Print) D.R. MacNeill (Sign) D.R. MacNeill Level Date

*(Refer to Appendix B of NU NDE Procedure Manual to fill in each block)
 **For extreme temperatures only.

FIGURE 4

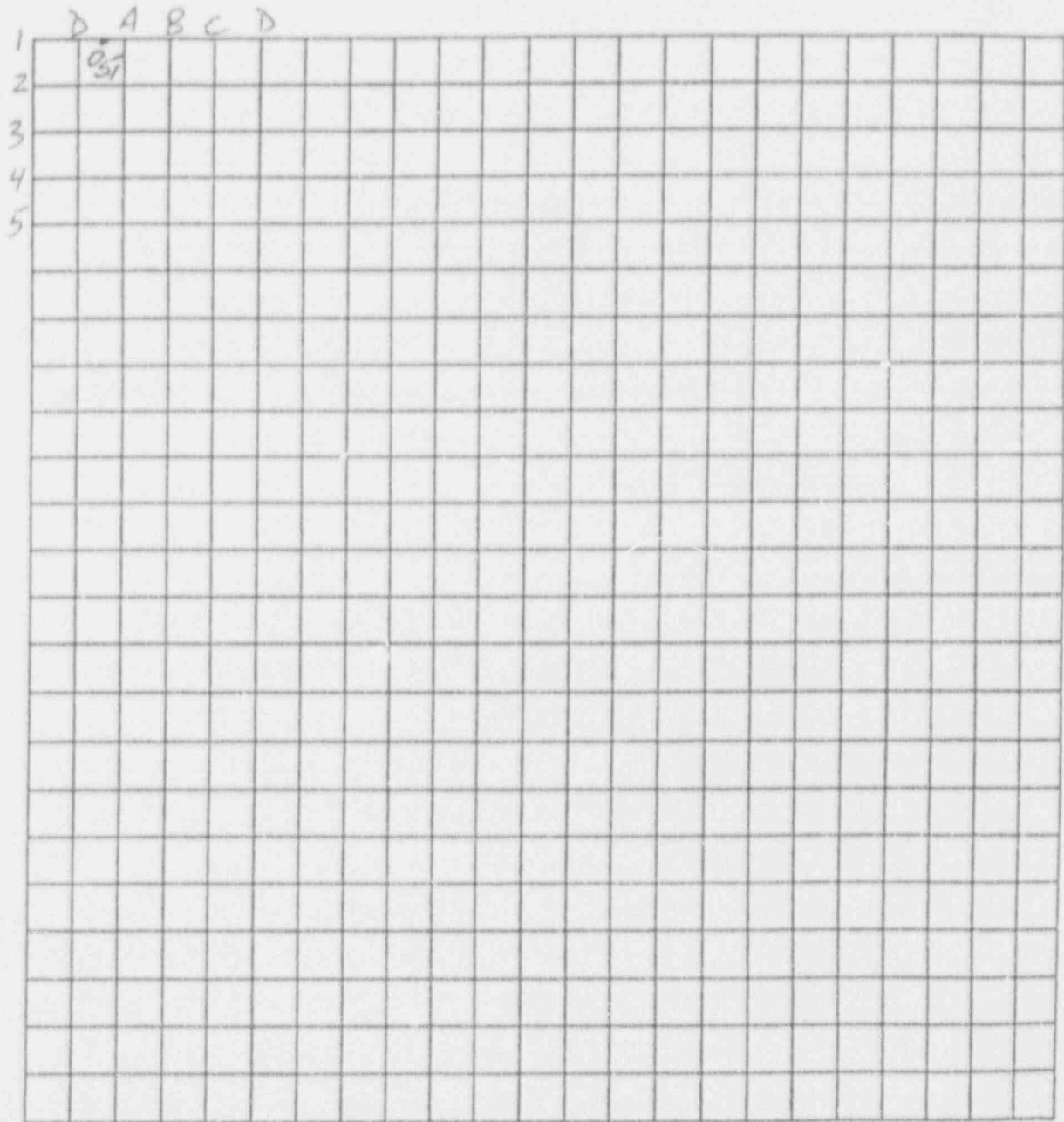
FIGURE 3

3-SWP-150-071-03(A)

COMPONENT ID C 43 (FW 8-1) EXAMINER John Jackson DATE 9-1-92

PLANT/UNIT Hollstone III SYSTEM Service Water

GRID SIZE 1" COLUMN - CIRCUMFERENTIAL LOCATION



ROW - AXIAL LOCATION

SKETCH OF COMPONENT SHOWING GRID LOCATIONS FOR THE EXTENT OF THE REDUCED THICKNESS AREAS

Notes

FILE NAME: SH21 C43 HSTRT
DOS FILE NAME: SH21C402.DAT
FILE TYPE: GRID
DATE & TIME CREATED: 09/01/92 09:40
DATE & TIME LAST MODIFIED: 09/01/92 10:14
FILE DESCRIPTION: 25212.210:3
ALLOW MANUAL READINGS: Y
UPPER LEFT LOCATION: A1
LOWER RIGHT LOCATION: D5
OPERATOR ID: J.JACOBSON
INSTRUMENT ID: 32810.941
PROBE ID: E22263
MATERIAL VELOCITY:
INCHES OR MM: I

READINGS

Main Section (0)

Rows : 5 Cols : 4 Direction : Clockwise Offset : 0

	A	B	C	D	RowMx	RowMn	Delta	Ave
1	0.142	0.153	0.157	0.139	0.157	0.139	0.018	0.148
2	0.150	0.150	0.161	0.153	0.161	0.150	0.011	0.154
3	0.150	0.150	0.153	0.153	0.153	0.150	0.003	0.152
4	0.150	0.153	0.153	0.153	0.153	0.150	0.003	0.152
5	0.150	0.168	0.153	0.153	0.168	0.150	0.018	0.156
	A	B	C	D	ColMx	ColMn	Delta	Ave
ColMx	0.150	0.168	0.161	0.153				
ColMn	0.142	0.150	0.153	0.139				
Delta	0.008	0.018	0.008	0.014				
Ave	0.148	0.155	0.155	0.150				

Section Summary

Maximum Reading = 0.168 (5, B) Average = 0.150
Minimum Reading = 0.139 (1, D) Standard Deviation = 0.006
Total Readings = 20

MILLSTONE II ULTRASONIC INSPECTION

DATA SHEET

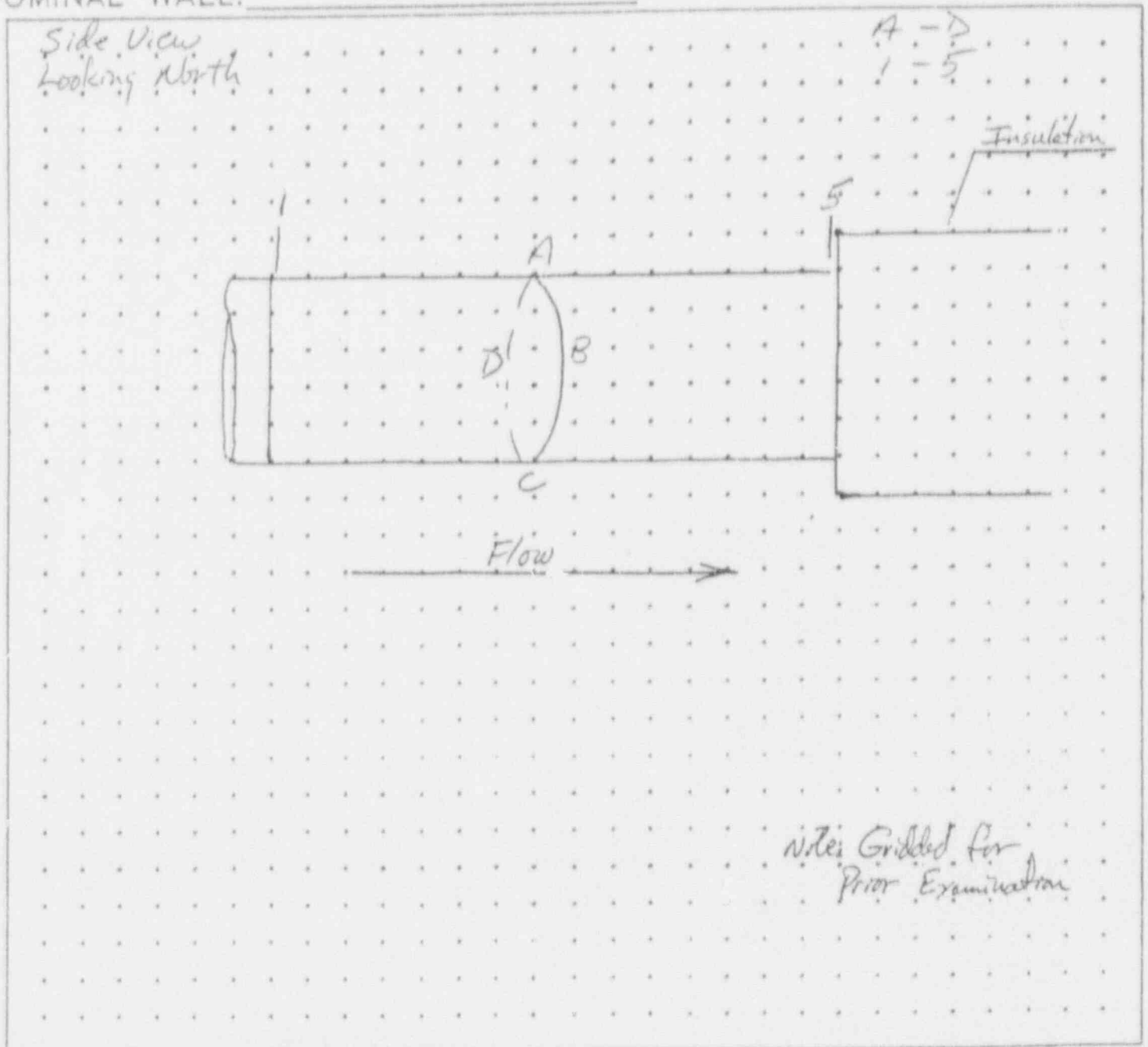
DRAWING NUMBER: 25212-21013 SH 21

LINE NUMBER: 3-SWP-150-071-03(A)

COMPONENT TYPE: Horizontal Straight COMPONENT NUMBER: C43/FW

SIZE: 1 1/2" SCHEDULE: Copper No. 40

NOMINAL WALL: NA



INSPECTOR: John J. [Signature]

DATE: 9-1-92

EROSION/CORROSION ULTRASONIC CALIBRATION DATA SHEET

(2) Plant Millsstone (3) Unit III (5) Component Designation C8 (FW12)
 (4) System Service Water (8) Iso. No. 2502-2103 (331) Line No. 3-SUP-150-071-03(A)
 (327) Diameter 1 1/2" (338) Grid Size 1" (339) T_{nce} N/A (340) T_{scr} N/A
 (341) Component Description Vertical Straight ** (63) Temp WA
 (344) Surface Unpainted

Instrument:

(16) Model No. ISK2D (17) S/N 32810-941 (124) Freq. 2.10MHz

Transducer:

(132) Mfg. KBA (133) S/N E22763 (131) Size .25" (134) Freq. 10MHz

Cal. Block:

(332) S/N N/A (333) Type Copper Nickel Provided By Cary Swider
.0865" - .2295"

(335) Block Thickness	(336) Instrument Reading	(136) Calibration Checks	
<u>.0865" - .2295"</u>	<u>.087" - .230"</u>	Initial Cal.	<u>1025</u>
<u>WA</u>	<u>N/A</u>	Intermediate	<u>N/A</u>
		Intermediate	
		Intermediate	
		Intermediate	
<u>.0865" - .2295"</u>	<u>.087" - .230"</u>	Final Cal.	<u>1037</u>

(342) Instrument Tolerance \pm 0.004" Intersects +100% Scan
 (345) Calibration Tolerance \pm 0.0005"
 (343) Grid Verified as correct J.J.

(49) Examiner:

(Print) John Jacobson (Sign) John Jacobson Level II Date 9-1-92

(50) Reviewer:

(Print) 2R MacNeil (Sign) 2R MacNeil Level III Date 9-2-92

*(Refer to Appendix B of NU NDE Procedure Manual to fill in each block)
 **For extreme temperatures only.

FIGURE 4

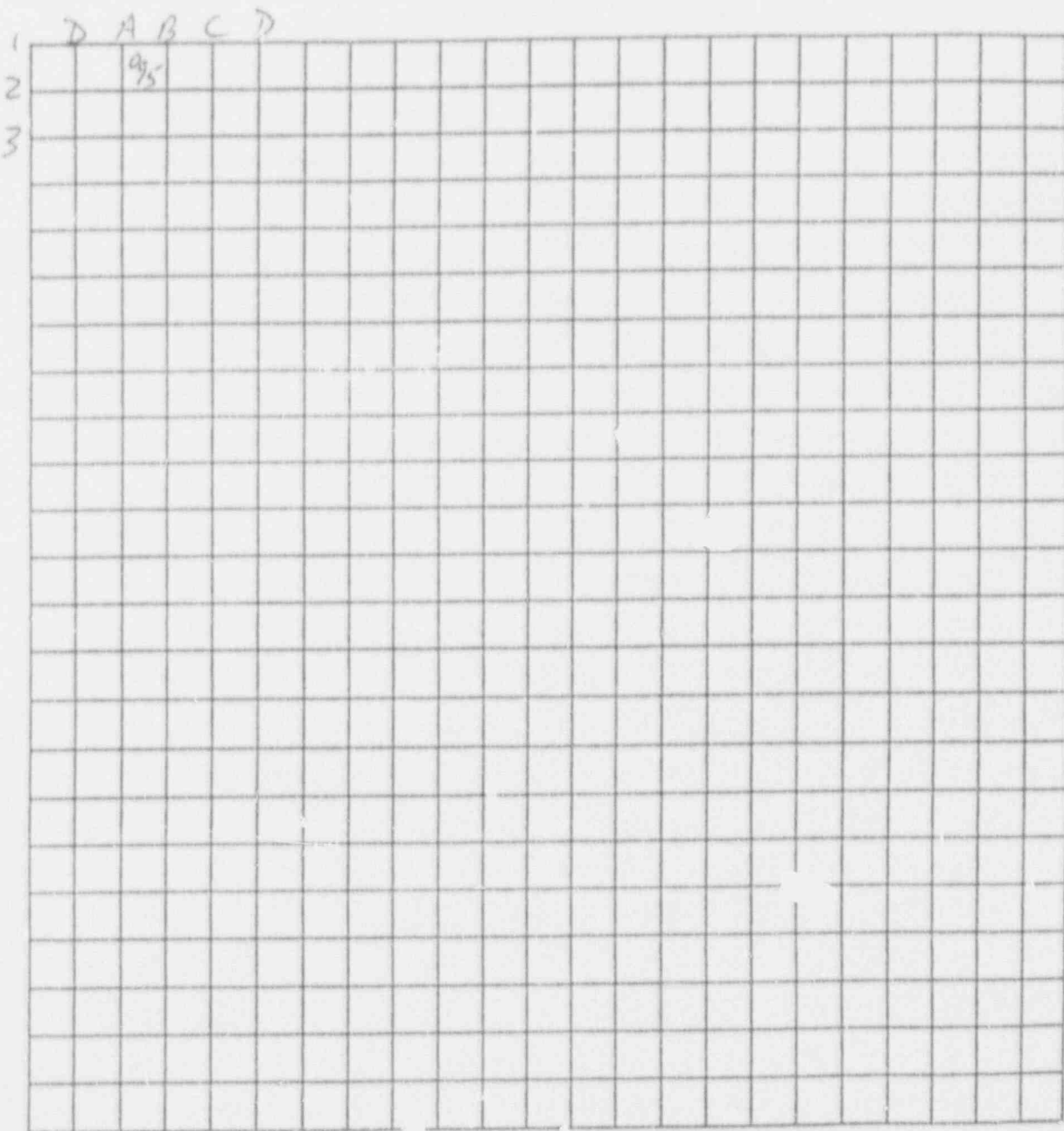
FIGURE 3

2-SWP-150-07-03(A-)

COMPONENT ID CS (Fw2) EXAMINER John Jacobson DATE 9-1-92

PLANT/UNIT Hillstone III SYSTEM Service Water

GRID SIZE 1" COLUMN - CIRCUMFERENTIAL LOCATION



SKETCH OF COMPONENT SHOWING GRID LOCATIONS FOR THE EXTENT OF THE REDUCED THICKNESS AREAS

Notes

FILE NAME: SH.21 C8 VSTRY
DOS FILE NAME: SH21C801.DAT
FILE TYPE: GRID
DATE & TIME CREATED: 09/01/92 09:42
DATE & TIME LAST MODIFIED: 09/01/92 10:30
FILE DESCRIPTION: 25212.21013
ALLOW MANUAL READINGS: Y
UPPER LEFT LOCATION: A1
LOWER RIGHT LOCATION: D3
OPERATOR ID: J.JACOBSON
INSTRUMENT ID: 32810.941
PROBE ID: E22263
MATERIAL VELOCITY:
INCHES OR MM: I

READINGS

Main_Section (0)

Rows : 3 Cols : 4 Direction : Clockwise Offset : 0

	A	B	C	D	RowMx	RowMn	Delta	Ave
1	0.117	0.146	0.150	0.150	0.150	0.117	0.033	0.141
2	0.150	0.150	0.146	0.150	0.150	0.146	0.004	0.149
3	0.151	0.150	0.142	0.151	0.151	0.142	0.011	0.150
	A	B	C	D	ColMx	ColMn	Delta	Ave
ColMx	0.151	0.150	0.150	0.151				
ColMn	0.117	0.146	0.142	0.150				
Delta	0.036	0.004	0.008	0.001				
Ave	0.149	0.149	0.146	0.151				

Section Summary

Maximum Reading = 0.151 (3, A) Average = 0.146
Minimum Reading = 0.117 (1, A) Standard Deviation = 0.010
Total Readings = 12

MILLSTONE II ULTRASONIC INSPECTION

DATA SHEET

DRAWING NUMBER: R5212-21013 SA 21

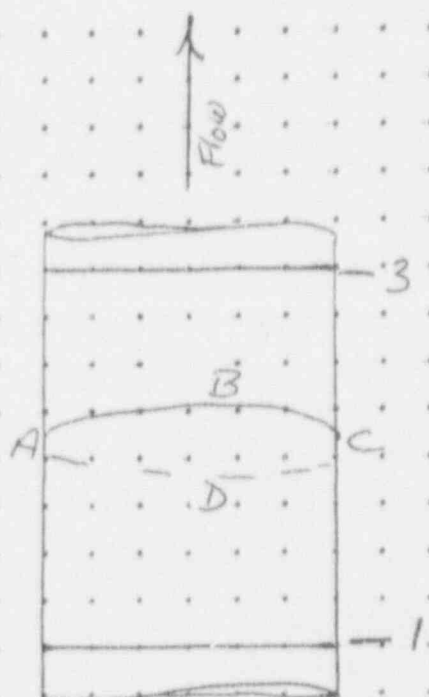
LINE NUMBER: 3-SWP-150-071-03(A-1)

COMPONENT TYPE: Vertical Straight COMPONENT NUMBER: C8(FWI)

SIZE: 1 1/2" SCHEDULE: Copperw.ckle

NOMINAL WALL: NA

Side View
Looking Northwest



A-D
1-3

Note: Gridded for
Prior Examination

INSPECTOR: [Signature]

DATE: 8-1-92

Daily Transducer Check. DATE 8-27-92

EXAMINER	PROBE SN.	TEST PC. #	UT MEASURED READING
CAREY LaSOYA	69125	1	.216"

TEST PIECE # 1- .217" t
TEST PIECE # 2- .151" t

Daily Transducer Check. DATE 8-28-92

EXAMINER	PROBE SN.	TEST PC. #	UT MEASURED READING
C. LA SOTA	69125	1	.217"

TEST PIECE # 1- .217" t
TEST PIECE # 2- .151" t

EROSION/CORROSION ULTRASONIC CALIBRATION DATA SHEET

(2) Plant Millstone (3) Unit III (5) Component Designation FW-6-1
 (4) System Service Water (8) Iso. No. 25212-21013 (331) Line o. 35WP-50-150 ^{5012 (CP-3000-x1)} 064-03 (B-)
 (337) Diameter 1.5" (338) Grid Size 1.0" (339) T_{nom} 0.151 T_{ser} N/A
 (341) Component Description TEE TO PIPE ** (22) temp. N/A
 (344) Surface O.D.

Instrument:

(16) Model No. 26 DL (17) S/N 91035508 (124) Freq. Broad band

Transducer:

(132) Mfg. Panametrix (133) S/N 69125 (131) Size .20" (134) Freq. 10 MHz

Cal. Block:

(332) S/N _____ (333) Type Pipe section

(335) Block Thickness	(336) Instrument Reading	(136) Calibration Checks	
.2295 - .0865	.230 — .0887	Initial Cal.	1225
.2295 - .0865	.232 — .0887	Intermediate	1250
		Intermediate	
		Intermediate	
		Intermediate	
.2295 - .0865	.233 — .0888	Final Cal.	1300

(342) Instrument Tolerance \pm 0.001 ^{of 2292}

(345) Calibration Tolerance \pm 0.002 ²⁰⁰⁻²⁸⁻¹²

(343) Grid Verified as correct kw

(49) Examiner:

(Print) Keith Wickens (Sign) [Signature] Level II Date 8-27-92

(50) Reviewer:

(Print) D.R. MacNeill (Sign) [Signature] Level III Date 8-28-92

*(Refer to Appendix B of NU NDE Procedure Manual to fill in each block)
 **For extreme temperatures only.

FIGURE 4

EROSION/CORROSION ULTRASONIC CALIBRATION DATA SHEET

(2) Plant MILLSTONE (3) Unit III (5) Component Designation FW-17
SH12 (EP-319004-4*1) 3-SWP-150-064-03(B-)
 (4) System SERVICE WATER (8) Iso. No. 25212-210LS (331) Line No. 35WP-50-150-006LS
 (337) Diameter 1.5" (338) Grid Size 1.0" (339) T_{nom} 0.151 (340) T_{scr} N/A
 (341) Component Description TEE To PIPE ** (63) Temp. N/A
 (344) Surface O.D.

Instrument:

(16) Model No. 26 DL (17) S/N 91035508 (124) Freq. Broad Band

Transducer:

(132) Mfg. PANAMETRIX (133) S/N 69125 (131) Size .20" (134) Freq. 10 MHz

Cal. Block:

(332) S/N _____ (333) Type PIPE SECTION

(335) Block Thickness		(336) Instrument Reading		(136) Calibration Checks	
.2295	-.0865	.234	-.083	Initial Cal.	1030
.2295	-.0865	.235	-.083	Intermediate	1100
				Intermediate	
				Intermediate	
				Intermediate	
.2295	-.0865	.235	-.083	Final Cal.	1115

(342) Instrument Tolerance ^{at .2295} ± ATA .001

(345) Calibration Tolerance ± ATA .005

(343) Grid Verified as correct CT

(49) Examiner:

(Print) CAREY LASOYA (Sign) Carey Lasoya Level II Date 8-27-92

(50) Reviewer:

(Print) RRMANWILL (Sign) RRManwill Level III Date 8-28-92

*(Refer to Appendix B of NU NDE Procedure Manual to fill in each block)
 **For extreme temperatures only.

FIGURE 4

FW-6-1 AND FW-8-1 "B" TRAIN

A 1 .150	A 2 .151	A 3 .157
B 1 .151	B 2 .157	B 3 .159
C 1 .154	C 2 .158	C 3 .152
D 1 .113	D 2 .112	D 3 .129

Low .108 High .159 .75" wide by 1" long low
area running along pipe.

FW-17

A 1 .150 B 1 .159 C 1 .157 D 1 .144

Low .144 High .159

FW-27

A 1 .098	B 1 .163	C 1 .151	D 1 .162
A 2 .136	B 2 .149	C 2 .154	D 2 .149
A 3 .164	B 3 .151	C 3 .166	D 3 .157
A 4	B 4	C 4	D 4
A 5 .149	B 5 .157	C 5 .160	D 5 .156
A 6 .151	B 6 .156	C 6 .163	D 6 .157
A 7 .163	B 7 .157	C 7 .162	D 7 .161
A 8	B 8 .155	C 8 .163	D 8 .157
A 9	B 9 .159	C 9 .163	D 9 .157
A 10 .162	B 10 .166	C 10 .164	D 10 .159
A 11 .151	B 11 .158	C 11 .161	D 11 .155
A 12 .152	B 12 .157	C 12 .161	D 12 .153
A 13 .161	B 13 .159	C 13 .163	D 13 .159

Low .098 High .166

APPROX 1/2" Pit at top of pipe

OK *Kate M. Miller* II 8-27-9:

EROSION/CORROSION ULTRASONIC CALIBRATION DATA SHEET

(2) Plant MILLSTONE (3) Unit III (5) Component Designation FW-54
SA 2 (CP 3190MB 541)
 (4) System SERVICE WATER (8) Iso. No. 2592 21013 (331) Line No 3SWP-9815-072-03 (A-)
 (337) Diameter 15" (338) ID Size 1" (339) T_{nom} 0.151 (340) T_{ser} N/A
 (341) Component Description ELBOW TO PIPE ******(63) Temp. _____
 (344) Surface O.D. UNPAINTED

Instrument:

(16) Model No. 26 DL (17) S/N 91035508 (124) Freq. Broadband

Transducer:

(132) Mfg. PARAMETRICS (133) S/N 69145 (131) Size 20" (134) Freq. 10 MHz

Cal. Block:

(332) S/N _____ (333) Type PIPE SECTION

(335) Block Thickness	(336) Instrument Reading	(136) Calibration Checks	
.2295 - .0865	.227	.089	Initial Cal. 0920
			Intermediate
			Intermediate
			Intermediate
			Intermediate
.2295 - .0865	.226	.086	Final Cal. 1015

(342) Instrument Tolerance $\pm 0.$.001

(345) Calibration Tolerance $\pm 0.$.0035

(343) Grid Verified as correct CL

(49) Examiner:

(Print) CAREY LA SOYA (Sign) Carey LaSoya Level II Date 8-28-92

(50) Reviewer:

(Print) DR MacNeil (Sign) DR MacNeil Level III Date 8-28-92

*(Refer to Appendix B of NU NDE Procedure Manual to fill in each block)
 **For extreme temperatures only.

FIGURE 4

FW-54

Unit III

7-1. 156
7-2. 155
7-3. obstruct
7-4. CLAMP
7-5. ↓
7-6. ↓
7-7. 151
7-8. 152
7-9. 156
7-10. 151
7-11. 152
7-12. 150

B1 . 153
B2 . 154
B3 obstruct
B4 CLAMP
B5 ↓
B6 ↓
B7 . 151
B8 . 148
B9 . 149
B10 . 147
B11 . 150
B12 . 147

C1 obstructed
C2 Tube Support
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12 ↓

D1 . 157
D2 . 156
D3 obstruct
D4 CLAMP
D5 ↓
D6 ↓
D7 . 160
D8 . 161
D9 . 159
D10 . 154
D11 . 156
D12 . 157

Casey to Soja
V.T. Level II
8-28-92