Attachment #1

SARGENT & LUNDY
ENGINEERS
CHICAGO

REPORT #EMD-029686
REV.: 00
DATE: 4/24/81

Project No.: 4536-00

SUMMARY REPORT
FOR
GUARDPIPE DYNAMIC GUIDE ASSEMBLIES

ILLINOIS POWER COMPANY
CLINTON UNIT - 1
PROJECT NO. 4536-00
REVISION-00

INTRODUCTION:

The methodology, assumptions and references used in calculating the total stresses at the location of the dynamic guides for all the guarded process pipes are outlined in this report. For the guardpipe and shoe assembly, the total stresses at the location of the dynamic guides considers the effect of local stresses due to thermal operating conditions by considering interaction between the process pipe, shoe assemblies, and guardpipe, and the effect of gross stresses due to dynamic and weight effects considering the same system interaction condition. However, for the process pipe the stresses summarized in this report are the local stresses due to thermal operating conditions only.

Two bounding cases are analyzed in calculating the worst stresses in the guardpipes, shoe assemblies and process pipes.

CASE I

The shoe assemblies are in an extreme case assumed to be in direct and uniform contact with the process pipe in the installed cold position.

CASE II

The shoe assemblies are in the other extreme case assumed to be in line contact along one edge (approximately 1/8" wide) along the axis of the process pipe in the installed cold position.

References:

1. Frequency evaluation of sleeve, process pipe and guide assembly (EMD-029083).

2. Revised guardpipe reactions and deflections at the drywell wall guides (EMD-029084).

3. Determination of boundary temperatures away from seismic guide local effects (EMD-029277).

4. Program for calculating temperatures within guardpipe assemblies (EMD-029279).

5. Methodology for calculating the temperature profile in penetration guardpipes (EMD-029150).

References: (cont'd)

6. Validation of 1TK*ZAP and 1TK*GAP Computer Programs (EMD-029278).

7. Program for determining the temperature profiles in supports and guardpipe (EMD-029276).

8. Local flexibilities and stress indices for thrust load... (EMD-029658).

9. Stress calculations for guarded process pipes (EMD-029500).

10. Revised sleeve stresses due to thrust and circumferential moment (EMD-029657).

11. Local stress analysis of process pipe due to line contact (EMD-029662).

12. Shoe assembly stresses due to thrust and circumferential moment (EMD-029685).

OUTLINE OF METHODOLOGY AND ASSUMPTIONS:

1. In Reference 1 a closed form solution of the lower bound frequencies for each sleeve, process pipe, and guide assembly is presented.

2. In Reference 2 reactions at the containment penetration assembly, drywell wall guide, and dynamic guide assembly are calculated. These calculations consider the effect of both static and dynamic loads.

3. In Reference 3 the temperatures in the guardpipes are calculated based on the maximum operating temperature of the process pipes, making the following assumptions.

   a) The heat transfer model considers a section through the guardpipes adjacent to the shoe assembly.

   b) The heat transfer mechanism considers heat dissipation from the exterior of the process pipe and process pipe insulation by conduction and radiation and heat dissipation from the outside surface of the guardpipe by convection and radiation.

OUTLINE OF METHODOLOGY AND ASSUMPTIONS: (cont'd)

4. In Reference 5 the temperatures in the guardpipes and shoe assemblies are calculated considering a section through the dynamic guide assembly by making the following assumptions.

   a) The shoe assemblies are assumed to act as fins conducting heat from the process pipe to the guardpipe.

   b) The initial conditions for the temperature distributions are obtained from References 3 and 4.

   c) The shoe assemblies are assumed to be either:

      (i) in direct and uniform contact with the process pipe in the cold position or

      (ii) installed with an air gap according to ECN-1424 Clinton-1. For the later condition, the heat transfer between the process pipe and the shoe assemblies is by conduction and radiation.

   d) The guardpipe is assumed to act as a fin distributing heat along the circumferential direction only.

5. The Reference 7 calculation uses the methodology developed in Reference 5 to determine the temperature profile along the shoe assemblies and along the guardpipes in the circumferential direction. This calculation furthermore determines the amount of expansion in the radial direction of the overall system which consists of the process pipe, shoe assemblies and guardpipe for each penetration for the two conditions discussed under 2(c) above.

6. The Reference 8 calculation computes the radial flexibility of the guardpipes considering all four shoes acting simultaneously on the guardpipe. This document also calculates the process pipe flexibility and stress intensification factors considering four shoe loads acting on the process pipes simultaneously.

7. Reference 9 contains the stress calculations for the guarded process pipes for the condition outlined as Case I in this document.

OUTLINE OF METHODOLOGY AND ASSUMPTIONS: (cont'd)

8. References 10 and 12 contain the stress calculations for the guardpipes and shoe assemblies respectively due to the condition outlined as Case II in this document.

9. Reference 11 contains the local stress calculations for the process pipes due to the condition outlined as Case II in this document.

CONCLUSIONS:

The local process pipe stress intensity for each guarded process pipe is summarized on Table 1. These local stresses will be added to the gross stresses in the process pipes due to other loads (in a separate report) and compared with the allowable stress values.

Tables 2 and 3 summarize the total stress intensities for each guarded process pipe at the shoe assembly and guardpipe respectively. For each penetration the total stress values are well within the allowable stress values and are therefore acceptable.

SARGENT & LUNDY
ENGINEERS
CHICAGO

TABLE 2

LOCAL, GROSS, AND TOTAL STRESSES AT THE SHOE ASSEMBLY

PENETRATION	LOCAL STRESSES (ksi)		GROSS STRESSES (ksi)	TOTAL STRESSES (ksi)		ALLOWABLE STRESS (ksi)
	CASE I	CASE II	CASES I & II	CASE I	CASE II	
5,6,7,8	1.4	10.31	1.6	3.0	11.91	56.1
9,10	1.38	7.13	1.46	2.84	8.59	56.1
14	2.49	8.11	0.94	3.43	9.05	56.1
42	0.68	1.94	3.44	4.12	5.38	56.1
43	3.93	15.22	2.67	6.60	17.89	56.1
45	1.99	4.89	1.93	3.92	6.82	56.1
60	2.98	15.27	2.93	5.91	18.2	56.1

TABLE 3

LOCAL, GROSS, AND TOTAL STRESSES ON THE GUARDPIPE AT THE CENTER OF THE SHOE ASSEMBLY

PENETRATION	LOCAL STRESSES (ksi)		GROSS STRESSES (ksi)	TOTAL STRESSES (ksi)		ALLOWABL STRESS (ksi)
	CASE I	CASE II	CASES I & II	CASE I	CASE II	
5,6,7,8	12.51	22.89	1.65	14.16	24.54	56.1
9,10	14.36	22.19	1.37	15.73	23.56	56.1
14	17.8	21.6	1.17	18.97	22.77	56.1
42	1.91	2.31	6.17	8.08	8.48	56.1
43	17.44	26.86	2.28	19.72	29.14	56.1
45	11.48	15.94	7.28	18.76	23.22	56.1
60	10.27	15.36	6.46	16.73	21.82	56.1

FILE COPY INTER-OFFICE MEMORANDUM

Attachment #2

From M. A. Atia - 23 (X7004)

Date April 24, 1981

Project No. 453_-00

Dept./Div. Mechanical/Engineering Mechanics

Spec. No.

File No. EMD#030051

Page No. 1

Client Illinois Power Co. Stn. Clinton Unit 1

Subject Stress Evaluations for Guarded Process Pipe

To: R. C. Heider - 23

CC: H. M. Sroka - 23
E. B. Branch - 30
G. T. Kitz - 30
A. E. Maligi - 30
P. R. Olson - 30
D. K. Schopfer - 23
R. D. Raheja - 17
EMD File - 30

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JUL 24 1981
ILLINOIS POWER COMPANY
NUCLEAR STATION ENGINEERING
DEPARTMENT

References:

1. Interoffice Memorandum from R. D. Raheja to R. C. Heider dated April 13, 1981 under the same subject.

2. Piping Analysis Stress Reports with accession numbers as indicated for each subsystem in the corresponding Process Pipe Stress Summary Table (attached to this memorandum)

3. G. E. Main Steam Preliminary Stress Report (attachment to G.E. Letter No. SL-915, April 18, 1980.

4. Baldwin Associates - IPC Nonconformance Report NCR 4151.

Attached please find the stress evaluations for the guarded process pipe which includes a summary of the evaluations as per the ASME Section III Code and Tables detail the stresses for each process pipe. Also attached is a table for the Buckling Load Calculations for each process pipe to be compared to the axial friction load.

It is important to indicate that the final stress evaluation for the involved subsystems are not available at this time, however if the present condition of the process pipe guides are acceptable (per NCR 4151), then the attached stress evaluation shall be included in the final stress report for each process pipe subsystem.

Should you have any questions, please call me.

MAA:mar
Attachment

Stress Evaluation for the Process Pipe

The stresses due to the friction and restricting pipe displacements at the shoe locations of the guide have been evaluated as "secondary stresses."

As per NB-3653.6 for Simplified Elastic Plastic Discontinuity Analysis:

If equation 7 (in the new numbering or (10) in the old numbering) cannot be satisfied for all pairs of load sets, equation 9(12) and 10(13) shall be met:

$$C_2 \frac{Do}{2I} M^* \leq 3\ Sm \text{ ----- } (9)$$

where M* is the moment due to the thermal loadings, anchor movement loads.

The evaluation of equation 10(13) cannot be done at this time due to lack of thermal transient information. However the thermal, displacement, friction and anchor displacement stresses are excluded from this equation as per NB-3653.6 (b). In the case we have, if we assume that the pipe stress at the guide locations and penetration anchor do not meet equation 7(10) then the stress evaluation of equation 9(12) is permitted at these locations.

The stresses of the process pipe at the guide and penetration anchor then evaluated considering adding the following loads to meet equation 9(12):

1. Thermal expansion
2. Anchor displacements
3. Seismic displacements
4. Pipe Local Stress - Shoe Full Contact (Line Contact)
5. Stresses due to restricting the pipe from radial expansion at the guide locations due to "no gap".

The attached tables were formed for each subsystem to sum up the findings.

Also attached is a list of Buckling load for each pipe which found to be much higher than the friction load.

Conclusion

1. The above secondary stresses are far below the allowables of equation 9 (12).

2. The overall effect on the piping subsystems are not significant.

STRESSES IN THE PROCESS PIPE

SUB-SYSTEM: MS-01 ACC. NO: G.E. Report

MATERIAL (PROCESS PIPE) SA-106 Sm 19.400

PENETRATION #5

Stresses in Detail	Guide (1) Node #	Guide (2) Node #	Penet. Anchor Node #
Thermal (max.)			
Weight			
Pressure			
Dyn. B (Level B spectra)			
Dyn. C (Level C spectra)			
AP Load			
Seismic Disp. B			
Seismic Disp. C			
Pipe Disp. (Gap at one or two shoe)			
(1) shoe			
(2) shoe	(4000 psi is assumed)		
Local Stress Shoe Full Contact (Line Contact)**	(13022) 7920	(13022) 7920	
Equation 9 stresses	(maximum between isolation valves 33,300)		
Equation 10 stresses		Not Evaluated	
Equation $12_{(1)}$*	(From GE Report - 11,147 is max.)		
Equation $12_{(2)}$*	(Addding 11,147 + 4000 + 7920 = 23,067 11,147 + 4000 + 13022 = (28,169)		
Equation 13 stresses			

*$12_{(1)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $Disp._{(1)}$

$12_{(2)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $Disp._{(2)}$

**All stresses between brackets are line Line Contact

STRESSES IN THE PROCESS PIPE

SUB-SYSTEM: MS-05 ACC. NO: 026307

MATERIAL (PROCESS PIPE) SA333 GR6 Sm 18.1 KSI

PENETRATION # MC-45

Stresses in Detail	Guide (1) Node #	Guide (2) Node #	Penet. Anchor Node #
Thermal (max.)	384	384	553
Weight	119	1259	1108
Pressure	2497	2497	2497
Dyn. B (Level B spectra)	615	1961	3881
Dyn. C (Level C spectra)	624	2053	3257
AP Load	2271	961	1651
Seismic Disp. B	159	153	365
Seismic Disp. C	278	250	597
Pipe Disp. (Gap at one or two shoe)			
(1) shoe	7	13	37
(2) shoe	14	26	74
Local Stress Shoe Full Contact (Line Contact)**	(5848) 3110	(5848) 3100	-
Equation 9 stresses (B)	3192	4928	7133
(C)	3198		6543
Equation 10 stresses	13455	15744	27166
Equation $12_{(1)}$*	(6398) 3660	(6398) 3660	955
Equation $12_{(2)}$*	(6405) 3667	(6411) 3673	992
Equation 13 stresses			

* $12_{(1)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $Disp._{(1)}$

$12_{(2)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $Disp._{(2)}$

**All stresses between brackets are Line Contact Stresses

STRESSES IN THE PROCESS PIPE

SUB-SYSTEM: 1FW-01 Rev. 2 ACC. NO: 026275

MATERIAL (PROCESS PIPE) SA106 Sm 19450 at 450 F

PENETRATION # MC-10

Stresses in Detail	Guide (1) Node #	Guide (2) Node #	Penet. Anchor Node #
Thermal (max.)	93		196
Weight	12		251
Pressure	5589		5589
Dyn. B (Level B spectra)	477		883
Dyn. C (Level C spectra)	417		755
AP Load	181		216
Seismic Disp. B	664		1411
Seismic Disp. C	1079		2318
Pipe Disp. (Gap at one or two shoe)			
(1) shoe	236		445
(2) shoe	472		890
Local Stress Shoe Full Contact (Line Contact)**	(4273) 2700		
Equation 9 stresses (B)	6420		6554
(C)	6380		6448
Equation 10 stresses	20363		29528
Equation $12_{(1)}$*	(5266) 3693		2052
Equation $12_{(2)}$*	(5502) 3929		2497
Equation 13 stresses			

* $12_{(1)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $Disp._{(1)}$

$12_{(2)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $Disp._{(2)}$

**All stresses between brackets are Line Contact Stresses

STRESSES IN THE PROCESS PIPE

SUB-SYSTEM: RH-34 ACC. NO: 026052

MATERIAL (PROCESS PIPE) SA-333 GR6 Sm 18.1 KSI

PENETRATION # 14

Stresses in Detail	Guide (1) Node #	Guide (2) Node #	Penet. Anchor Node #
Thermal (max.)	1991		2465
Weight	359		350
Pressure	4866		4866
Dyn. B (Level B spectra)	179		271
Dyn. C (Level C spectra)	5213		319
AP Load	629		380
Seismic Disp. B	134		590
Seismic Disp. C	308		1281
Pipe Disp. (Gap at one or two shoe)			
(1) shoe	388		627
(2) shoe	776		1254
Local Stress Shoe Full Contact (Line Contact) **	(12306) 7440		-
Equation 9 stresses (B)	5364		5435
(C)	5397		5482
Equation 10 stresses	18985		26136
Equation 12 $_{(1)}$ *	(14819) 9953		3682
Equation 12 $_{(2)}$ *	(15207) 10341		4309
Equation 13 stresses			

* $12_{(1)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE Disp. $_{(1)}$

$12_{(2)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE Disp. $_{(2)}$

**All stresses between brackets are Line Contact Stresses

STRESSES IN THE PROCESS PIPE

SUB-SYSTEM: RI-10 ACC. NO: 027550

MATERIAL (PROCESS PIPE) SA333 Sm 17700 at 575 F

PENETRATION #42

Stresses in Detail	Guide (1) Node #	Guide (2) Node #	Penet. Anchor Node #
Thermal (max.)	909	650	1036
Weight	1239	103	383
Pressure	3211	3211	3211
Dyn. B (Level B spectra)	4163	1581	10[illegible]5
Dyn. C (Level C spectra)	6051	2287	1590
AP Load			
Seismic Disp. B	162	252	207
Seismic Disp. C	334	521	427
Pipe Disp. (Gap at one or two shoe)			
(1) shoe	0	7	21
(2) shoe	0	14	42
Local Stress Shoe Full Contact (Line Contact)**	(2298) 1180	(2298) 1180	-
Equation 9 stresses (B)	8439	4886	4577
(C)	10320	5593	5076
Equation 10 stresses	14496	9366	12449
Equation $12_{(1)}$*	(3369) 2251	(3207) 2089	1264
Equation $12_{(2)}$*	(3369) 2251	(3214) 2096	1285
Equation 13 stresses			

* $12_{(1)}$ TH. + SEIS. DISP. (OBE) + Local S..ess + SHOE $\text{Disp.}_{(1)}$

$12_{(2)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $\text{Disp.}_{(2)}$

**All stresses between brackets are Line Contact Stresses

STRESSES IN THE PROCESS PIPE

SUB-SYSTEM: RI-01 ACC. NO: 028076

MATERIAL (PROCESS PIPE) SA333 Sm 18.1 KSI

PENETRATION # MC-43

Stresses in Detail	Guide (1) Node #	Guide (2) Node #	Penet. Anchor Node #
Thermal (max.)	1942		1806
Weight	761		389
Pressure	5391		5391
Dyn. B (Level B spectra)	2120		1513
Dyn. C (Level C spectra)	2097		1495
AP Load	1983		2540
Seismic Disp. B	217		797
Seismic Disp. C	448		1609
Pipe Disp. (Gap at one or two shoe)			
(1) shoe	97		232
(2) shoe	194		464
Local Stress Shoe Full Contact (Line Contact)**	(25060) 11830		-
Equation 9 stresses (B)	8127		7226
(C)	8127		7226
Equation 10 stresses	14103		19485
Equation $12_{(1)}$*	(27316) 14086		3551
Equation $12_{(2)}$*	(27413) 14183		3783
Equation 13 stresses			

* $12_{(1)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $\text{Disp.}_{(1)}$

$12_{(2)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE $\text{Disp.}_{(2)}$

**All stresses between brackets are Line Contact Stresses

STRESSES IN THE PROCESS PIPE

SUB-SYSTEM: RT-01 Rev. 1 EMD 011912

MATERIAL (PROCESS PIPE) SA106 GR.B Sm 1700 psi at 575 F

PENETRATION # MC-60

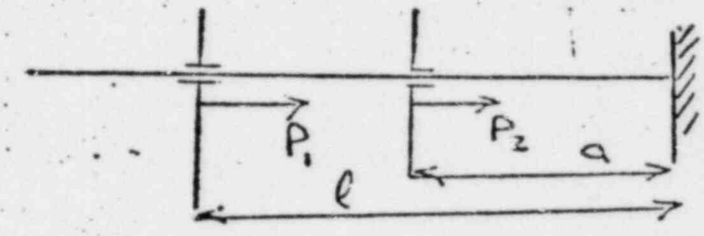
Stresses in Detail	Guide (1) Node #	Guide (2) Node #	Penet. Anchor Node #
Thermal (max.)	1001	Not Available	3082
Weight	1189	N/A	1191
Pressure	3684	3684	3684
Dyn. B (Level B spectra)	1221	N/A	2142
Dyn. C (Level C spectra) (SRV R.S)	2285	N/A	3670
AP Load			
Seismic Disp. B			
Seismic Disp. C			
Pipe Disp. (Gap at one or two shoe)			
(1) shoe	7	62	167
(2) shoe	14	124	334
Local Stress Shoe Full Contact (Line Contact)**	(10687) 5170	(10687) 5170	---
Equation 9 stresses (B)	7956	Not Available	9922
Equation 10 stresses (C)	26939	Not Available	47656
Equation $12_{(1)}$*	(11695) 6178	Not Available	3249
Equation $12_{(2)}$*	(11702) 6185	Not Available	3416
Equation 13 stresses			

* $12_{(1)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE Disp. $_{(1)}$

$12_{(2)}$ TH. + SEIS. DISP. (OBE) + Local Stress + SHOE Disp. $_{(2)}$

**All stresses between brackets are Line Contact Stresses

BUCKLING CALCULATIONS



$$P^1 = K_1 \frac{\pi^2 EI}{\ell^2}$$

$(a = 0 \ , \ K_1 = 1.0)$
$P_2 = 0$

$E = 27.9 \times 10^6$

Subsystem	a/ℓ	P2/P1	K1	ℓ (in)	$P1 = K_1 \frac{\pi^2 EI}{\ell^2}$	I
FW-01	0	-	1.0	196.32	3.27×10^7 #	4585
RH-34	0	-	1.0	199.5	3.02×10^7 #	4360
RI-01	0	-	1.0	156"	1.196×10^6 #	105.7
MS-05	0.48	1.0	.65	255	1.376×10^4	5.0
RI-10	0.46	1.0	.65	191	5.741×10^4	11.7
RT-01	0.46	1.0	.65	191	2.041×10^4	41.6
MS-01	0	-	1.0	221	3.191×10^7	5672

Reference :
Data taken from Roark, 5th Edition, Page 535, Case 1C

BALDWIN ASSOCIATES
ILLINOIS POWER COMPANY
CLINTON POWER STATION
1 CPS UNIT ______

COPY

Attachment #3
NONCONFORMANCE REPORT

12. NCR No. 4151
SHEET 1 OF 2? 18 7-13-81 JWB

2. PREPARED BY/DATE: R. L. Neeb 2-27-81	3. DEPARTMENT: Piping	4. TRAVELER/REPORT REF: RT-31B
5. [X] SAFETY [ ] NON-SAFETY [ ] AUG D/FP	6. SYSTEM: RT SUBJECT: Gap between Seismic Guides & Process Pipe	7. REF DOCUMENT/REV: MO-6-1000 sht. 6 R/H

8. NONCONFORMANCE

The Seismic guides for line 1RT01B6 were installed and inspected per the attached portion of B.A. traveler RT-31-B. The Seismic guides were set in position using .010" shim stock. The guides were tack welded with the shims in place. Upon completion of the tacks, the shims were removed and the guides were welded to the guard pipes. On February 27, 1981, the gap between the drywell side guide and the ~~guard~~ process pipe was reinspected with the results shown on the attached Q.C. inspection report. 3/2/81

9. RECOMMENDATION ASSIGNMENT: [X] PE [X] TS [ ] QC [ ] OTHER ______

10. PROJ. ENGR. REVIEW/DATE: 4/27/81

11. ASME SECTION III [X] YES [ ] NO

13. HOLD TAG IDENT: NUMBER N/A OTHER ______

14. Q.C. MGR. REVIEW/DATE: William J. O'Brien 3-2-81

15. CLASSIFICATION [X] USE-AS-IS [ ] REWORK [ ] REPAIR [ ] REJECT

RECEIVED JUL 17 1981 ILLINOIS POWER COMPANY ... STATION ENGINEERS DEPARTMENT

16. RECOMMENDATION

Submit to Sargent and Lundy for verification that the present condition is acceptable.

CHS 3/2/81
CHS 3/2/81

CORRECTIVE ACTION (IF REQ'D): N/A At This Time

PROJ. ENGR./DATE: 3/2/81

17. DOCUMENT REVISION REQ'D [ ] YES [X] NO — AFFECTED DOCUMENT(S)/NUMBER(S): [ ] DWG [ ] SPEC [ ] OTHER — N/A

18. RECOMMENDATION IMPLEMENTED [ ] YES DATE N/A	19. DATE DISP. NEEDED 3-2-81	20. BA REC. DATE 3-2-81 2/27/81	21. PE APPROVAL/DATE 3/2/81
22. QC MGR REVIEW/DATE William O'Brien 3-2-81	23. CONDITIONAL ACCEPT TAG No. N/A 3-2-81	24. ANI REVIEW/DATE M. J. King 3-2-81	25. IPC SUPVR OF CONST/DATE 3/3/81

26a. IPC SUPVR. OF CONSTR. COMMENTS: N/A.

26b. IPC ENGINEERING DISPOSITION:
Accept BA recommendation, The present condition is acceptable based on the following S&L documents, EMD-029600, EMD-029657, EMD-029662 and verbal confirmation of acceptable test results on movement of process pipe. (See attach pages 8 thru 18 for test results - JWB 7-13-81)

27. IPC FIELD ENG. APPROVAL/DATE: 7/13/81

28. S&L ACCEPTANCE REFERENCE/DATE: R. C. Heider 6-9-81 / Jerome W. Blattner 7-13-81

29. FINAL INSPECTION RESULTS:
REPORT No. REF:
[ ] CONFORMING [ ] NON-CONFORMING
SIGNATURE AND DATE ______

31. Q.C. MGR. FINAL REVIEW/DATE:

32. ANI FINAL REVIEW/DATE:

33. Q.A. MGR. FINAL REVIEW/DATE:

30. SEE NCR #

34. NCR CLOSED BY/DATE:

FORM JV-143 (4-80)

NCR [illegible]
sht 2 of 18
7-13-81 JWB

FABRICATION/INSTALLATION TRAVELER INFORMATION SUPPLEMENT

	QC	TS
1. Line up and weld first section of guard pipe.	[signature] 7/80	
2. Temporarily place bellows hardware on respective guard pipe.	[signature] 7/80	
3. Temporally attach seismic shoes to guard pipe(s) in a retracted position.	[signature] 7/80	
4. Install process line through penetration and all guard pipe sections.	[signature] 7/80	
5. Line up and tack weld head fitting to penetration. Weld out may not proceed until step 6 is completed.	[signature] 4/10/80	
6. Insulate first section of process line between seismic shoes and head fitting. Note: Clearance of seismic shoes may require this step to proceed step 4.	QC [signature] 6/80	
7. Set, shim and weld seismic shoes. Remove shims.	QC [signature]	
8. If a second set of seismic shoes are required, repeat steps 1 & 6 for the respective section of guard pipe.	QC [signature] 11/3/80	
9. Align and weld last section of guard pipe.		
10. Align and weld bellows as follows:		
a. Drywell guide to drywell penetration.		
b. Bellows to drywell guide.		
c. Attachment ring to bellows.		
d. Guard pipe to attachment ring.		
11. Insulate remainder of process line. Note: This may precede Item #9.		

FORM JV-488-2 (11/78)

BALDWIN ASSOCIATES

FABRICATION/INSTALLATION TRAVELER

ILLINOIS POWER COMPANY CPS # 1

TRAVELER NUMBER BT-31-B

PAGE 5 OF ___

![BA logo] **BALDWIN ASSOCIATES**

CIVIL/STRUCTURAL INSPECTION Page 3 Z-718
REPORT NO. ..33

SAFETY RELATED YES ☑ NO ☐

Clinton Power Station Unit 1 & 2
Clinton, Illinois
Illinois Power Company

Date 2/23/81
Shift 1st

References ~~BOB~~ (RA): Trav #RT-31-B, Drawing #1G33-D305 R/1

Description of Inspection On 2/27/81, measurements were taken to measure the gap between the ~~Main S~~ (MC 3/2/81) Seismic Guides just North of Weld # 1G33-D305-3 and Spool #1RT-31-6. The measurements were taken using Calibrated Feeler Gauges #QC-130-4, QC-130-7, QC-130-9 (Calibration Expiration Date 4/30/81) and QC-125 (Expiration Date 6/8/81). The readings were obtained by inserting the Feeler Gauges from the "South End" of the Guides, and measuring the depth of penetration of the gauge. Accurate readings of the "North End" of the Guides could not be obtained due to inaccessability.

CC: J. Findley
R. Campbell (IPC)
B. Hermann
R. Webb
D. O'Brien
L. Colbert
Trav #RT-31-B

Inspector [signature]

Level [signature]

White - Q.A. Files
Yellow - Q.C. Files
Green - Project Engineer
Pink - Originator

NCR # 4151
INSP REPORT # 3133
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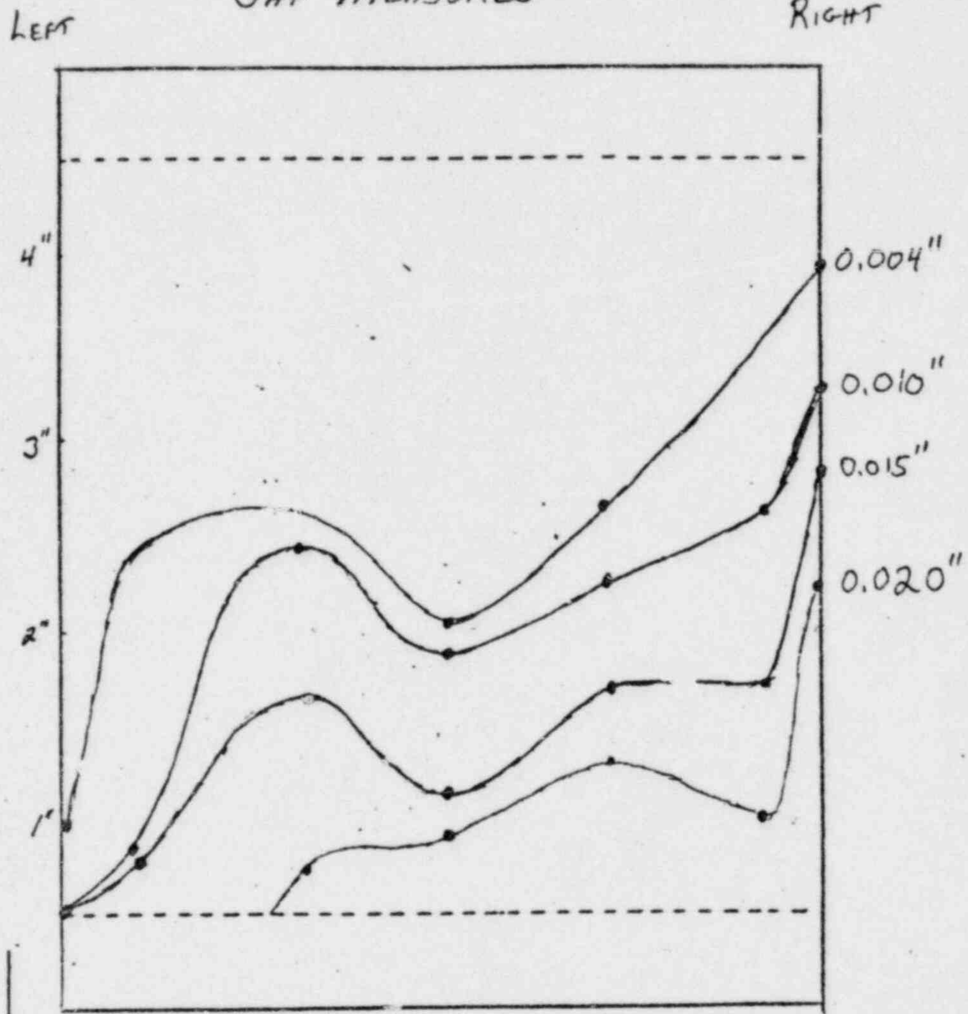
GAP MEASURED



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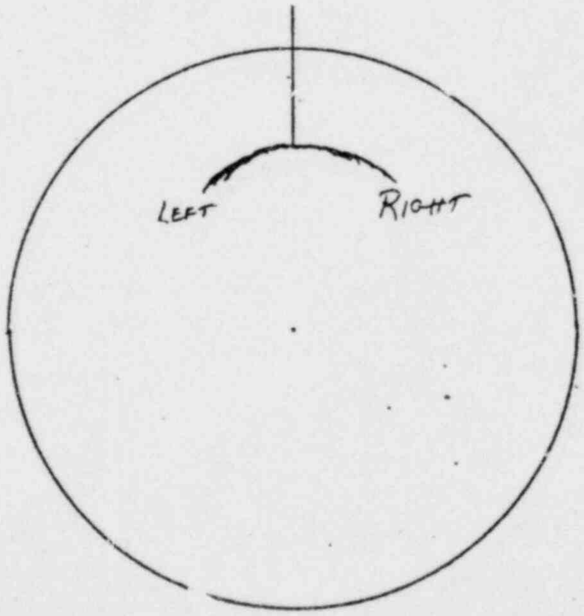
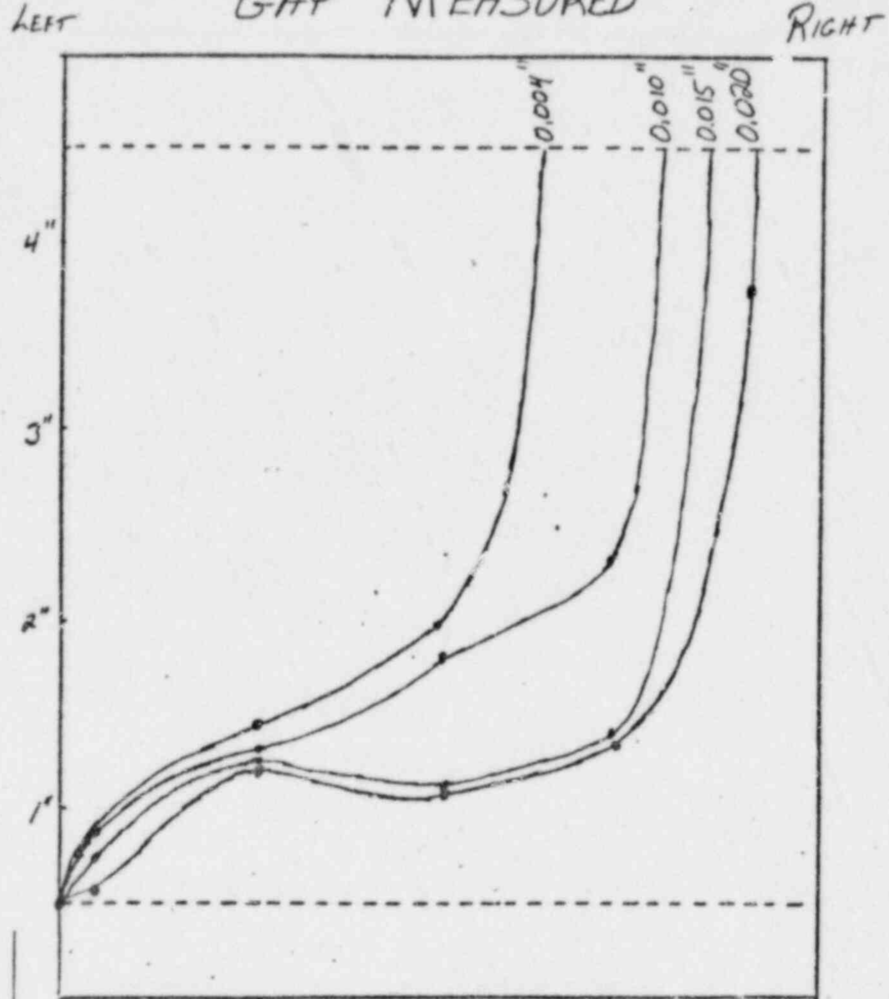
WELD #
1G33-D305-3



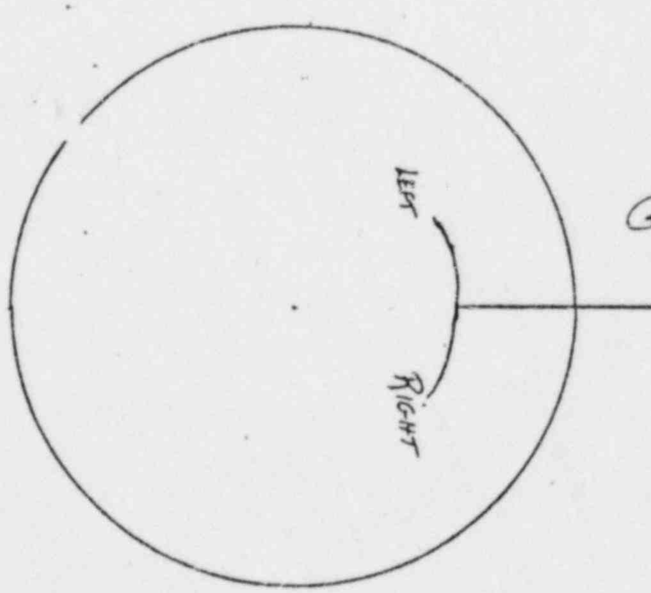
GUIDE MEASURED
1G33-D-305-D

GAP MEASURED



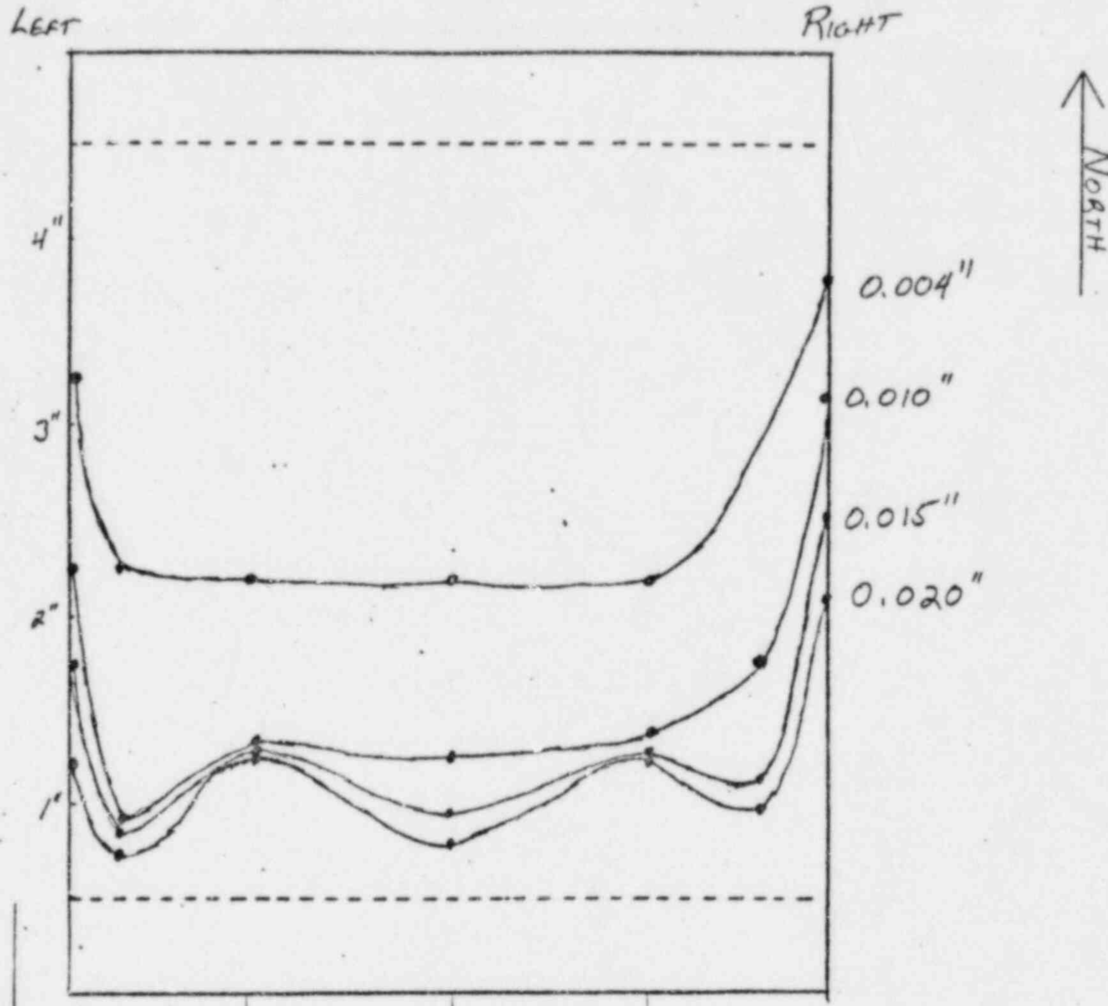
NORTH

WELD #
1G33-D305-3



GUIDE MEASURED
1G33-D305-F

Gap Measured



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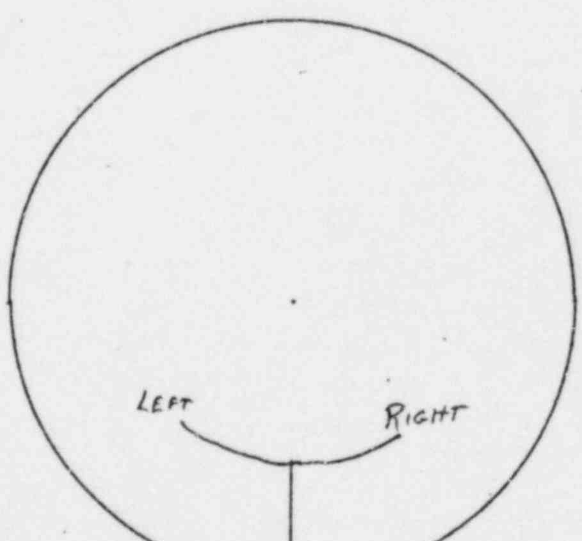
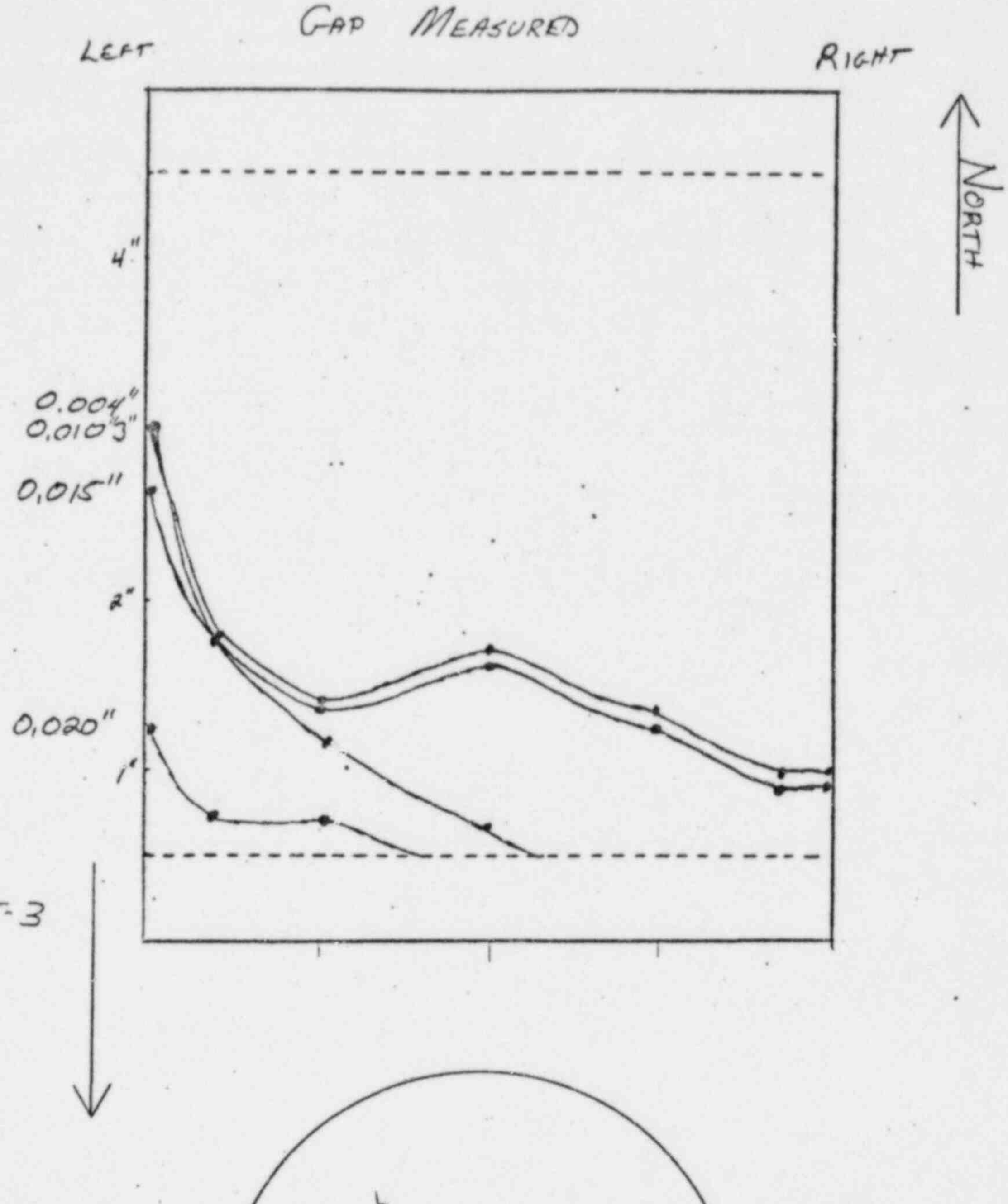
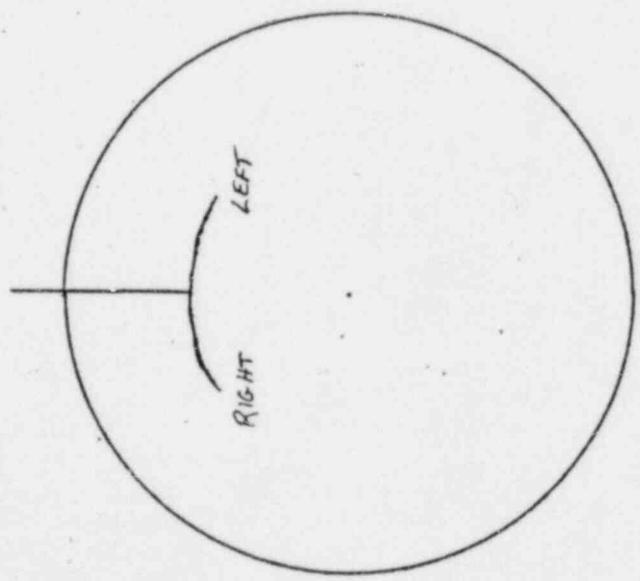


Guide Measured
1G33-D305-E





GUIDE MEASURED
1G33-D305-G

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FABRICATION / INSTALLATION TRAVELER

OPERATION SEQUENCE

Column headings (repeated for each of 8 column groups): 11. REPORT REQUIRED / RPT RQD | 15. ANI HOLD | 11. SEQUENCE REQUIRED / SEQ RQD | 8. TS/DATE | ANI/DATE | 9. QC/DATE | ANI/DATE

11. WELDING OPERATION AND PROCEDURE DATA

- A.) WELDING PROCEDURE
- B.) AWS FILLER MATERIAL CLASS
- C.) BTS PR SPEC 497
- D.) BASE MATERIAL SPECS
- E.) JOINT DIAMETER
- F.) WALL THICKNESS OR THICKNESS RANGE
- G.) CLEANLINESS & FITUP
- H.) INERT GAS BACKING PURGE
- I.) PREHEAT (MIN.) °F
- J.) INTERPASS (MAX.) °F
- K.) ROOTPASS (VISUAL)
- L.) ROOTPASS (NDE)
- M.) VISUAL & RELEASE FOR NDE
- N.) MAGNETIC PARTICLE
- O.) LIQUID PENETRANT
- P.) MAGNETIC PARTICLE / LIQUID PENETRANT
- Q.) RADIOGRAPHY
- R.) ULTRASONICS
- S.) LEAK DETECTION
- T.) POSTWELD HEAT TREATMENT
- U.) TEMPORARY ATTACHMENTS (INSTALL)
- V.) TEMPORARY ATTACHMENTS (REMOVE)
- W.) WELD COMPLETED

9. SUBASSEMBLY

14. OPERATIONS ON FABRICATED / INSTALLED ITEMS

- FAB/INST. AREA CONDITIONS
- PRELIMINARY DIMENSIONAL CHECK
- LOCATION AND ORIENTATION
- ALIGNMENT / CONFIGURATION
- BOLTING AND FASTENINGS
- SUPPORTS AND RESTRAINTS
- FINAL DIMENSIONS
- FINAL CLEANING
- PROTECT SLS. & COVERS (FAB.)
- PROTECT SLS. & COVERS (INST.)
- BENDING

*1 NOTE — [handwritten initials and date, illegible]

INITIAL REVIEW

10. REV	10. ENGR/DATE	13. T.S./DATE	17. Q.C./DATE	18. ANI/DATE	19. GE/DATE	20. STATUS/COMMENTS
0	B. Cook 6/3/81	M.W.B. 6/3/81	R. Campbell 6/4/81	J/A RC 6/4/81	7/1/81 6/4/81	PRE-LOAD INVESTIGATION

21. FINAL REVIEW

	NAME	DATE
FAB. SUPT.		
INS'L SUPT.	Jerry Lee	6-5-81
ENGR.		
T.S.		
Q.C.		
A.N.I.		

BALDWIN ASSOCIATES

ILLINOIS POWER COMPANY - CPS # 1
TRAVELER No. 1G33-D305
FABRICATION ☐ AREA/BLDG. CONTAINMENT
INSTALLATION ☐
CLASS MC(NE)
EQUIP./SYS. 1G33
SUBASSEMBLY N/A
K-SPEC REF 2882 AMD 6
A.S.M.E. YES ☒ NO ☐
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FORM JV-486 (2/81)

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16. WELD NUMBER	ITEM/ASSEMBLY DESCRIPTION (TYPE & SIZE)	SERIAL NUMBER ASSEMBLY/PIECE OR HEAT NUMBER	RIR NUMBER	MATERIAL REQUISITION NUMBER	Q.C. INSP. INITIAL/DATE	ANI INITIAL/DATE	ANI HOLD	12. WELD JOINT	WELD MAT'L TYPE	HEAT NUMBER	LOT	K/B-030 SERIAL NO./DATE	WELDERS SYMBOLS	TS INSP	ANI HOLD

6. TRAVELERS REFERENCED	7. TRAVELER ATTACHMENTS	20. GENERAL NOTES
	1G33-D305 R/1	1 MW-169, MW-172, MW-157 & MW-77
	EEP-40-IPC (8 PAGES)	DIAL INDICATORS WERE VERIFIED PRIOR
		TO AND AFTER INSPECTION BY THE CAL LAB
		FOR CALIBRATION [illegible]

2. PROCEDURE/INSTRUCTION	3. DRAWING/DESIGN TABLE	4. E.C.N.'s/F.C.R.'s	5. N.C.R.'s
BAP 2.14 R/3			

1.
BALDWIN ASSOCIATES
FABRICATION/INSTALLATION TRAVELER

ILLINOIS POWER COMPANY CPS # 1

TRAVELER NUMBER 1G33-D305

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JV-488-1 (2/81)

7-13-81

FABRICATION/INSTALLATION TRAVELER
INFORMATION SUPPLEMENT

\#1

PERORM THE CLEARANCE/PRELOAD TEST ON THE REACTOR WATER CLEANUP SEISMIC GUIDE ASSEMBLY 1G33-D308 (BA IDENTITIES ARE 1G33-D305-D,E,F,& G AS OUTLINED ON DRAWING 1G33-D305 R/1) IN ACCORDANCE WITH THE ATTACHED ILLINOIS POWER COMPANY PROCEDURE. THE PIPING SUPT. SHALL OBTAIN BA'S QC AND IPC'S SIGNATURES ON THE ATTACHED PROCEDURE

BALDWIN ASSOCIATES
FABRICATION/INSTALLATION TRAVELER
ILLINOIS POWER COMPANY CPS # 1
TRAVELER NUMBER 1G33-D305
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FORM JV-488-2 (11/78)

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Thom Moran - please handle

JUN 3 '81 H.R.S.

CLINTON POWER STATION

EEP-40-IPC

TO: H. R. SWIFT

FROM: E. E. PANGANIBAN

DATE: JUNE 3, 1981

SUBJECT: SIESMIC GUIDE PRE-LOAD INVESTIGATION

Please make the necessary arrangement to perform preliminary investigation of clearance and/or preload on the Siesmic Guide Assembly 1G33-D308 located on the reactor water clean up line 1RT01B6 as per attached procedure.

We would like this to be accomplished by Friday, June 5, 1981.

Would there be any questions, please contact me or J. Spencer.

EEP/dh

cc: L. W. Dozier
J. S. Spencer
R. J. Canfield
E. Muelhausen

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1 of {7}

JSS 6/3/81 (all pgs.)

CLINTON POWER STATION ENGINEERING PROCEDURE

Prepared by Peter E. Walberg Date 5/27/81

Reviewed by [illegible] Date 6/2/81

Approved by J S Spencer Date 6/2/81

Purpose:

The purpose of this procedure is to perform preliminary investigation of clearance and/or preload on the seismic guide assembly 1G33-D308 located on the Reactor Water Cleanup line 1RT01B6 closest to the drywell wall, 49' - 0½" from the reactor centerline.

References:

MD6-1000, sheets 6 and 7

PEW/lt

Equipment required:

4- dial indicators capable of at least .001" resolution with magnetic or clamp bases

1- piece of lumber no bigger than 2 x 4 inches in cross section

Various shim stock in .001" increments, brass or stainless

Various wood wedges and blocks as necessary

Procedure:

1. Place dial indicators ~~on~~ {at each or guard} 155 6/13/81 each of the seismic guides with their sensors against the process pipe (see sketch 1+2) 155 6/13/81. Record calibration data on the attached data sheet. Zero or read initial position of each indicator

Initial Reading

Upper Indicator	Lower Indicator	West Indicator	East Indicator
.0005	.004	.011	.001

QC R Emerson Date 6-5-81

NSED Mike Tindill Date 6/5/81

2. By prying with the 2 x 4 attempt to obtain relative motion between the guardpipe and the process pipe. Attempt motion in the vertical direction first. If motion is obtained, record the amount of change obtained on the upper and lower dial indicators.

Vertical Motion

	Upper Indicator	Lower Indicator
Change in Reading	.002	.003

QC R Emerson Date 6-5-81

NSED Mike Tindill Date 6/5/81

3. If no vertical motion is obtained, stop and report results.

4. If vertical motion was obtained, try to obtain relative motion in the east-west direction by prying with the 2 x 4. If motion is obtained, record the amount of change obtained on the east and west dial indicators.

Horizontal Motion

	West Indicator	East Indicator
Change in Reading	.002	.002

QC R. Emerson Date 6-5-81

NSED Mike Tindill Date 6/5/81

5. If no horizontal motion is obtained in step 4, cut shim stock to fit between the process pipe and the lower guide. The thickness of the shim is to be one-half of the vertical motion obtained in step 2. Then, raise the process pipe as in step 2 and place the shim between the process pipe and the lower guide.

QC________________ Date________________

NSED________________ Date________________

6. Attempt to obtain horizontal relative motion by prying with the 2 x 4. If motion is obtained, record the change observed on the east and west dial indicators.

Horizontal Motion

	West Indicator	East Indicator
Change in Reading		

QC________________ Date________________

NSED________________ Date________________

If no horizontal motion is obtained, so report.

7. Remove the shim installed in step 5.

QC__________________ Date______________

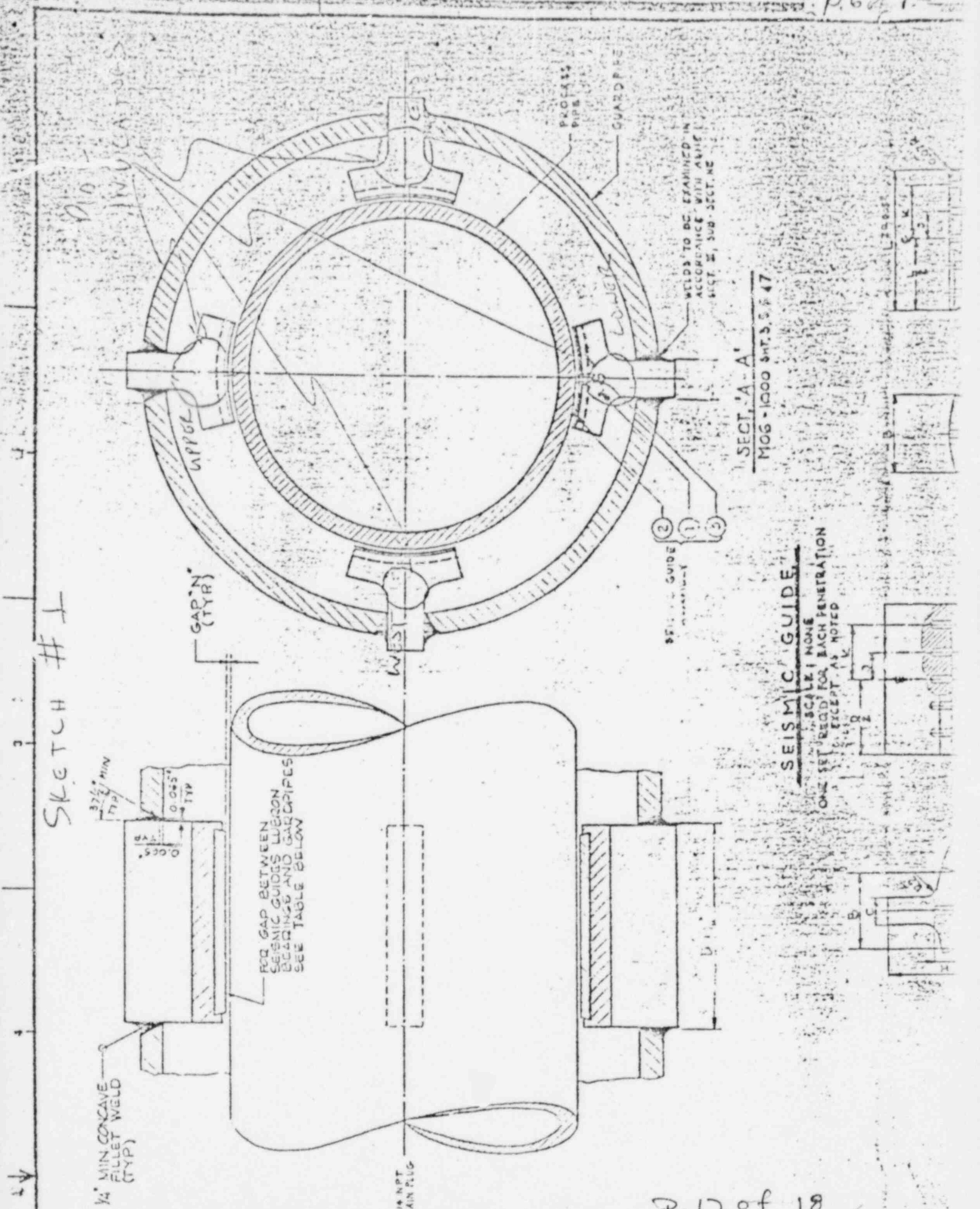
NSED________________ Date______________

PEW:ks
5/26/81

Instrument Calibration Data Sheet

Instrument	Ser. No.	Last Calibrated
Upper	MW-169	5/27/81
Lower	MW-173	5/28/81
West	MW-77	5/20/81
East	MW-157	5/14/81

THESE INSTRUMENTS WERE VERIFIED FOR CALIBRATION PRIOR TO AND AFTER INSPECTION PEG 6/5/81


SKETCH #1
SEISMIC GUIDE
SCALE: NONE
ONE SET REQ'D FOR EACH PENETRATION EXCEPT AS NOTED
SECT. 'A-A'
MOG-1000 SHT. 3, 5 & 47
PROCESS PIPE
GUARDPIPE
WELDS TO BE EXAMINED IN ACCORDANCE WITH ASME SECT. III, SUB-SECT. NE
UPPER
LOWER
WEST
GAP 'N' (TYP)
FOR GAP BETWEEN SEISMIC GUIDES LUBRON BEARINGS AND GARDPIPES SEE TABLE BELOW
1/4" MIN CONCAVE FILLET WELD (TYP)
1/4"-18 NPT R DRAIN PLUG
0.065" TYP
37 1/2° MIN TYP

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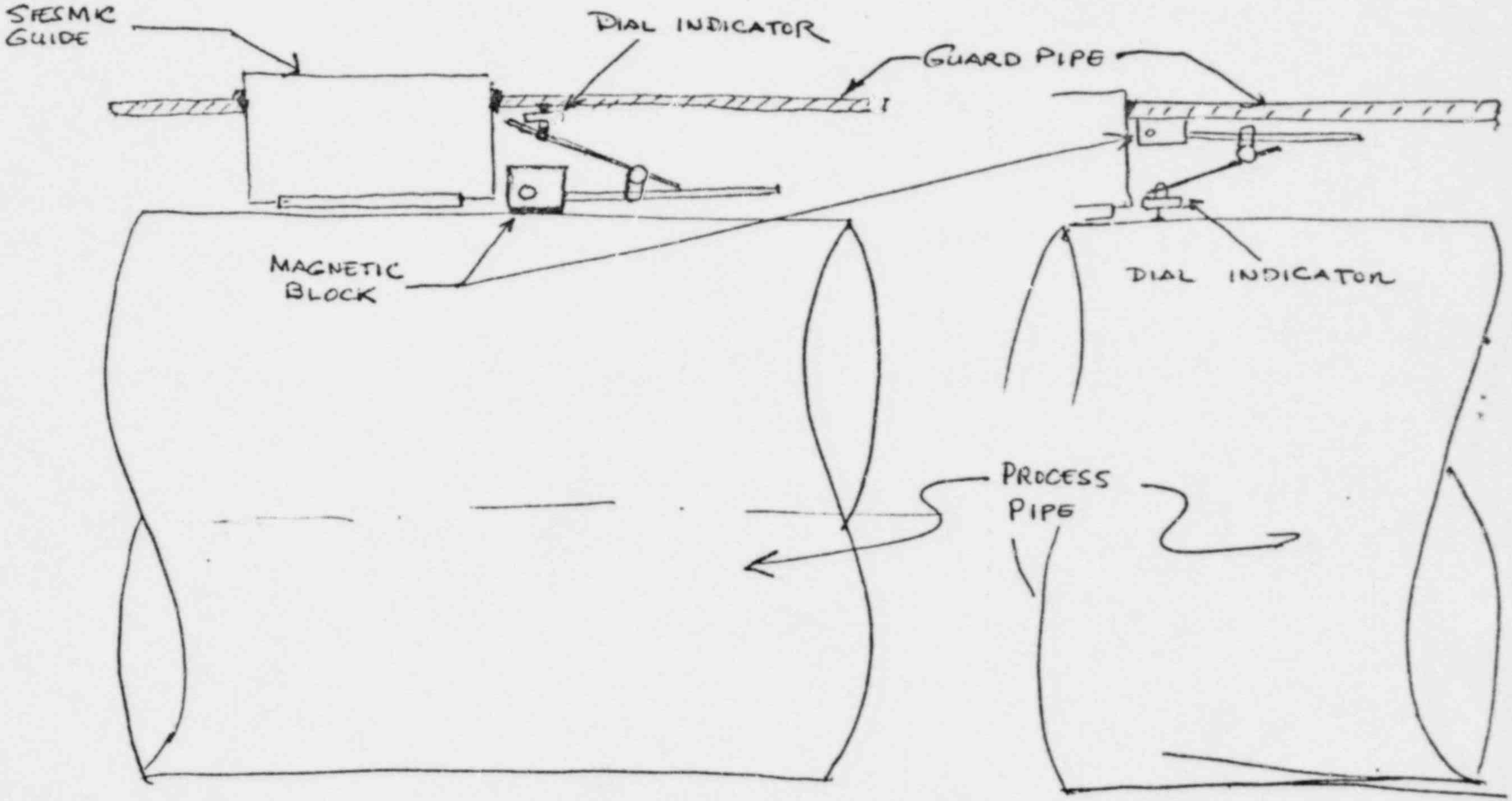
SKETCH #2



TYPICAL ARRANGEMENT

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