HANGER REPORT
Midland Plant Units 1 and 2

August 9, 1982

MIDLAND PLANT UNITS 1 AND 2

HANGER REPORT

CONTENTS

I. INTRODUCTION

- A. Reason for Overinspection
- B. Overinspection Results
- C. Corrective Action and Safety Evaluation of Identified Nonconformances
- D. Adjusted Reported Results and Dispositions

II. POTENTIAL GENERIC EVALUATION OF IDENTIFIED NONCONFORMANCES

- A. Introduction
- B. Conclusions
- C. Tables 1 and 2

III. PROCESS CORRECTIVE ACTION

- A. Completed Process Corrective Action
- B. Planned Process Corrective Action

IV. SUMMARY AND CONCLUSIONS

ATTACHMENTS

- IOM, R. Tulloch to L. Curtis, 5/13/82 (Com 069863)
- IOM, D. Riat to L. Curtis, 4/23/82 (Com 067605)
- Consumers Power Company NCR M-01-9-2-007
- 4. Consumers Power Company NCR M-01-9-2-010
- 5. Consumers Power Company NCR M-01-5-2-014
- Consumers Power Company NCR M-01-5-2-017
- Transmittal Field (Response to Attachment 3)
- Transmittal Field (Response to Attachment 4)
- 9. Transmittal Field (Response to Attachment 5)

Midland Plant Units 1 and 2 Hanger Report

Table of Contents (continued)

- 10. Transmittal Field (Response to Attachment 7)
- 11. Engineering Response to Attachment 3
- Engineering Response to Attachment 4
- 13. Engineering Response to Attachment 5
- 14. Engineering Response to Attachment 6
- 15. CPCo letter Serial 17009, 5/5/82 (Com 069346)
- 16. Classroom Training Letter
- 17. On-the-Job Training Checklist
- 18. Installation Review Forms P-119S and P-129S

MIDLAND PLANT UNITS 1 AND 2

HANGER REPORT

I. INTRODUCTION

A. Reason for Overinspection

The NRC conducted an inspection at the Midland jobsite from May 18 to 22, 1981. As a result of that inspection, two items of noncompliance were documented. Item 329/81-12-11; 330/81-12-12 states in part ". . . seven large bore pipe restraints, supports, and anchors were not installed in accordance with design drawing and specification requirements." Item 329/81-12-12; 330/81-12-13 states in part ". . . QC inspectors inspected and accepted 6 of 7 large bore pipe restraints, supports, and anchors that had not been installed in accordance with design drawings and specifications as determined by the NRC inspector."

In the Consumers Power Company response to those items of noncompliance (CPCo letter Serial 14601, 10/30/81), a commitment was made for the Midland Project Quality Assurance Department (MPQAD) to perform an overinspection of a sample of hangers installed before January 1981.

The purpose of the overinspection was to assess the acceptability of the installations and the adequacy of the original inspections performed by Bechtel Quality Control (QC).

B. Overinspection Results

One hundred twenty-three hangers were overinspected by MPQAD. With one exception, all of the hangers were installed before January 1981.

The results of the MPQAD overinspection are summarized as follows:

Hangers overinspected 123

Hangers acceptable (no nonconformances) 68 (55%)

Characteristics overinspected 9,630

Characteristics acceptable 9,504 (98.7%)

The statistics given above, with some variances, were provided to the NRC during an exit meeting held on April 23, 1982 (see Attachment 15).

The nonconformances identified in the overinspection were documented on MPQAD Nonconformance Reports (NCRs) M-01-9-2-007, M-01-9-2-010, M-01-5-2-014, and M-01-5-2-017.

As issued in February 1982, the NCRs listed above identifed the 55 nonconforming hangers and grouped the 126 nonconforming characteristics into 88 items. (An item is one or more nonconforming characteristics of the same kind on a single hanger.)

C. Corrective Action and Safety Evaluation of Identified Nonconformances

Upon receipt of the NCR, construction and QC reviewed each nonconforming characteristic and item and performed a reinspection to understand them more fully. On the basis of the review and reinspection, the items were dispositioned to perform one of the following:

- o Rework them (Category A)
- Accept them as is, based on redline drawings approved by Field Engineering in accordance with Field Procedure FIP-1.112 (Category B)
- O Accept them as is, based on the redline drawing approved by Project Engineering in accordance with Procedure EDPI 4.46.9 (Category C)
- o Reclassify them as conforming to requirements based on the reinspection results and based on agreements with MPQAD (Category D)
- Submit them for further dispositioning to project engineering (Category E)

The above dispositions were provided to the MPQAD as formal responses to the NCR (see Attachments 7 through 10).

The items dispositioned for Categories A, B, C, and D above were evaluated by Project Engineering to have no impact on safety.

D. Adjusted Reported Results and Dispositions

Based on the reinspection results concurred with by MPQAD and the disposition categories above, the 88 items were dispositioned as follows:

Category	Quantity of Items
A	21
В	31
C	13
D	21
E	2
TOTAL	88

Midland Plant Units 1 and 2 Hanger Report

Based on the foregoing information, for the total number of hangers installed before January 1, 1981, there is 95% confidence that at least 97.5% of the characteristics of the hangers conform to the requirements.

II. POTENTIAL GENERIC EVALUATION OF IDENTIFIED

NONCONFORMANCES

A. Introduction

The 67 nonconforming items remaining after adjusting the overinspection results have been categorized into 14 specific anomaly groups, as shown in Table 1 and further described in Table 2. Additionally, Table 1 provides a rationale as to the generic implications of each anomaly group and as to actions already taken and to be taken.

B. Conclusions

Table 1 lists four anomaly groups that are of generic concern if they should occur elsewhere. To identify these occurrences, various examinations as described in Section IV will be utilized. Once identified during these examinations, any nonconformances will be properly dispositioned.

C. Tables 1 and 2

Tables 1 and 2 categorize and describe the 14 specific anomaly groups. These tables are found on the following pages.

TABLE 1 CORRECTIVE ACTIONS NECESSARY TO RESOLVE ANOMALIES

	Anomaly	Number of Occurrences	Generic Concern	Rationale	Action Required
1.	Missing components	4	Yes	Missing components could have an effect on the ability of the support to function properly.	a) Field Engineering and Quality Control are required to per- form inspections of each hanger in accordance with the requirements of Specification 7220-M-326 and AAPD/PSP-G-11.1 prior to turnover. This is to verify the hanger configuration conforms to the latest design drawings.
					These additional inspections will identify any missing components as required by the design.
					Records of completion will be recorded on the P-119 (small bore) and P-129 (large bore) form as required by Specification 7220-M-326.
					Quality Control procedure AAPD/PSP G-11.1 will provide additional guidelines.
2.	Material substitution	4	No	Substituted material was found to be equal to or better than that specified.	
				Review of existing conditions indicates conditions are acceptable because they are in accordance with the specifications.	
				Field Engineering utilized Section 5.10 of Specification 7220-M-326 when making material substitutions and exercising engineering judg- ment. The four occurrences do not indicate any further action is warranted.	Field is to utilize field change procedures for future substitutions.

	Anomaly	Number of Occurrences	Generic Concern	? Rationale	Action Required
3.	Undersize welds				
	A) Component supports other than anchors	8	No	Evaluation by engineering has determined that these existing undersized welds do not have an impact on safety.	No further action beyond engi- neering analysis and a previous analysis and testing is required.
				During 1977 and 1978, undersized welds of this type were analyzed and tested extensively as a result of 10 CFR 50.55(e) reports on this subject. (Reference Bechtel MCARS 18, 19, and 21). Welds of this type were found to be acceptable because of design conservatism. This analysis was verified by destructive load testing of worst-case deviations. The analysis and worst-case testing was based on the results of random sample reinspections and random sample drawing reviews. The conditions discovered during the overinspection are no more severe than, and are similar in configuration to, those welds analyzed and tested earlier based on these facts. Any undersized welds that may have not been identified would have no impact on safety.	
	B) Anchors	3	No	Same as above	Same as above
4.	Bill of material problem	n 10	No	The size, shape, and characteristics of the item (e.g., 3 x 3 x 3/8) are critical to the support; however, the amount of the item (e.g., length) is not critical but is only a guide for estimating required quantities.	Revise Specification 7220-M-326 to define "member length" on bill of material as being provided to facilitate shop fabrication only.

	Anomaly	Number of Occurrences	Generic Concern	Rationale	Action Required
5A.	Dimensional violations (other than anchors)	11	No	If the location of the member point of attachment to building structure and centerline of pipe are within tolerance, there is no effect on the design or structural capability of the support.	Revise Specification 7220-M-326 to clarify the tolerances. With this clarification, the previously identified nonconformances are eliminated.
58.	Dimensional violations (anchors)	2		Same as above	Same as above
6.	Clearance between pipe and support				
	A) Zero clearance	5	Yes	Binding of pipe by box or U bolt does not allow pipe to move axially.	Zero clearance and excessive clearance are attributes checked during planned engineering functional stress walkdown. This walkdown will cover all Q supports where this condition could exist.
	B) Excessive clear- ance	4	Yes	Clearance is greater than that specified in drawings, but this does not affect the structural integrity of the component. If a seismic event occurs, the integrity of piping system could be compromised (additional impact loads).	
7.	Fixed component rotation				
	A) WF in tension rotated 90 degrees	1	Yes	As installed, the load (tension) carrying capability of the component was not compromised. This may not be true for other possible rotations of components.	These cases have been found acceptable. The inspections described in the "Action Required" for Anomaly 1 will address this anomaly as well.
	B) Angle rotated 90 degrees (only equal leg angles)	1	Yes	An equal leg angle has equal moments of inertia when rotated in increments of 90 degrees. This would not be true for unequal leg angles.	Same as Anomaly 7A

TABLE 1 (continued)

	Anomaly	Number of Occurrences	Generic Concern	Rationale	Action Required
9.	Location of hangers	5	No	Hanger location dimensions on hanger drawings are reference dimensions for small bore and are so noted on the drawings. The large bore hangers are controlled by hanger drawings. Conditions are unique to skewed pipe.	Relocation of hangers to be consistent with the location of the pipe is not a problem for this type of occurrence. Field will request design changes for all future occurrences. Project Engineering will also
					judge the acceptability of hanger location during functional walk-down.
9.	Gap between wall and base- plate	1	No	Evaluation by engineering in- dicates that, as installed, this baseplate is acceptable; one occurrence in the total sample does not indicate this is of generic concern.	Same as Anomaly 7A
10.	Clevis rotation	2	Yes	Hanger design normally pro- vides for ±5 degrees rota- tion in the direction of least pipe movement. If rotating	Same as Anomaly 7A
				movement is larger, this could restrict pipe movement.	Currently, Specification 7220- M-326(Q), Section 6.1, requires that Field Engineering observe pipe movement during plant heat- up. Restricted motion would be noted at that time.
11.	Irregulairty in weld (grinding of weld)	1	No	a) Weld is not undersized.	Project Engineering review of this case completed all required
				b) Structural integrity has not been violated.	action.
12.	Incorrect weld				
	A) Weld in wrong place (weld is east-west instead of north- south)	1	No	Flared bevel groove weld used to hold a shim in place with very low weld loading.	Same as Anomaly 7A
	B) Rotated weld	1	Yes	Stress analysis required. Rotated welds may provide strength only in secondary axis.	

	Anomaly	Number of Generic Occurrences Concern		Rationale	Action Required
	C) Modification to weld configuration	1	No	The modified weld has been analyzed and found acceptable.	
13.	Thread engagement (engage- ment of rod into sway strut)	1	No	Thread engagement will be set during adjustment of hangers prior to functional turnover.	Same as Anomaly 7A
14.	Miscellaneous (angle clip in wrong location)	1	No	Clips are only to facilitate construction.	None

TABLE 2

DESCRIPTION OF ANOMALIES

ANOMALY 1: MISSING COMPONENTS

Description of Anomaly

Missing components, e.g., nuts, bolts, washers, cotter pins, lock nuts

Hanger No.	No. of Occurrences	Ref: CPCo NCR
FSK-M-2ECB-4-4-H5, Rev 2 (Item a)	1	M-01-5-2-014
FSK-M-2EBB-3-4-H1, Rev 1 (Item a, b, c)	3	M-01-5-2-014

ANOMALY 2: MATERIAL SUBSTITUTION

Description of Anomaly

- a. The drawing requires the jam nuts to be SA-307, GR B. On the contrary, jam nuts SA-194, 2H were used.
- b. PGS 104 pipe strap specified; PGS 111 installed.
- c. W5 I-beam specified; W6 I-beam installed.

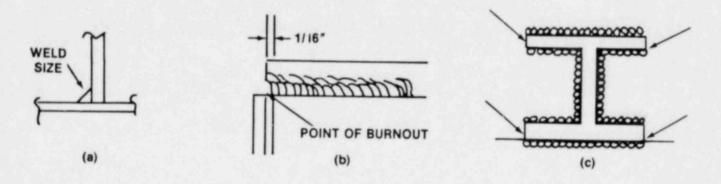
Hanger No.	No. of Occurrences	Ref: CPCo NCR
FSK-M-1CCB-69-1-H1, Rev 3 (a)	1	M-01-5-2-017
FSK-M-1CCB-69-1-H2, Rev 2 (a)	1	M-01-5-2-017
FSK-M-2HBC-145-1-H5, Rev 2 (c)	1	M-01-5-2-014
FSK-M-2GCB-21-1-H1, (b)	1	M-01-9-2-010

ANOMALY 3: UNDERSIZE WELDS

Description of Anomaly

Undersize welds include: a) weld size which is either entirely or partially less than specified in the drawing, b) undercut (burnout), and c) noncontinuous weldment.

3A - Component Supports Other Than Anchors:



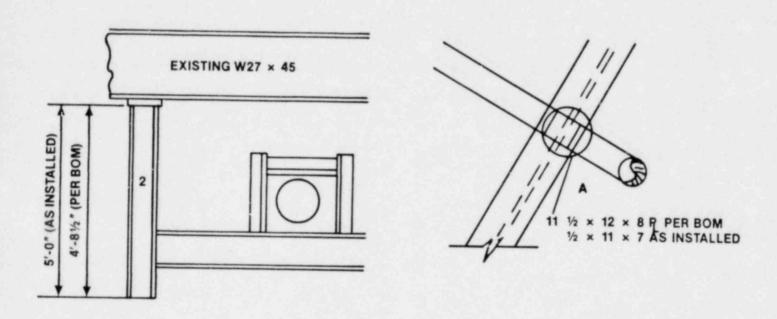
Hanger No.	No. of Occurrences	Ref: CPCo NCR
1-610-4-27, Rev 4(b)	1	M-01-9-2-007
2-604-3-18, Rev 1(c)	1	M-01-9-2-007
2-611-7-33, Rev 1(a)	1	M-01-9-2-010
2-611-6-5, Rev 3(a)	2	M-01-5-2-014
2-613-4-19, Rev 3(a)	1	M-01-5-2-014
2-619-6-11, Rev 3(a)	1	M-01-5-2-014
1-612-2-2, Rev 1(a)	1	M-01-5-2-014
3B - Anchors (see Figure	e 3a above):	

Hanger	No.		No. of Occurrences	Ref: CPCo NCR
2-619-1-19,	Rev	1(a)	1	M-01-9-2-010
1-612-4-33,	Rev	1/F1(a)	1	M-01-5-2-014
1-616-6-28,	Rev	1(a)	1	M-01-9-2-007

ANOMALY 4: BILL OF MATERIAL PROBLEM

Description of Anomaly

Component dimensions are not in accordance with the dimensions listed on the bill of materials.



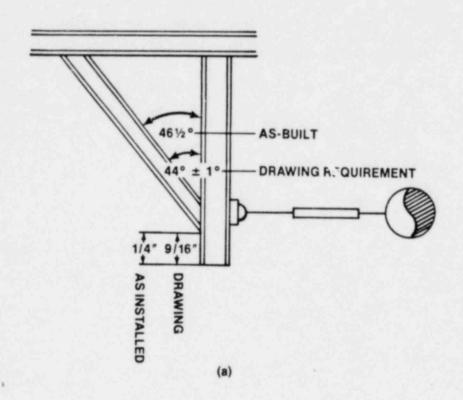
Hanger No.	No. of Occurrences	Ref: CPCo NCR
1-616-10-22, Rev 4	1	M-01-9-2-007
FSK-M-2HBC-216-5-H3, Rev 0	1	M-01-9-2-010
2-604-16-15, Rev 0/F1	2	M-01-9-2-010
2-619-1-19, Rev 1	1	M-01-9-2-010
FSK-M-2HBC-219-1-H1, Rev 0	1	M-01-9-2-010
FSK-M-2HBC-144-1-H8, Rev 1	1	M-01-5-2-014
2-619-6-11, Rev 3	2	M-01-5-2-014
FSK-M-2GCB-22-1-H3, Rev 0	1	M-01-5-2-014

ANOMALY 5: DIMENSIONAL VIOLATION

Description of Anomaly

Angular and linear dimensions are not in accordance with the drawing.

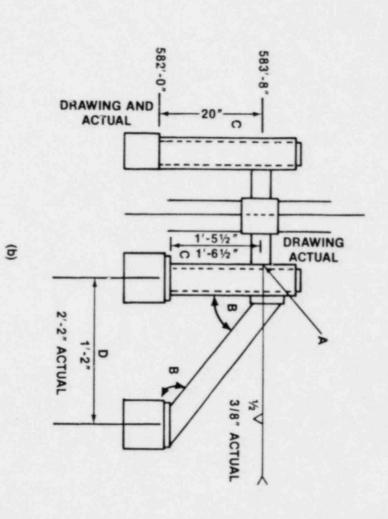
5A - Component Supports Other Than Anchors:



Hanger No.	No. of Occurrences	Ref: CPCo NCR
2-611-6-5, Rev 3	1	M-01-5-2-014
1-619-14-4, Rev 2	1	M-01-9-2-007
1-610-4-27, Rev 4	1	M-01-9-2-007
1-616-10-22, Rev 4	1	M-01-9-2-007
1-612-2-3, Rev 1	1	M-01-9-2-007
FSK-M-1HBC-219-1-H1, Rev	2 1	M-01-9-2-007
2-616-8-2, Rev 7	1	M-01-9-2-010

TABLE 2 (continued)

5B - Anchors:	1-633-1-33, Rev 2	2-617-11-9, Rev 0	2-611-4-4, Rev 4	Hanger No.
	1	2	ı	No. of Occurrences
	M-01-5-2-017	M-01-5-2-014	M-01-9-2-010	Ref: CPCO NCR

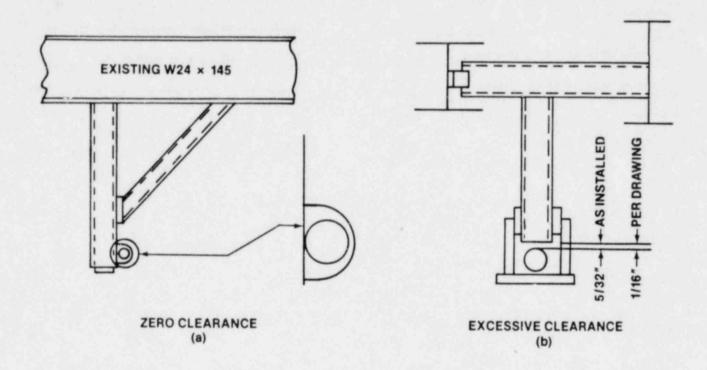


1-616-6-28, Rev 1	Hanger No.
2	No. of Occurrences
M-01-9-2-007	Ref: CPCo NCR

ANOMALY 6: CLEARANCE BETWEEN PIPE AND SUPPORT

Description of Anomaly

Clearances between pipe and support (strap, u-bolt, box) do not conform to the drawing/specification tolerances, e.g., zero clearance, excessive clearance.



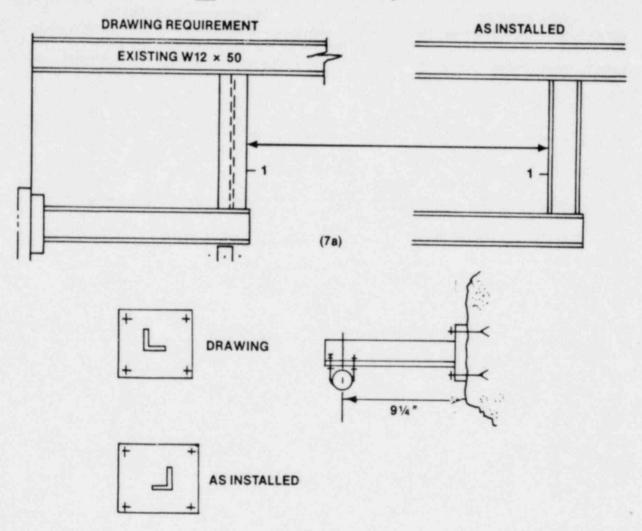
Hanger No.	No. of Occurrences	Ref: CPCo NCR
2-604-16-15, Rev 0/F1(a)	1	M-01-9-2-010
2-657-43-6, Rev 1(b)	1	M-01-9-2-010
2-619-6-11, Rev 3(a)	1	M-01-5-2-014
FSK-M-1HBC-144-1-H3, Rev 1(b)	1	M-01-5-2-017
1-648-7-58, Rev 1/F1(b)	1	M-01-5-2-017
1-657-37-9, Rev 2(a)	1	M-01-5-2-017
FSK-M-OHBC-142-1-H1, Rev 4(b)	1	M-01-5-2-017

Hanger No.	No. of Occurrences	Ref: CPCo NCR
FSK-M-1CCB-69-1-H2, Rev 2(a)	1	M-01-5-2-017
FSK-M-1HBC-145-1-H9, Rev 2(a)	1	M-01-5-2-017

ANOMALY 7: FIXED COMPONENT ROTATION

Description of Anomaly

Support member rotated __ degrees from design sketch.



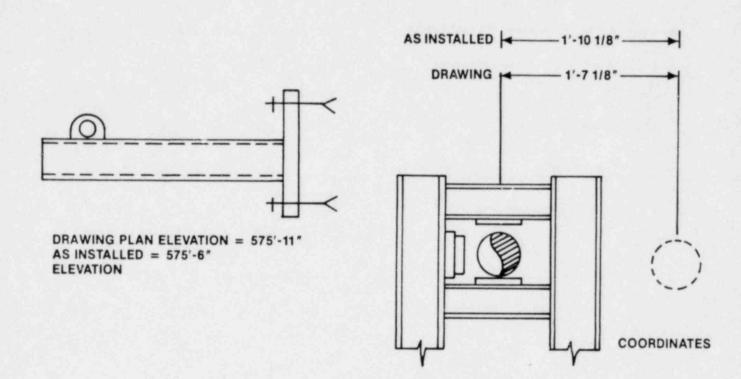
(7b)

Hanger No.	No. of Occurrences	Ref: CPCo NCR
2-639-13-5, Rev 2(a)	1	M-01-9-2-010
2-604-17-2, Rev 1(b)	1	M-01-9-2-010

ANOMALY 8: LOCATION OF HANGERS

Description of Anomaly

Hangers are not installed in accordance with the elevation and coordinates specified in the drawings. For example:

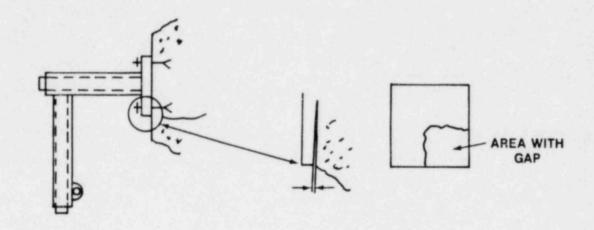


Hanger No.	No. of Occurrences	Ref: CPCo NCR
FSK-M-2HBC-217-1-H2, Rev 1	1	M-01-9-2-010
1-612-2-2, Rev 1	1	M-01-5-2-014
2-619-6-11, Rev 3	1	M-01-5-2-014
1-612-3-12, Rev 1	1	M-01-5-2-014
2-619-1-20, Rev 1	1	M-05-2-014

ANOMALY 9: GAP BETWEEN WALL AND BASEPLATE

Description of Anomaly

Lower right-hand corner of baseplate exceeds gap tolerance.

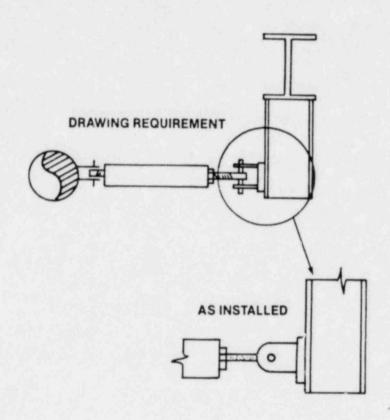


Hanger No.	No. of Occurrences	Ref: CPCo NCR
FSK-M-2HBC-216-5-H3,	1	M-01-9-2-010

ANOMALY 10: CLEVIS ROTATION

Description of Anomaly

Clevis rotated 90 degrees from drawing configuration.

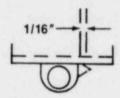


Hanger No.	No. of Occurrences	Ref: CPCo NCR
2-604-2-35, Rev 1	1	M-01-9-2-010
2-619-2-19, Rev 1	1	M-01-5-2-014

ANOMALY 11: IRREGULARITY IN WELD

Description of Anomaly

The vertical support weldment exhibits an approximately 2-inchlong groove, creating a sharp edge.



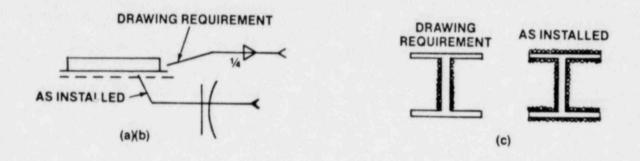
 Hanger No.
 No. of Occurrences
 Ref: CPCo NCR

 FSK-M-1HBC-219-1-H1
 1
 M-01-9-2-007

ANOMALY 12: WELD IN WRONG PLACE

Description of Anomaly

Field welds do not conform to drawing requirements, e.g., a, b) welds located at the ends instead of at the sides, c) weld configuration is not as shown on the drawing.

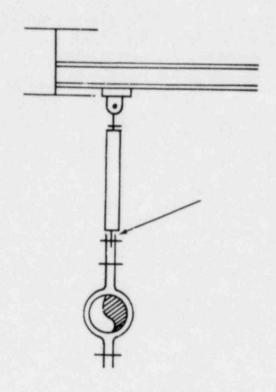


Hanger No.	No. of Occurrences	Ref: CPCo NCR
0-618-1-6, Rev 0(b)	1	M-01-5-2-017
2-617-8-5, Rev 2(c)	1	M-01-9-2-007
FSK-M-2HBC-219-1-H1, Rev O(a)	1	M-01-9-2-010

ANOMALY 13: THREAD ENGAGEMENT

Description of Anomaly

At sight holes of support rod, no threads are visible. Thread engagement (at the lower end only) was 1 inch, instead of 1-1/2 inch.

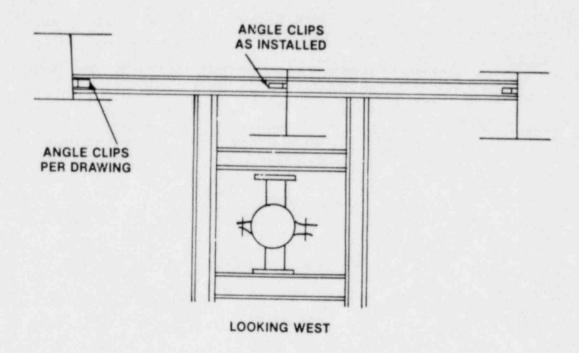


Hanger No.	No. of Occurrences	Ref: CPCo NCR
1-616-8-2, Rev 7	1	M-01-9-2-010

ANOMALY 14: MISCELLANEOUS

Description of Anomaly

Angle clips are in wrong location.



Hanger	No.	No. of	Occurrences	Ref:	CPCo	NCR
0-617-7-13,	Rev 0		1	M-01	-5-2-	017

III. PROCESS CORRECTIVE ACTION

A. Completed Process Corrective Action

In January 1981 a QC Training Coordinator was appointed. The Training Coordinator's primary function is to arrange indoctrination and orientation training for new QC Engineers (QCEs). This training gives the QCE a better understanding of the Project Quality Assurance (QA)/QC programs. The Training Coordinator reviews all training and certifications to ensure that the new QCE fulfills all requirements set forth in PSP G-8.1, which is Bechtel's procedure for complying with ANSI N45.2.6.

In addition to the Training Coordinator responsibilities, each discipline group supervisor (e.g., pipe supervisor) has created training programs for new QCEs. Training involves both classroom and on-the-job training (OJT). This training is then documented on standard training letters and OJT checklists (see Attachments 16 and 17). During training, each group supervisor tests the new QCE to determine areas in which the QCE needs additional training. In 1981 approximately 1,400 documented training sessions were performed by the pipe/mechanical discipline.

Audiovisual training programs have also been established to help familiarize new QCEs with the areas to which they will be assigned (e.g., pipe, hangers). Examples of audiovisual aids are: audioviewer projector, slide/tape programs, and overhead transparencies.

In early 1981, a formal Level II QCE training program was established to better familiarize the potential Level II QCE with QA/QC philosophy, organization, and program requirements. The program also instructs in evaluations, training, and reviewing documents for acceptance.

From February to March 1981 several pipe/mechanical discipline project QC instructions were changed to incorporate installation inspection records and welding inspection records. These changes were made to reduce the amount of paperwork and documentation errors. Other changes were made to replace surveillances with specific inspections on a characteristic-by-characteristic basis.

From November 1980 to January 1981, the project QC department underwent a management change. A new project field QCE and lead pipe/mechanical QCE were appointed during this period. Through their programatic and technical direction, the training and certification programs have improved the thoroughness and effectiveness of the QCE.

After April 1981, the number of Q indicators averaged approximately 20 per month. Before that time, the number was substantially higher. MPQAD overinspections confirmed the improvement in conformance to the installation and inspection program.

B. Planned Process Corrective Action

The following actions are to be taken in addition to the examinations and inspections described in Section IV.

- Specification 7220-M-326 will be revised as described in Table 1 to provide additional direction to construction.
- The QC instructions will be revised as necessary to reflect the specification changes.
- Training will be provided as necessary to reflect the changes to both the specification and QC instructions.

IV. SUMMARY AND CONCLUSIONS

As stated in Section I, deficiencies identified during the Consumers Power Company overinspection would not have had an impact on safety. Reasonable assurance, based on the confidence level described in Section I, has been provided that if the same deficiencies occurred in similar situations, there would be no impact on safety.

Section III describes process corrective actions taken after January 1981, which are applicable to this problem. Based on these actions, hangers installed after January 1981 should have fewer deficiencies and an even higher assurance that there would be no impact on safety.

However, additional inspections of hangers are planned by the project before fuel load in accordance with actions described as shown in Table 1 of Section II.

Bechtel Power Corporation

Inter-office Memorandum

L. H. Curtis To

Date May 13, 1982

Subject

Midland Plant Units 1 and 2

R. Tulloch From

Bechtel Job 7220

Safety Evaluation of Large Bore Pipe Of

Project Engineering

Hangers Discrepancies Identified in

Copies to CPCo NCRs

Ann Arbor

P. Corcoran w/a

R. Hollar w/a

D. Anderson w/a

D. Borlaza w/a

D. Lewis w/a

D. Loos w/a B. Klein w/a

E. Hughes w/

References: A) NCR M-01-9-2-007 AI: S-1261 B) NCR M-01-9-2-010 AI: S-1265

C) NCR M-01-5-2-014 AI: S-1267

D) NCR M-01-5-2-017 AI: S-1272

E) NCR M-01-5-2-015 AI: S-1268

This documents the safety evaluation performed by Plant Design Group on Large Bore Pipe Hangers discrepancies identified in the referenced CPCo NCRs. Only those hangers identified as requiring rework are the subject of this evaluation.

Detailed safety evaluation for these hangers are attached.

*1-616-6-28 CPCo NCR M-01-9-2-007

2-619-1-19 . 1 CPCo NCR M-01-9-2-010

2-611-7-33

2-604-2-35

1-616-8-2 r 2-657-43-6

2-604-16-15

OPCO NCR M-01-5-2-014

2-619-6-11 - 14

*This item was field redlined. Status was changed to rework.

Results of the safety evaluation indicate that the identified deficiencies, were they to have remained uncorrected, could not have affected adversely the safety of operation of the plant.

Bechtel Associates Professional Corporation

IOM
Page 2

If there are any questions, please advise.

Prepared by

R. Tulloch

P.D. Group Supervisor

Reviewed by

D. F. Lewis Licensing Engineer

R. L. Loos

Chief Nuclear Engineer

RT/LS/slm

Attachments

Written Response Requested: No Com Use: N/A

PROJECT	MIDEANO 18	12	JOB NO.	MIDLAND ME	DATE 4-21-2
CLIENTI	usumens la	03003	SUBJECT NO	Mio: -9- 2-00	z
ITEM NO.	LOG NO.	ITEM	1-616-6	-28 (0)	
NON-CONFOR	MING PART CIN				
PIPE SUPPO	BT EVALUATION Hye to Be Re	num Led			
RATIONALE	FOR ACCEPTING				
		SAFETY E	VALUATION		
STRESS ENG	INEERS COMMENTS				
STRESS ENG	INEERS COMMENTS				
PIPE SUPPO ELTEN:	RT ENGINEERS CON	By ITI-	WILL ACC	ENCE HAS DET	ermine0
PIPE SUPPO ELTEN: PHAT LIADIN	RT ENGINEERS CON	By 171- WELD ONS. 4/2	WILL ACC	communate THE	ermineD
PIPE SUPPO ELTEN: PHAT LIADIN	RT ENGINEERS CON SIVE REVIEW G CONDITT	By 171- WELD ONS. 4/2	WILL ACC	D	DATE 23 KZ

PROJECT	camp/gz		JOB NO.	MICHAE MI	DATE 4-23:
CLIENT	sciners Power	6.09863	SUBJECT NCR	9-2-010	
ITEM NO.	LOG NO.	ITEM	2-619-1		
HON-CONFORM	ING PART LO for ITEM	6 to 11 15		ed by 1/32" for 1	est.
PIPE SUPPOR	T EVALUATION				
RATIONALE F	OR ACCEPTING				
		SAFETY EV	ALUATION		
		SALETT ET	7.70.		
STRESS ENGI	NEERS COMMENTS				
LOAD BE	FID WILL N	REFORE, W	T THE DE	NOS. 6 \$ 11) 15 IF BY 1/32"	OF THE
STRUCTU	lety impact	is ACCE	PTABLE.	FPIC - 4-28-82 ITTGRUNEIL	
STRESS ENG	INEER	DATE	APPROVED		DATE
PIPP SUPPO	RIJEHETHEER	DATE 4-78-8	I Son of	PTULLOCH	4-79-8

REP	Y TO	Nonco	NFORM.	AUCE	REPO	RT
PROJECT	10/12	69163	JOB NO. 7220	LOCATION MICH	HUR MI	DATE 4-16-8
	MERS PEWE	celo	SUBJECT NCR	M01-9-		
ITEM NO.	LOG NO.	ITEM	2-611-7-			
ON-CONFORMIT	NG PART WEL	lds for Her	THE RESIDENCE OF THE PARTY OF T	COMPANIES - CONTRACTOR CONTRACTOR	D. 43"	
PIPE SUPPORT	The second secon	be reworked	2.			
ATIONALE FOR	R ACCEPTING					
		SAFETY EV	ALUATION			
			1			
	anti in care					
TRESS ENGINE	ERS COMMENTS					
			المستناسين		فنند نياسات	
PIPE SUPPORT	ENGINEERS CO	MMENTS				
	-n.	7 0	Pies. Ap	p. FVIT	Tablexu	111-2452.1-
Section	III Dives,	and office	1/6/10	1 + 1	UCE Relo	wminmun
States m	inimum 50	Te welds	18 mild 21	are in	0 20"	
and como	whe for /2 7	Pate and	Considera	d a cord	a poera.	
1 '	line one	THE America	NT OF WEL	0 00 0	. 11.0	·
DASED ON	ITHIN The	THE Amount	warre. 4-1	9-82 Km	13 714	is me
10 SAFET	19 IMPACE	2		111-9		List he days
STRESS ENGINE		DATE	APPROVED	٨		DATE
	danieli, Te				1.	1.2352
PIPE' SUPPORT	ENGINEER	DATE	111	1		(. 1) 2-
Sul. 16		4-14-82	10			

MIDLAND 14Z	69863	JOB NO.	MIDLAND HI	DATE 4-29-8
CLIENT COOSUMETES Faul		SUBJECT HCR	101-9-2-010	
ITEM NO. LOG NO.	ITEM	604-2.35	(9)	
NON-CONFORMING PART				
PIPE SUPPORT EVALUATION				
RATIONALE FOR ACCEPTING				
	SAFFTY F	VALUATION		
	SAFETTE	1,201,1011		
STRESS ENGINEERS COMMEN	IS			
PIPE SUPPORT ENGINEERS	COMMENTS	Car Py-y	· · · · · · · · · · · · · · · · · · ·	. ()
Has he effect on	Ner design	- Kotzs	in of Rear Braz	see.
No Sofety Im	pact			
, , , ,				
STRESS ENGINEER	DATE	APPROVED		DATE
PIPE SUPPORT ENGINEER	DATE 4.29-88	- Son &	P. Towock	429-82

PROJECT MIDLAND 142	60.63	JOB NO. 7220	MID AN	בות חוב	DATE 4.29
CLIENT ON SUMERS Powe		SUBJECT NO			
ITEM NO. LOG NO.	ITEM	1-616-			
NON-CONFORMING PART THERE EXTENSION DUES NOT 15 1: MINIMUM 15	meet !	GEMENT	on Come	ASUREN E	F NGAGE-MC
PIPE SUPPORT EVALUATION	. 4				
RATIONALE FOR ACCEPTING					
	SAFETY EN	ALUATION			
STRESS ENGINEERS COMMENTS					
PIPE SUPPORT ENGINEERS COMB BASED ON CARC'S !! SUCCEST TO REDUCE REQUIREMENTS. P. TIL	F14 211 7	o in GALIC	117:43 11	Sufficient.	-17. Hen
No Safety un pact	r-G.				
pa pa					
STRESS ENGINEER	DATE	APPROV	ED R. Tucco		DATE

ROJECT		69863	JOB NO. 7220	MIDE	wo Mi	DATE 4.16.8
LIJENT	NSUMERS POU	-a Co	SUBJECT NO			
TEH NO.	LOG NO.	ITEM	2-657-4			
NON-CONFORM	3/46	"elegrance	exists Be	twan Top	o of pipe	f U BOLT
PIPE SUPPORT	EVALUATION A Conteste for	is support	for speed	Pearque		
RATIONALE FO	OR ACCEPTING	21				
KAI IOIDIGE II						
		SAFETY EV	ALUATION			
			1			
STRESS ENGI	NEERS COMMENTS	s				
PIPE SUPPOR	RT ENGINEERS C	OMMENTS	- duda	of louds	could not	crarke
PIPE SUPPOR	RT ENGINEERS C	OMMENTS The ma	agnitude.	of louds	could not	enate
PIPE SUPPOR	RT ENGINEERS C ferty impact C. force to	OMMENTS E. JRoma Fail UBOK.	agnitude.	of louds	could not	crake
PIPE SUPPOR No Say	RT ENGINEERS C ferty impact C. force to	OMMENTS E. JRe M. Fail UBOK.	agnitude.	of louds	could not	crake
PIPE SUPPOR No Say	RT ENGINEERS C fety impossing a force to	OMMENTS E. Jle M.	agnitude.	of loads	could not	cracke
PIPE SUPPOR No Say	RT ENGINEERS C fety impossing a force to	OMMENTS E. Jle M.	agnitude.	of loads	could not	cracke
PIPE SUPPOR No Scy	RT ENGINEERS C fety impact C face to	OMMENTS L. JRe M. Fail UBOK.	agnitude.	of louds	could not	crake
PIPE SUPPOR No Say 2 nous		OMMENTS The many of the control of	agnitude.		could not	DATE
STRESS ENG					could not	

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1 / AX /	DLAND 1920 S	63	JOB NO. 7220	LOCATION MIDLAND M	DATE 4.28-8
LIENT	visumens Power	Co		01-9-2-010	17.66.0
TEH NO.	LOG NO.	ITEM		-16-15 (a)	
ON-CONFORM		earonce	- Z DIREC	crion one side	of UBoH
IPE SUPPOR	T EVALUATION				
ATIONALE I	FOR ACCEPTING No Spec. U.ola	tion			
		SAFETY E	VALUATION		
STRESS ENG	INEERS COMMENTS				
SPEC. To design sides of less the clearon contraction contractions of the contraction contractions of the	sketch/bug st of the pipe or 7 on 1/16" or more nees may be of legrance on o	The lug	cleer. 15 + the actual	e componed PIN 1/32" Inch Typ. or 1 clearences sta o the actual y manner, Inch inch. Therefore - h	individual
SPEC. To design sides of less the clear or control of the control	sketch/Dwg st sketch/Dwg st of the pipe or to on 1/16" or more nees may be of learance on a	states The sign loss of the loss of the side	cleer. 15 + the actual	the actual	individual
SPEC. To design sides of less the clear or control of the control	sketch/Dwg st sketch/Dwg st of the pipe or p on 1/16" or more lees may be of learnee on of on Safety impace	states The sign loss of the loss of the side	cleer. 15 + the actual	the actual y manner, inclose. Therefore - K	individual

PROJECT	162	JOB NO. 7220	MIDLAND P	DATE 4-14-2
CLIENT CONSUMERS?		SUBJECT NCR	M01-5-2-01	
17EM NO. LOG NO. 7664	TEN ;	Ten 14 2	·619 - 6 · 11 (Q)	
NON-CONFORMING PART	GAPS NO LONGE	R EXIST BETW		
2) 2	WELDS MEASURE	3/16" HEM	1 to ITEMZ &	ITEM 4
PIPE SUPPORT EVALUATI	ON			
DATIONAL FOR ACCEPTI	NC 4.2			
ATTIONALE FOR ACCEPTE	XPANSIAU OF T	HEPIPE 15	LESS THAN	. 001 "(.wenes)
RESULTIVE IN AU	ICEY SMALL LO	AD. FRICTI	ONAL EFFECTS	EXISTING
FROM Y LOAD IS THEREFORE ITS 2) THE REQUIRED	CONTRIBUTION	U IS NEGLIG	GABLE, (REF CA	DIAL EXPAUSION
2) THE REQUIRED	WELD PER CAL	CULATION 13.	OS THEREFORE	2 3/16" 15
	SAFETY E	VALUATION		
1				
STRESS ENGINEERS COMM	ENTS			
Jiness Ensineers com				
	S COMMENTS			
PIPE SUPPORT ENGINEER				
	O AZ PERNE DO	SIGN FOR E	VACUATION.	
TELEX TO				(2.50.
TELEX TO	PERUISON R. Tu	LLOCH REPO	RTS NO SERET.	Y IMPACT
TELEX TO		TEO RATIO	RTS NO SEECT.	Y IMPACT
TELEX TO	PERUISON R. Tu	TEO RATIO	RTS NO SERET.	YIMFACT
TELEX TO	PERUISON R. Tu	APPROVED	RTS NO SEECT.	DATE

Bechtel Power Corporation

Inter-office Memorandum

To L. E. Curtis Date April 23, 1982

Subject

Midland Plant Units 1 and 2

From D. Riat

At

Bechtel Job 7220

Safety Evaluation of Small Pipe

Of Resident Engineering

Midland Jobsite

Hanger Discrepancies Identified in

Copies to CPCo NCRs

P. Corcoran w/a

R. Hollar w/a

R. Tulloch w/a

D. Anderson w/a

D. Borlaza w/a

D. Loos w/a B. Klein w/a

References: A) NCR M-01-9-2-007 AI: S-1261

B) NCR M-01-9-2-010 AI: S-1265 C) NCR M-01-5-2-014 AI: S-1267

D) NCR M-01-5-2-017 AI: S-1272

This documents the safety evaluation perfomed by the Small Pipe and Hanger Group (SPHG) on Small Pipe hangers discrepancies identified in the referenced CPCo NCRs. Only those hangers requiring rework, as determined by Construction, were subjected to this evaluation.

Detailed safety evaluation for the following hangers are attached.

CPCo NCR M-01-9-2-007 - - - - FSK M-1-HBC-219-1-H1 CPCo NCR M-01-9-2-010 - - - - FSK M-2-HBC-216-5-H3 CPCo NCR M-01-5-2-014 - - - FSK M-2-ECB-4-4-H5 FSK M-2-EBB-3-4-H1 CPCo NCR M-01-5-2-017 - - - - FSK M-0-HBC-142-1-H1 FSK M-1-HBC-145-1-H9 FSK M-1-HBC-144-1-H3 FSK M-1-CCB-69-1-H2 FSK M-1-CCB-69-1-H1

Results of the safety evaluation indicate that the identified deficiencies, were they to have remained uncorrected, could not have affected adversely the safety of operation of the plant.

IOM dated D. Riat to L. H. Curtis Page 2

Prepared by Robert & Cambridge D. Rist

D. Riat

SPHG Group Supervisor

Reviewed by

D. F. Lewis

Licensing Engineer

R. L. Loos

Chief Nuclear Engineer

Attachments:

Written Response Requested: No Com Use: N/A

PROJECT MIDERNO NO	1/		JOB NO.	LOCATION	SMALL BORE	DATE
CLIENT	DIVIN DIVI	13 1,6	SUBJECT NCR		THE ZORE	4-12.82
CONSUMER !	Power Co.		Mo1 - 9-			
ITEM NO.	LOG NO.	ITEM				1-24-14-12-1
16.)	81753	FSA	- M- IHBO	-219-1-HI	(8)	
ON THE PGS	1" Lave x /3 - 113 STRAP.	A 3/16 /A	CET 13 KEGO	THE TOP WELD	18 10000	marnisk al
		acravo !	GROOVED ARE	M. THE REMAN	VDER OF WE	MO (1.)
M NOT-A	TABLE- PROVID	FORM SAFFTY	EVALUATION	PER 6-27 51		
		PREGULARY	165.	,	ATES WELD	SHALL BE
RATIONALE FOR	ACCEPTING	N/A				
		SAFETY EV	ALUATION			
STREET FUCINES						
STRESS ENGINEER	RS COMMENTS					
		N/A				
PIPE SUPPORT EN	GINEERS COMM	ENTS				
	FUEN I	CAFECTIO	E WELD 312	E WERE REL	EXED TO	1/4 FILLET
FOR 2" LO	NG, THE WE	LO WOULD	QUALIFY F	OR A 900 = L	0AD - (Two- a	IRECTIONAL)
ON THE PG.	S STRAP PL	FR STD - C	ALC. 400-0	05 REV E.		
	THE MA	X LOAD C	N NI -	\$15 ", wwi	N IS LESS	
THAN 900 =				-), THERE		WELD
	WITNIN DE					
		TY IMI	PACT ON	THE HANG	EL.	
STRESS ENGINEER		DATE 4-12-82				
PIPE SUPPORT EN	GINEER	DATE				
1 . 1/1/	/ -	4/ /				

PROJECT	O NULLEAR U	Nits 152	JOB NO.	RESIDENT SMALL BOLL	DATE
CLIENT	ER POWER Co.		_	R - Z - 010	9-75-82
ITEM NO.	LOG NO.	ITEM		BC - 216-5-H3 (Q)	
PIPE SUPPOR	REQUIREMENT	PATIONAL F	DE BOLT \$ 10.	WER YY of PLATE SLIGHTLY	EUS > 1/16 GAR

RATIONALE FOR ACCEPTING

N/A

SAFETY EVALUATION

ASSUMING ONLY 3 BOLTS EXIST ON THE BASE PLATE, EVALUATE THE IMPACT ON THE SYSTEM.

STRESS ENGINEERS COMMENTS

PIPE SUPPORT ENGINEERS COMMENTS

AN EVALUATION OF SUPPORT 2HBC-216-5-H3 (Q)
ASSUMING THE BOLT ON THE LOWER RIGHT HAND CORNER
OF THE BASE PLATE IS NOW-FUNCTIONAL, VERIFIES THAT ALL THE
STRESSES ARE WITHIN DESIGN ALLOWABLES.

THEREFORE THERE'S NO SAFETY IMPACT ON THE SUPPORT.

STRESS ENGINEER	DATE	
PIPE SUPPORT ENGINEER	DATE	
where fallener	4/15/82	

PROJECT MIDLAND NUCLEAR UNITS 142	JOB NO. 7220	LOCATION RESIDENT SMALL BORE	DATE 4-10-82
CLIENT CONSUMER POWER Co.	SUBJECT NC	4-10-82	
Ba. LOG NO. ITEM			
NON-CONFORMING PART COTTER PIN 15 MISSING D.	N LOWER	END OF WEST SWAY	STRUT.
PIPE SUPPORT EVALUATION ACCEPTABLE - PROVIDE RATIONAL NOT-ACCEPTABLE - PERFORM SAFET	E Y EVALUATION		
RATIONALE FOR ACCEPTING			

SAFETY EVALUATION

ASSUMING THE VERTICAL RESTRAINT ON THE HANGER WILL BE NON-FUNCTIONAL.

STRESS ENGINEERS COMMENTS :

THERE IS AMSOLUTELY NO DANGER OR SAFETY
HATZARD TO THE PIPING SYSTEM. THERMOL STRESSES ARE ACTUALLY
REDUCED, WEIGHT AND SEISIMIL STRESSES ARE INCREASED,
BUT ARE STILL WITHIN ASME - SECTION III CODE
HULCWADLE STRESS LEVELS.

IF IT IS ASSUMED THAT HANGER DECB- 4-4-H5 (Q) IS

PIPE SUPPORT ENGINEERS COMMENTS

AN EUALUATION OF THE ADJACENT SUPPORTS,

2ECB-4-4-4-440) AND DECB-4-5-41(0), WITH THE

INLINERSED LOADS SHOWS THAT THEY ARE STILL WITHIN

THE HECEPTABLE DESIGN ALLOWABLES THERE FORE THERE IS

NO SAFETY IMPROT ON THE SYSTEM.

STRESS ENGINEER	DATE 4-9-82
PIPE SUPPORT ENGINEER	DATE
(to Comesons	4-10-82

TOUR INNEL KEPUKI

DATE	LOCATION RESIDENT SMALL BORE	JOB NO. 7220	5 112	NUCLEAR UNIT	MIDLAND
7-8-82	Land of the second	SUBJECT NOT		POWER CO.	CLIENT CONSUMER
			S FSK-	LOG NO. = 7/689 REV	ITEM NO.
	STRUT TO CLAMP.	0	ALGO DAL	NUTS ON CLA	C.) LOCK
		EVALUATION	RATIONALE RM SAFETY	TABLE- PROVING	PIPE SUPPORT E
		EVALUATION	RATIONALE RM SAFETY	TABLE- PROVIDE CCEPTABLE-PERFO	D ACCEP

SAFETY EVALUATION

ASSUMING THE SUPPORT WILL BE NON-FUNCTIONAL!

STRESS ENGINEERS COMMENTS

ASSUMING SUPPORT ZEOB-3-4-HIGWILL BE NOW FUNCTIONAL, THE
THE PIPING SYSTEM WOULD STILL QUALIFY PER SPEC. M-343; STILL
WITHIN ACCEPTABLE SEISINIC SPANS. THE ADJACENT SUPPORT
ZEOB-3-4-HZ(Q) WOULD BE REQUIRED TO PICK UP THE RODITIONAL
SEIDINIC LOAD INCREASE FROM 14 LBS. TO 8Z Ibs.
FRULTED LOAD INCREASE FROM 42 Lbs to ZOS LBS.

PIPE SUPPORT ENGINEERS COMMENTS

PIPE SUPPORT 2EBB-3-4-H2 (D) WAS ORIGINALLY DESIGNED FOR A FAULTED LOAD OF 345 LBS. THIS IS GLEATER TITHIN THE LOAD ARRIVED AT BY THE STRESS CNCINEEU'S EVALUATION, THEREFOLE THE HANGER IS STILL WITHIN DESIGN ALLOWALES.

NO SAFETY IMPACT ON THE SYSTEM.

STRESS ENGLIEER Surand	4-8-82
PIPE SUPPORT ENGINEER	DATE
at Camerano	4-8-82

PROJECT MIDLAND NUCLEAR UNITS	JOB NO. 7220	RESIDENT SMALL BORE 4-14-82
CLIENT CONSUMER FOWER CO.	SUBJECT NO	
ITEM NO. LOG NO. I	TEM	(BC-142-1-H1 (Q)
NON-CONFORMING PART ACTUAL TOTAL CLEARA 15 3/32". THIS DOES A TOLERANCES.	NCE BETWEEN	PIPE AND PGS-104 STRAP
PIPE SUPPORT EVALUATION ACCEPTABLE - PROVIDE RAT	TONAL E	

M NOT-ACCEPTABLE-PERFORM SAFETY EVALUATION

RATIONALE FOR ACCEPTING

SAFETY EVALUATION

STRESS ENGINEERS COMMENTS : THE ADDITIONAL 1/32 CLEARANCE IS ACCEPTABLE FROM A SAFETY EVALUATION STAND POINT. IT DOES NOT INCREASE STRESSES ON THE PIPING SYSTEM. STRESSES ARE WITHIN CODE ALLOWABLES.

PIPE SUPPORT ENGINEERS COMMENTS

STRESS ENGINEER DATE 4-14-82 PIPE SUPPORT ENGINEER DATE

PROJECT JOB NO. LOCATION RES. SMALL BORE DATE MIDLAND NUCLEAR PLANT, LANTS / \$ Z 04/10/82 MIDLAND, MICH. 7220 CLIENT M-01-5-2-017 SUBJECT NCR CONSUMERS POWER FSK-M-148C 795-1-49 ITEM NO. LOG NO. ITEM 16. FSK-M-14BC -145-1-49 (Q)

NON-CONFORMING PART

NO GAP EXISTS BETWEEN SIDES OF PGS 113 STRAP AND PIPE.

PIPE SUPPORT EVALUATION

ACCEPTABLE- PROVIDE RATIONALE
NOT-ACCEPTABLE-PERFORM SAFETY EVALUATION

RATIONALE FOR ACCEPTING

N/A

SAFETY EVALUATION

ASSUMING THE SUPPORT INBC-145-1-49 LOCKS UP IN THE ATIAL DIRECTION, EURLUATE THE IMPACT ON THE SYSTEM.

STRESS ENGINEERS COMMENTS: ASSUMING TOTAL AXIAL RESTRAINT AT HANGER HY RESULTS IN THE 6-11" SPAN BETWEEN HY AND HID BEWL TOTALLY RESTRAINED. ALTHOUGH THE COMPRESSIVE STRESS IS NOT REQUIRED TO BE EVALUATED BY CODE, AT A MAX TEMP. OF 150° AS LISTED IN SPEC. M-480, COMPRESSIVE STRESS IS WELL WININ THE YELD STRENGT OF THE PRE MATERIAL. ALSO THE CRITICAL BUXKING LOAD FOR THE SPAN IS NOT DEVELOPED. THEREFORE AT A MAX, TEMP. OF 150°F, THE PIPE SYSTEM IS OPERABLE. HOWEVER A TOTAL DEFLECTION OF O.OYZZ" WILL BE DISTRIBUTED BETWEEN SUPPORTS HY AND HID.

PIPE SUPPORT ENGINEERS COMMENTS :

SINCE THERE IS "SI" CLEARANCE BETWEEN THE LOG AND THE PIPE ON NIO, MANGER HY OR HID WOULD ONLY BE REQUIRED TO DEFLECT .0422" - .03/25" = .01095". HOWEVER, WE'VE ASSUMED THAT THE CLEARANCE IS NOT THERE AND HID IS ALSO LOCKED.

WITH THIS ASSUMPTION THE FORCE REQUIRED TO DEFLECT HANGER MY .0422" IN THE X DIRECTION IS FY = 600 ".

AN EVALUATION OF SUPPORTS HO & HO WITH AN ADDITIONAL LOAD OF 600 THOUS THAT THE SUPPORTS ARE STILL WITHIN DESIGN ALLOWABLES.

NO SAFETY IMPACT ON THE SYSTEM

PIES ENGINEER / Durand 04/10/02

PIES SUPPORT ENGINEER DATE

Wife a / Carciano 4/13/82

KEPLY TO NONCO	NLOKA	TANCE REPOR	
PROJECT MIDLAND NUCLEAR PLANT, UNITS / 82	JOB NO. 7220	MIDLAND, MICH	DATE
CONSUMERS POWER	SUBJECT NO		
ITEM NO. LOG NO. ITEM	SK-M-148C-	144-1-43	
HON-CONFORMING PART "THERE IS ONLY A 32" CLE AND PIPE."	ARANCE BETW	WEN SIDE OF PGS-113	STRAP
PIPE SUPPORT EVALUATION CONTROL ACCEPTABLE - PROVIDE RATIONAL NOT-ACCEPTABLE - PERFORM SAFET	E Y EVALUATION		
RATIONALE FOR ACCEPTING			
1/4			
SAFETY E	VALUATION	,	
STRESS ENGINEERS COMMENTS: THE RADIO			
		OF 115% IS EQUAL TO OLE 132" . THIS QUALIFIES THE	
		TON THE HANGER.	
PIPE SUPPORT ENGINEERS COMMENTS			
NIA			

PIPE SUPPORT ENGINEER DATE

DATE

PARES ENGINEER DATE

	WELEAR PLANT,	UNITS 1/2	JOB NO. 7220	LOCATION MIDLAND, MICH	DATE
CONSMER	POWER		MOI- 5	R	77-
ITEM NO.	LOG NO.	ITEM /CC	8-69-1-1		

NON-CONFORMING PART

NO GAP EXIST BETWEEN PIPE CLAMP AND ITS SUPPORTING STRUCTURE

PIPE SUPPORT EVALUATION

ACCEPTABLE - PROVIDE RATIONALE

NOT-ACCEPTABLE-PERFORM SAFETY EVALUATION

RATIONALE FOR ACCEPTING

SAFETY EVALUATION

ASSUMING THE SUPPORT ICCB-69-1-HE LOCKS UP IN THREE DIRECTIONS, EVALUATE THE IMPACT ON THE SYSTEM.

STRESS ENGINEERS COMMENTS: PROJECTIONAL PESTRAINT FOR WE, AND SEIS. LOAD CASES WILL AID IN THE PIPE STRESS EQUATIONS AND ADDITIONAL LOADS WOULD BE NUMBED DISPLACEMENTS FOR THRITY SAM LOAD CASES AT HZ DER AAD ANALYSIS PRE USED TO APPROXIMATE AUDITIONAL LOADS, IT THESE DISPLACEMENTS WERE RESTRAINED, THE ADDITIONAL PIPE STRESS WILL BE APPROXING THE ALURANTE OF ECATIONS "DE "II, LOAD IS CONSERVATION TO BEED ON A GUIDED CHATLED BEAM! THEREFORE THE PIPE SISTEM WOLD STILL BE CHERABLE. ADDITIONAL LOADS ON HE FROM ALL LOAD CASES COMBANDED USED BE CONSERVATIVELY DISPLACED IN THE HEAD CASES COMBAND USED BE CONSERVATIVELY DISPLACED IN THE HEAD OF THE PIPE SISTEM WOLD STILL BE CHERABLE. ADDITIONAL LOADS ON HE FROM ALL LOAD CASES COMBAND USED BE CONSERVATIVELY DICHES X AND 2001 BE, ADDITIONAL LOADS ON HANCENS ICCB-66-1-HI AND ICCB-69-1-HIS WILL BE APPREXIMATELY 100 LBS IN THE X AND THE E.

PIPE SUPPORT ENGINEERS COMMENTS

AN EUNCURTION OF SUPPORTS ICCB-69-/- HZ(Q),
ICCB-66-1-HI(Q) AND ICCB-69-1-H3(Q) WITH ADDITIONAL LOADS CAUSED
BY SUPPORT ICCB-67-1-HZ(Q) BEING LOCKED IN THREE DIRECTIONS
VERIFIES THAT THE STRESSES ON THE MANGERS ARE STILL WITHIN DESIGN ALLOWABLES.

SIRESS ENGINEER DATE

PIPE SUPPORT ENGINEER DATE

DATE

PROJECT MILLENNIN NOLLEM	Unirs 152	JOB NO. 9220	REJUENT SAI	ALL ISORE	DATE 4-15-82
CLIENT CONER POWER CO		SUBJECT NO	R A		
ITEM NO. LOG NO	. ITEM	x - 17 - 1661	3-69-1-H1	(Q) ; H	2(0)
	REQUIRES THE	Jain NUT.	NUTS ARE S	807, GRE	
PIPE SUPPORT EVALUATI ACCEPTABLE- I NOT-ACCEPTABLE ACCEPTABLE NOT-ACCEPTABLE ACCEPTABLE	PROVIDE RATIONAL	TY EVALUATION			
RATIONALE FOR ACCEPTI	KS	Y/A			
1	SAFETY	EVALUATION			1
STRESS ENGINEERS COMM	ENTS				
	N	1/A			
PIPE SUPPORT ENGINEER	PLTHOUGH S HESE SUPPORT R PROOF LOAD	ASSEMISCH D RATING		9 2H A	VUTS
TRIPACT OF	N THE SUP				
STRESS ENGINEER	DATE				

DATE

PIPE SUPPORT ENGINEER

DOES NO AFFECT Q-LIST ITEM: YES X N	0	17. IS NC REPORTABLE PER 50.55(e): YES 80 *	_
IS NC REPORTABLE PER PART 21: YES S	w x	19. IF YES, DATE & TIME OF REPORT TO MRC: N/A	_
DF YES, WHO MADE REPORT TO MRC: N/	Α	21. IF YES, NAME OF REC OFFICIAL TO WHOM REPORTED: N/A	
Malerderose	23. WRITTEN REPLY REQUIS 2/22/82 TO ESTABLISH CA COMPLETIO	MARE CONTERNATION	2
PART CA DISPOSITION. ASTIPICATION & COMPLETIO	N DATE -		-

Project Engineering's complete response is attached.

cc: D. Borlaza D. Riat W. Bird R. Tulloch D. Hollar D. Taggart L. Curtis D. Turnbull R. Myers P. Corcoran J. Horsch B. Marguglio

		To be determined
Messign Project sig. AUTH. DISP.: 27. PMD SIG. AUTH. DISP.:	28. PROCUREMENT SIG. COMC. DISP.:	1. Cordin for L. Cinta 420/22.
FAB/CONST. SIG. AUTH. DAP. DISP.: 31. SIG. OF TEST GROUP ACKNOW. CONDITION:	32. FOR MAJOR MOD - PLT. SUPT. SIG. AUTH. DISP.:	33. QA AUTH. SIG. TO IMPLEMENT DISP.:

Consumers

Company

arious (See Block 12)

ments as itemized below:

P2.10 document for each hanger.

DESIGN/PROJECT ENG. DISPOSITION REQUIRED

NO X

FSK-M-1HBC-219-1-H1 - S/U-1GJA

SERIAL JUMBER:

na l

IS PHOCESS CA REQUIRED



NONCONFORMANCE REPORT

PROJECTS, ENGINEERING AND CONSTRUCTION QUALITY ASSURANCE DEPARTMENT MO1-9-2-007

NCR SERIAL NUMBER:

PAGE 2 OF 5

4		WALCOUTE MOUNT		PAGE OF
B. QA ASSESSMENT OF ROOT CAUSE(S)				
Unknown, to be det	ermined.			
99. ACTUAL ROOT CAUSE(S), IF DIFFE	RENT FROM ABOVE (TO BE COM	OPLETED BY ORG. RESPONSIBLE I	FOR PROCESS CA):	
+0. PROCESS CA REQUIRED FROM:				DESPECTION X
DESIGN FABR	RICATION X	COMSTRUCTION X	PROCUREMENT	DISPECTION A
11. QA RECOMMENDATION FOR PROCESS	CA:			
Unknown, to be det	armined			
onknown, to be det	ermineu.			
42. PROCESS CA TO BE TAKEN BY ORG	(S) CHECKED IN BLOCK 41 &	DATE OF COMPLETION:		
43. METHOD OF PROJESS CA TERIFT'A	TION:			

NCR MU1-9-2-007 Page 3 of 5 Date: 2/4/82 File: 16.0

12. "AS IS" NONCONFORMING CONDITION VERSUS "AS REQUIRED" CONDITION WITH REFS:

Contrary to the above, the measured dimension is 64".

b) The P2.10 for the subject hanger (Log 81753) references M-343 for hanger fabrication. Paragraph 6.7.2 (Welding) envokes G-27 for welding and paragraph 4.4.8 of GWS-FM Rev 4 from G-27 states in part, "...each weld layer shall be free of porosity and excessive <u>irregularities</u> such as high spots and deep crevices."

Contrary to the above, the vertical support weldment exhibits an approximately 2" long groove - creating a sharp edge.

2) 1-610-4-27 - S/U-1BCA

a) The subject sketch requires a 9/16" length of support steel beyond the cross support weldment.

Contrary to the above, a length of 1/4" was measured.

b) The P2.10 for the subject hanger (Log 69498) references M-326 for hanger installation. Paragraph 4.2.2 (Welding) states in part, "Undercut shall not exceed 1/32"."

Contrary to the above, the angle flange to horizontal support beam weld exhibits a 5/32" undercut, (burnout).

3) 1-612-3-25 - S/U-1BKA

a) The P2.10 for the subject hanger (Log 76542) references M-326 for hanger installation. Paragraph 4.1.2 (Welding) envokes G-27 for welding and paragraph 4.4.8 of GWS-FM Rev 4 from G-27 states in part, "...each weld layer shall be free of porosity and excessive <u>irregularities</u> such as high spots and deep crevices."

Contrary to the above, the vertical hanger support to support beam weld exhibits a grooved face 3/32" wide for approximately 1".

4) FSK-M-1HBC-204-1-H12 - S/U-1GJA

a) The bill of materials for the subject sketch specifies a 5/8" thickness for Item 6.

Contrary to the above, several areas of the item noted measure 9/16".

5) 1-616-6-28 - S/U-1EGA

a) The subject sketch specifies a 1/2" weld for the stanchion to vertical support, (two sides).

Contrary to the above, a 3/8" weld was measured.

NCR M01-9-2-00/

Page 4 of 5

Date:

File: 16.0

b) The subject sketch specifies an angle of 60° between the angle support brace and vertical support.

Contrary to the above, an angle of 51° was measured.

c) The subject sketch specifies stanchion heights of 20" and 174".

Contrary to the above, stanchion heights of 224" and 18 5/8" were measured respectively.

d) The subject sketch specifies 14" between the base of the angle support brace and the vertical support.

Contrary to the above, a 25%" dimension was measured.

6) 1-603-6-16 - S/U-1BGC

a) The subject sketch specifies a gap between the ends of the two clamp halves of ".

Contrary to the above, a gap of 19/32" was measured.

h) The P2.10 for the subject hanger (Log 81906) specifies M-326 for hanger installation. Paragraph 5.8 (Locking devices) of M-326 states in part, "...all threaded connections...shall be secured by....two jam nuts."

Contrary to the above, one (outer) of the nuts was observed to be loose rendering the clamp insecure.

7) 1-612-2-3 - S/U-1BKA

a) The subject sketch specifies a support beam (w14 X 150) to pipe dimension of 1'-114".

Contrary to the above, a dimension of l'-4" was measured.

8) 2-604-3-18 - S/U-2BGA

a) The subject sketch specifies a 4" fillet weld - all around for the horizontal support to support beam weldment (Item 1 to 7).

Contrary to the above, a non-continuous weldment was observed in this location.

9) 1-616-10-22 - S/U-1EGA

- a) The subject sketch specifies a vertical support beam (Item 2) of 4'-85" in length.

 Contrary to the above, the support beam measures 5'-0".
- b) The subject sketch specifies a vertical support beam to cross beam support length of 29".

Concrary to the above, the distance was measured to be 25".

NCR M01-9-2-007 Page 5 of 5

Date:

File: 16.0

10) 2-617-8-5 - S/U-2EGA

a) The P2.10 for the subject hanger (Log 82242) references M-326 for hanger installation. Paragraph 4.2.5 (Welding) states in part, "Additional welds not shown in the design sketches/drawings require Project Engineering review and approval via field design change control procedure or nonconformance procedure as applicable."

Contrary to the above, several additional fillet welds were observed at the vertical support to angle support union (Item 2 to 3).

11) 1-603-3-2 - S/U-1BGA

a) The subject sketch specifies a piping elevation of 634'-6".

Contrary to the above, an elevation of 633'1114" was measured.

12) 1-619-14-4 - S/U-1EAC

a) The subject sketch specifies a support beam to support beam dimension of 1'-10 3/8".

Contrary to the above, this dimension measured 1'-9 4".

Consumers Power Company

1	NO	NCC	NFOR	MANCE	REPORT	QL	From:	L.	H.	Curtis
T		02	A/I:	S-1265	S/U: CODE 87	Т	REND:	DNT	PAG	1 0
	7.	MONCO	NFORMING PAI		6. MONCONTORMENS PART NAME:). ·	IRIZ KO	AL NO	01-9-2-

QA27-0 PRIORI	TY: 02 A/I: 5-1265	S/U: CODE 87 . IKE	IND: DNI MOE - 0
O. PROJECT NAME:	7. NOMCONFORMING PART NO:	6. MONCONTORMING PART NAME:	1. MCR SERIAL NO. 1-9-2-010
MIDLAND 1 & 2	N/A	N/A	2. MT: 2/5/82
9. SERIAL MUMBER:	10. ORG. COMMITTING NO:	12. AREA/LOC. OF MC:	3. DATE OF NEV: N/A
N/A	BECHTEL CONSTRUCTION	MULTIPLE BLDG's	4. FILE NO: 16.0
The following list of ments as itemized be It is noted that the below was the result installed and inspect the completed P2.10 Specification M 326 extent possible, pip 13. A RECOMMENDATION FOR PART CA. The recommended part on NCR	f hangers do not conform low. identification of the not of an examination of har ted by Field Engineering, d/accepted by Quality Condocument for each hanger. section 5.1.1 states in personance of the supports shall be instantiated by a support of the support o	onconformances listed agers completely turned over to Quality atrol as evidenced by art: "To the greatest alled in strict (CONTINUED) es to all hangers listed anger. (LHCurtis) coument. (LEDavis, ESmith) as as is. (LHCurtis)	LHCurtis LEDavis ESmith MRBird DMTurnbull JEBrunner RAWells JWCook JLWood MADietrich ALAB- BWMarguglio DBMiller REMcCue/RDJohnson BHPeck FSchulmeister DATaggart
	25 X 10	17. IS NO REPORTMENT PER 50.55(*):	ns *
16. DOES NO AFFECT Q-LIST TIDE:		19. IF TES, DATE & TIME OF REPORT IS	
18. IS SC REPORTABLE PER PART 21: 20. IF TES, NOW MADE REPORT TO KEC:	ns	21. If the, make of the official to	VISON REPORTED:
Project Engineering cc: D. Borlaza D. Hollar L. Curtis P. Corcoran	D. Riat W. Bird R. Tulloch D. Taggart R. Myers D. Turnbull J. Horsch B. Margugli	attached.	N/A N/A N/A N/A N/A N/A N/A N/A
26. DESIGN/PROJECT SIG. AUTH. DISP. (Corion of I long 5/20)	.: 27. PMD SIG. AUTH. DISP.:	26. PROCURDENT SIG. COMC. DISP.:	P. Cirku for R. Cat stack
30. FAB/CORST. SIG. AUTR. DO. DISS	P.: 31. SIG. OF TEST GROUP ACCISON.	32. FOR MAJOR MOD - PLI. SUPT. SIG. AUTH. DISP.:	33. QA AUTH. SIG. TO DEPLOCAT DIET

34. METHOD OF PART CA VERIFICATION:

35. SIG. OF ORG. RESP. FOR PART C/A SIGNIFYING COMPLETION:

36. SIG. VERLITTING PART C/A & HOLD TAG

37. MCR CLOSED SY/DATE: (PART & PROCESS CA COMPLETE)



NONCONFORMANCE REPORT PROCESS CORRECTIVE ACTION

QUALITY ASSURANCE DEPARTMENT

PAGE 2 OF 5

			700
30.	LA ASSESTMENT OF ROOT CAUTELS):		
	Unknown: To be determined.		
19	ACTUAL ROOT CAUSE(5), IF DIFFERENT FROM ABOVE (TO BE COMPLETED BY ORG. RESPONSIBLE FOR PROC	EL (4):	
,,,			
140.	PROCESS CA. ADQUIDED PRON:		
	O'DECK COME	ACCURAGE	эвиспо Х
41.	GA RECOMMENDATION FOR PROCESS CA:		
	Unknown: To be determined.		
42.	PROCESS CA TO BE DANCE BY ORG(S) CRECKED OF BLOCK 41 & DATE OF COMPLETION:		
43.	METHOD OF PROCESS CA VERIFICATION:		
· .	SIG. OF ORG. RESPONSIBLE FOR PROCESS OF SIGNEFICING COMPLETION: 45. PROCESS	A COMPLETION VENTILED BY/DAT	1

S-1265 M-01-9-2-010 Page 3 of 5

compliance with the component pipe support design sketches/drawings."

Contrary to the above, the following hangers have violated this specification:

Hanger 2-604-17-2 P2.10 log #76648; support angle welded to plate is reversed from design sketch. S/U: 2BGA

Hanger 2-639-13-5 P2.10 log #63333; item #1 rotated 90° from design sketch. S/U:2Al

Hanger 2-604-16-15 P2.10 log # 81811, pipe stanchion listed on bill of materials to be 1' - 7 13/16"; actual is 1' - 7 3/16". S/U: 2BGA

Hanger 2-604-2-35 P2.10 log #59842; strut not located on 4"m beam as per drawing. S/U: 2BGE

Hanger 2-619-1-19 P2.10 log #124673; item #11 listed as 8" x 12" actual as installed is 7" x 11". S/U: 2EAC

Hanger 2-GCB-21-1-H1 P2.10 log #73127; pgs 104 pipe strap specified, pgs 111 installed. S/U 2BKA

Hanger 2-HBC-219-1-H1 P2.10 log #71982; bill of materials lists item #2 as 3/8" x 4" x 4"; actual as installed is 3/8" x 4" x 3 13/16". S/U: 2GJA

Hanger 2-HBC-216-5-H3 P2.10 log #72035; item #5 on bill of _aterials list_d as 3 3/4" x 3 3/4"; actual is 4" x 4". S/U: 2GJA

Hanger 2-604-16-15 P2.10 log #81811 material lists item #2 to be 3/8" thick; actual is 1/2" thick. S/U: 2BGA

Hanger 2-HBC-219-1-H1 P2.10 log #71982 rev 5 item #3 to item #2 welded @ opposite sides than design sketc... S/U: 2GJA

Hanger 2-611-4-4 P2.10 log #12411 hanger clamp assembly indicates 1 3/8" clearance on sketch; actual is 1 1/2" typical on both sides. S/U:2BCA

Hanger 2-616-8-2 P2.10 log #63192; centerline of pipe to top of item #1 (4'M beam) not per drawing. S/U: 1EGA

Specification M-343 section 6.22 states in part: "Acceptable Deviation Vertical Piping: The design location of pipe supports on vertical pipe may deviate from the original approved location, in a direction parallel to the pipe centerline by 4 inches, provided it is not adjacent to an anchor, equipment nozzle or valve, in which case prior approval from the engineer shall be required.

S-1255 M-01-9-2-010 Page 4 of 5

Contrary to the above:

Hanger 2-HBC-217-1-H2 P2.10 log #69460; sketch & isometric calls for hanger to be centered @ elevation 575' - 11 1/2"; actually @ 575' - 5 3/4". S/U: 2GJA

Specification M-326 section 5.11.1 states in part: "The clearance between the concrete walls and the structural attachment plates should not exceed 1/16" over a maximum of 20% of the bearing area;"

Contrary to the above:

Hanger 2-HBC-216-5-H3 #72305 lower right hand corner of base plate exceeds gap tolerance. S/U: 2GJA

Specification M-326 section 4.2.1.9 states: "No undersize welds are permitted".

Contrary to the above:

Hanger 2-619-1-19 P2.10 log #124673 undersize weld @ item #6 to item #11. S/U: 1

Hanger 2-604-2-35 P2.10 log #59842 undersize weld @ sway strut to 4"M beam. S/U:

Hanger 2-611-7-33 P2.10 log #135884 undersize weld @ item #2 to item #3. S/U: 21

Hanger 2-639-13-5 log #63333 insufficient welds for item #1. S/U: 2AEA

PQCI 7220-P2.10, 3.3B states: "Minimum thread engagement shall be that amount necessary to engage all the threads of the nut or threaded component. Hanger load devices which have internally threaded adjustable components are to have sight holes provided to verify adequate thread engagement where required."

Contrary to this:

Hanger 1-616-8-2 P2.10 log #63192; at sight holes of support rods, no threads are visible. S/U: 1EGA

Specification M-326 section 5.1.3.b states: "When the component pipe support design sketch/drawing states the clearance is "1/32 inch typical" on opposite sides of a pipe or 1/16 inch on one side of a pipe or pipe lug, the sum of the actual clearances measured on the opposite sides of the pipe shall not be less than 1/16 inch or more than 1/8 inch. As long as the sum of these actual clearances falls within the above allowable limits, the actual individual clearances may be distributed in any manner, including a zero clearance on one side of the pipe.

Contrary to the above;

Hanger 2-657-43-6 P2.10 log #84577; design sketch calls for 1/32" inch clearance around "U bolt" and pipe: a total of 3/16" exists @ top side of pipe and flush on bottom. S/U: 2GJA

S-1265 M-Q1-9-2-Q10 Page 5 of 5

Hanger 2-604-16-15 log #81811 design sketch calls for 1/32 clearance around pipe and "U bolt"; no clearance exists due to off set boit holes. S/U: 2BGA

Hanger 2-611-5-98 P2.10 log #70407; welds for 3/8" plates have buckled plates @ weld locations and corners. S/U: 2BNA

NOTE 1: The preceded conditions of all hangers identified, leave the integrity of hangers indeterminate.

NOTE 2: All identified non-conforming hangers have been previously inspected & accepted by QC.

22:

1

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ATTAGLIMENT _ 5

071354

To: M. Curland

PRO.	JE	CT	S.	
	^			

PROJECT NAME:	7. MOMEONFORMING PAST NO:	6. NONCOMPORMING PART NAME:	1. M-01-5-Z-014
idland Units 1 & 2	Various Hangers		2. DATE: 2/3/82
	(See below)	Pipe Hangers	
MERIAL MUMBER:	BPCo	Various	3. DATE OF REV: N/A
arious	l Bred	1411043	16.0
"AS IS" HOLDERFORMERS COMDITION V	TERSUS "AS REQUIRED" CONDITION WITH RE	n:	5. DISTRIBUTION
	hangers do not conform	to applicable require	e- LH Curtis
ents as itemized belo	W.		ESmith
or all undersized wel	ds see also M-326 4.2.	a 1 which states.	LEDavis
	rs permitted." For wro		rial
imensions see M-326 5			WRBird THYoung
			JWCook ALAB (2)
			MADietrich
			BWMarguglio
			DBMiller
WA RECOMMENDATION FOR PART CA: TO	The recommended part Cor	reactive lation to	REMcCue/CTFollin
1 hangers: 1) Enginee	ring to evaluate accept	tability of hangers	2) If
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NCR: M-01-5-2-014 Date: 2/3/82 Page 3 of 5

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12. "AS IS" NONCONFORMING CONDITION VERSUS "AS REQUIRED" CONDITION WITH REFS:

Hardware Discrepancy

- 1) 2-611-6-5 Q10-2FL3-35-H5) Log #63225 Rev 5 S/U 2BCA
 - a) Where the sway strut fitting is welded to the vertical I-Beam, the welds are undersized both legs per the drawing.
 - b) Three of four welds attaching the horizontal I-Beam to the superstructure I-Beam are undersized on one leg per the drawing
 - c) The beam to beam shop fabricated portion welds are undersized on one leg per the drawing.
 - d) The brace beam angle is supposed to be 44°±1° per the drawing and it is installed at 46%.
- 2) FSK-M-2HBC-145-1-H5Q Log #87879 Rev 5 S/U 2EGA

Item #1 in bill of materials is a W5 I-Beam and a W6 I-Beam was installed.

3) FSK-M-2HBC-144-1-H8Q Log #73182 Rev 5 S/U 2EGA

Item #3 per drawing bill of material is a plate $\frac{1}{4}$ " \times 2 3/4" \times 2 3/4" however, a $\frac{1}{4}$ " \times 3 3/4" \times 3 3/4" plate was installed.

4) 1-612-3-12Q(8"-1GCB-16-H1) Log #76107 Rev 5 S/U 1BKA

This hanger was installed 44" West of drawing coordinates perpendicular to the pipe. (Contrary to even the new Appendix K of M-326 allowance of ±2" for a deviation of the pipe)

- 5) 2-613-4-19Q(12-2HBC-5-H1) Log # 68235 Rev 5 S/U 2BCA
 - a) The two welds that attach the spring canister to the channels are undersized on one leg per the drawing.
 - b) The angle clips are attached to the wrong end of the channels per the drawing
 - c) Both bottom welds of the angle clips to the channel are understand on one leg per the drawing.
 - d) There is a gap between the angle clips and the channel and the drawing shows no gap. Note:

Although the clip to main beam welds were changed from being an NF5222 weld the detail indicates the clip to channel welds are still per NF5222.

NCR: M01-5-2-014 Date: 2/3/82 Page 4 of 5

6) FSK-M-2-FCC-4-1-H1 (Q' Log # 64107 Rev 5 S/U 2BBB

There is weld burn out causing reduced thickness of up to 3/32" at one end of one of the welds of strap to angle. This also makes the weld undersize.

- 7) FSK-M-2ECB-8-3-H4 (Q) Log #79652 Rev 5 S/U 2BHA
 - a) Item #1 on the bill of material is 134" long, however, actual installed is 13 3/4" long.
 - b) The isometric drawing locates this hanger 11'-1 11/16" East of reactor building centerline, however, measurement from a benchmark locates it at 11'-9 4" East of the reactor building centerline contrary to para 6.2 of M-343.
- 8) FSK-M-2ECB-4-4-H5(Q) Log #60821 Rev 4 S/U 2BHA
 - (a) There is a cotter pin missing on the lower end of the West sway strut.
 - b) The '" gap between the sway struts called for in view c-c of the drawing is actually '".
- 9) FSK-M-2HBC-1 -1-H2(Q) Log #78717 Rev 5 S/U 2JEA
 - a) The stiffener place outer bottom edge thickness is reduced due to weld burn off resulting in an undersize weld.
 - b) The same condition occurs on three (3) places on the pipe strap (this was beveled and a full weld was not made).
- 10) FSK-M-2GCB-22-1-H3 (Q) Log #68259 Rev 5 S/U 2BKA

Item #3 on bill of material is $4" \times 2 3/4" \times 2 3/4"$ per drawing. Actual is $4" \times 3 3/4" \times 3 3/4"$.

- 11) 2-617-11-9 (5"-2HBC-149-H1)(Q) Log #69494 Rev 5 S/U 2EGA
 - a) Section AA of drawing requires 2 31/32" offset between centerline of main beam and centerline of vertical beams of the hanger. Actual is 5/16" offset.
 - b) centerline of pipe to centerline of vertical beams is actually 4" and 12 4", however, the drawing requires 12".
- 11) 2-619-1-20R (8"-2HEC-109-H20R) Log #64049 Rev 5 S/U 2EAC

The hanger is 5" West of drawing coordinates (perpendicular to the pipe) contrary to para 5.2 of M-326 (note the drawing states "field cut to suit" for "tems 1 and 2 on the hill of material, however, material used was longer than called for).

NCR: M01-5-2-014 Date: 2/3/82 Page 5 of 5

13) 2-619-2-19 Q (10"-2HBC-110-H19) Log #103729 Rev 6 S/U 2EAC

The lugs attaching the sway strut to the vertical I-Beam are rotated 90° from the drawing configuration and contrary to M-326 5.2.1.d.

14) 2-619-6-11 Q (10"-2HBC-100-H3) Log #76640 Rev 5 S/U 2EAD

- a) Item #8 on bill of material requires 1" x 6" x 45", however, 1" x 65" x 5" was installed.
- b) Item #7 on bill of material requires 7/8" x 6" x 5", however, 7/8" x 6" x 44" was installed. (a <u>later</u> rev makes a & b acceptable)
- c) Vertical gap, both top and bottom, is not parallel with pipe. Guide pads top and bottom touch the pipe at one end and have gap exceeding the requirements of the drawing and M-326 para 5.1.3.b at the other end.
- d) The welds of the vertical hanger beams to the bottom horizontal beam are undersized per drawing.
- e) The 1'-7 1/8" distance between pipes per drawing was installed as 1'-10 1/8".
- 15) FSK-M-2EBB-3-4-H1 (Q) Log # 71689 Rev 5 S/U 2BMA
 - a) The sway strut has a tie wrap (plastic) instead of a bolt, nut and washers per the manufacturers drawing on one end.
 - b) A cotter pin is missing from the retaining pin at the other end of the sway strut contrary to the manufacturers drawing
 - c) Lock nuts missing on pipe clamp
- 16) 1-612-2-2 Q (8"1GCB-16-H47) Log #63197 Rev 5 S/U 1BKA
 - a) The 2'-54" dimension from centerline of pipe to centerline of the W14 x lll I-Beam is 2'-3" installed (this is perpendicular to the pipe)
 - b) The North and South end plates (Item 5) welded to angle have an undersized weld on one leg. Both of these are on the West side.
- 17) 1-612-4-33(Q)(6"-1GCB-18-H10) Log #65882 Rev 5 S/U 1BCA

The small plate (#1 on bill of material) has reduced section and therefore undersized weld at the top.

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NONCONFORMANCE REPORT

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Page 3 of 3

1) Clearances on the following hangers do not conform to the drawing/ specification tolerances:

a)	O-HBC-142-1-H1	SUS:	2-EAD
b)	1-HBC-145-1-H9	SUS:	1-EGA
c)	1-657-37-9	SUS:	1-GJA
d)	1-657-37-22	SUS:	1-GJA
e)	1-648-7-58	SUS:	1-KAB
f)	1-HBC-144-1-H3	SUS:	1-EGA
g)	1-CCB-69-1-H2	SUS:	1-BGA

NOTE: Items b & f contain masking tape under the strap, preventing accurate measurement.

2) 0-617-7-13 SUS: 0-EGA

Item #3 (I-BEAM) is not installed in accordance with the drawing. Angle clip & field weld is located incorrectly.

3) 0-617-8-33 SUS: 0-EGA

a) Field weld between items 2 & 3 does not conform to drawing requirements. West weld, south end, contains approximately '' of undersize weld.

4) 1-633-1-33 SUS: 1-BMA

a) Drawing requires the bottom plate, on one corner, to be beveled k".

Contrary to the above, the bevel was determined to be 3/16".

5) 1-CCB-69-1-H1 SUS: 1-BGA

a) PGS-114 requires the jam nuts to be SA-307, GR B Contrary to the above, the jam nuts are SA-194, 2H.

6) 1-CCB-69-1-H2 SUS: 1-BGA

a) Same as 5.a above.

7) 0-618-1-6 SUS: 0-EAA

a) Field welds between items 2 & 8 do not conform to drawings requirements.

Drawing requires the welds to be located on the sides of item 8, the welds are located on the ends of item 8.

QC AI 1527
FE AI J-73
CMO NCR MOI-9-2-007

CONSTRUCTION
RESPONSE

Item numbers listed in this response correspond to the item numbers listed in Block 12 of subject NCR. Information given reflects investigation of actural field conditions and what, if any, construction action has been taken.

Item (1)

- a) Redline SH-10111 has been issued to reflect existing field condition. Basic design of hgr not affected and PE approval is not required. No further action required.
- b) Subject weld has been damaged by grinding at the toe of the weld. Adequate weld size exists and will remain after ground area is faired-in Rework Package RSH-1105 issued to correct existing condition.

Item (2)

- a) Redline LH-10420 has been issued to reflect existing field condition. Basic design of hgr not affected and PE approval is not required. No further action required.
- b) Subject condition listed on NCR has been documented on Bechtel NCR 4112. PE to evaluate.

Item (3)

a) The condition stated on NCR has been evaluated by FE and QC. Condition conforms to requirements and no nonconforming condition exists. No further action required.

Item (4)

a) Condition stated has been evaluated by FE and QC. Material installed conforms to dwg, requirements. No further action required.

Item (5)

- a) Redline has been submitted for evaluation to PE reflecting existing field condition.
- b) Redline LH-4769 was issued and used as criteria for acceptance. Subject redline deleted angle requirements. No nonconforming condition exists. No further action required.

c) Redline has been made to reflect existing field condition.

Basic design of hgr not affected and no PE approval required.

No further action required.

d) Redline has been submitted to reflect existing field condition. Basic design of hgr not affected and PE approval not required. No further action required.

Item (6)

- a) Redline LH-10579 has been issued to reflect existing field condition. Basic design not affected. PE approval not required. NOTE: Lower end of clamp measured '2" upper end 9/16". No further action required.
- b) Condition stated is not a nonconformance. Securing of threaded fastners is a requirement of final walkdown and would have been corrected at that time.

Item (7)

a) Condition stated, no longer exists. Subsequent revision of drawing reflects existing field condition. No further action required.

Item (8)

Redline has been submitted for evaluation to PE reflecting existing field condition.

Item (9)

- a) Redline has been submitted for evaluation to PE reflecting existing field condition.
- Basic design of hgr not affected and no PE approval required. No further action required.

Item (10)

Redline has been submitted for evaluation to PE reflecting existing field condition.

Item (11)

a) Redline LH-10361 has been issued to reflect existing field condition. Actual existing elevation is within installation tolerances. No further action required.

Item (12)

a) Redline LH-10457 has been issued to reflect existing field condition. Basic design of hgr is not affected and PE approval is not required. No further action required.

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NONCONFORMANCE REPORT

PROJECTS. ENGINEERING AND CONSTRUCTION -QUALITY ASSURANCE DEPARTMENT MU1-9-2-007

B. QA ASSESSMENT OF ROOT CAUSE(5):			PAGE _2_ OF _ 5
Unknown, to be determined.			
9. ACTUAL ROOT CAUSE(S), IF DIFFERENT FROM ABOVE (TO)	BE COMPLETED BY ORG. RESPONSIBLE	E FOR PROCESS CA):	
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PROCESS CA TO BE TAKEN BY ORG(S) CHECKED IN BLOCK 41	& DATE OF COMPLETION.		
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NCR M01-9-2-007

Page 3 of 5 Date: 2/4/82 File: 16.0

12. "AS IS" NONCONFORMING CONDITION VERSUS "AS REQUIRED" CONDITION WITH REFS:

Contrary to the above, the measured dimension is 61.

b) The P2.10 for the subject hanger (Log 81753) references M-343 for hanger fabrication. Paragraph 6.7.2 (Welding) envokes G-27 for welding and paragraph 4.4.8 of GWS-FM Rev 4 from G-27 states in part, "...each weld layer shall be free of porosity and excessive <u>irregularities</u> such as high spots and deep crevices."

Contrary to the above, the vertical support weldment exhibits an approximately 2" long groove - creating a sharp edge.

2) 1-610-4-27 - S/U-1BCA

a) The subject sketch requires a 9/16" length of support steel beyond the cross support weldment.

Contrary to the above, a length of 1/4" was measured.

b) The P2.10 for the subject hanger (Log 69498) references M-326 for hanger installation. Paragraph 4.2.2 (Welding) states in part, "Undercut shall not exceed 1/32"."

Contrary to the above, the angle flange to horizontal support beam weld exhibits a 5/32" undercut, (burnout).

3) 1-612-3-25 - S/U-1BKA

a) The P2.10 for the subject hanger (Log 76542) references M-326 for hanger installation. Paragraph 4.1.2 (Welding) envokes G-27 for welding and paragraph 4.4.8 of GWS-FM Rev 4 from G-27 states in part, "...each weld layer shall be free of porosity and excessive irregularities such as high spots and deep crevices."

Contrary to the above, the vertical hanger support to support beam weld exhibits a grooved face 3/32" wide for approximately 1".

4) FSK-M-1HBC-204-1-H12 - S/U-1GJA

a) The bill of materials for the subject sketch specifies a 5/8" thickness for Item 6.

Contrary to the above, several areas of the item noted measure 9/16".

5) 1-616-6-28 - 9/U-1EGA

a) The subject sketch specifies a 1/2" weld for the stanchion to vertical support, (two sides).

Contrary to the above, a 3/8" weld was measured.

NCR M01-9-2-007 Page 4 of 5 Date:

File: 16.0

b) The subject sketch specifies an angle of 60° between the angle support brace and vertical support.

Contrary to the above, an angle of 51° was measured.

c) The subject sketch specifies stanchion heights of 20" and 174".

Contrary to the above, stanchion heights of 22½" and 18 5/8" were measured respectively.

d) The subject sketch specifies 14" between the base of the angle support brace and the vertical support.

Contrary to the above, a 25%" dimension was measured.

6) 1-603-6-16 - S/U-1BGC

a) The subject sketch specifies a gap between the ends of the two clamp halves of 5".

Contrary to the above, a gap of 19/32" was measured.

h) The P2.10 for the subject hanger (Log 81906) specifies M-326 for hanger installation. Paragraph 5.8 (Locking devices) of M-326 states in part, "...all threaded connections...shall be secured by....two jam nuts."

Contrary to the above, one (outer) of the nuts was observed to be loose rendering the clamp insecure.

7) 1.-612-2-3 - S/U-1BKA

a) The subject sketch specifies a support beam (wl4 X 150) to pipe dimension of 1'-11'x".

Contrary to the above, a dimension of l'-4" was measured.

8) 2-604-3-18 - S/U-2BGA

a) The subject sketch specifies a 'm' fillet weld - all around for the horizontal support to support beam weldment (Item 1 to 7).

Contrary to the above, a non-continuous weldment was observed in this location.

9) 1-616-10-22 - S/U-1EGA

- a) The subject sketch specifies a vertical support beam (Item 2) of 4'-8' in length.

 Contrary to the above, the support beam measures 5'-0".
- b) The subject sketch specifies a vertical support beam to cross beam support length of 29".

Concrary to the above, the distance was measured to be 25".

NCR M01-9-2-007

Page 5 of 5

Date:

File: 16.0

10) 2-617-8-5 - S/U-2EGA

a) The P2.10 for the subject hanger (Log 82242) references M-326 for hanger installation. Paragraph 4.2.5 (Welding) states in part, "Additional welds not shown in the design sketches/drawings require Project Engineering review and approval via field design change control procedure or nonconformance procedure as applicable."

Contrary to the above, several additional 4" fillet welds were observed at the vertical support to angle support union (Item 2 to 3).

11) 1-603-3-2 - S/U-1BGA

a) The subject sketch specifies a piping elevation of 634'-6".

Contrary to the above, an elevation of 633' 1114" was measured.

12) 1-619-14-4 - S/U-1EAC

a) The subject sketch specifies a support beam to support beam dimension of 1'-10 3/8".

Contrary to the above, this dimension measured 1'-9 4".

Sent Lite Soul

QC AI 1505 FE AI J-40 CROO NCR MOI-9-2-010

CONSTRUCTION RESPONSE

QA AI 5-2165

Hangers listed in the response correspond to the hangers listed in Block 12 of subject NCR. Information given reflects investigation of actual field conditions and what, if any, construction action has been taken.

Hgr 2-619-1-19

- a) Subject weld is to be reworked under rework package RLH-626.
- b) Redline LH-10448 has been issued to reflect existing field condition. Basic design of hgr is not affected and PE approval not required. No further action required.

Hgr 2-604-2-35

- a) Subject weld was measured by QC and found to be acceptable,
 No further action required.
 - b) Subject condition no longer exist in field. Strut was removed under rework package RLH-390. Strut to be re-installed under rework package RLH-623.

Hgr 2-611-7-33

Subject weld is to be reworked under rework package RLH-618. Note: Subject weld is a vendor supplied weld.

Hgr 2-639-13-5

- a) Redline LH-10450 has been issued to reflect existing field condition. Welds are not insufficient (undersize), but are orientated incorrectly.
- b) Redline has been submitted for evaluation to PE reflecting existing field condition.

Hgr 2-604-17-2

Redline LH-10437 has been issued to reflect existing field condition. Basic design of hgr not affected and PE approval not required. No further action required.

Hgr 2-604-16-15

- a) Redline LH-10438 has been issued to reflect existing field condition. Basic design of hgr not affected. PE approval not required. No further action required.
- b) Redline LH-10438 has been issued to reflect existing field

condition. Basic design of hgr not affected and PE approval is not required. No further action required.

c) Stated condition no longer exists in field. U-bolt is no longer installed. U-bolt to be reinstalled under rework package RLH-622.

Hgr FSK-M-2GCB-21-1-H1

Redline SH-10112 has been issued to reflect existing field condition. Drafting error made, therefore PE approval not required. No further action required.

Hgr FSK M-2GCB-21-1-H1

- a) Redline SH-10113 has been issued to reflect existing field condition. Basic design of hgr not affected and PE approval not required. No further action required.
- b) Redline SH-10113 has been issued to reflect existing field condition. Basic design not affected and PE approval not required. No further action required.

Hgr 2-611-4-4

Redline LH-10422 has been issued to reflect existing field condition. Basic design not affected and PE approval not required. No further action required.

Hgr 2-616-8-2

- a) Redline LH-10431 has been issued to reflect existing field condition. Basic design not affected and PE approval is not required. No further action required.
- b) Rework Package RLH-617 issued to correct tread engagement. Lower end is only nonconforming condition.

Hgr FSK-M-2HBC-217-1-H2

Redline SH-10115 has been issued to reflect existing field condition. FE determined no basic design change and PE approval not required. No further action required.

Hgr FSK-M-2HBC-216-5-H3

- a) Rework Package RSH-1097 issued to correct existing field condition.
- b) Redline SH-10114 issued to reflect existing field condition.

 Basic design not affected. PE approval not required. No further action required.

Hgr 2-657-43-6

Rework Package RLH-620 issued to correct existing field condition.

Hgr 2-611-5-98

Existing condition has been inspected and evaluated by FE and QC and is acceptable as is. No further action required.

Consumers Power	NONCONFORMANC		NGINEERING AND CONSTRUCTION Y ASSURANCE DEPARTMENT
company PRIOF	ITY: 02	S/U: CODE 87 TRE	ND: DNT PAGE 1 OF 5
6. PROJECT NAME:	7. NONCONFORMING PART NO:	8. NONCONFORMING PART NAME:	1. NCR SERILL
MIDLAND 1 & 2	N/A	N/A	2. DATE: 2/5/82
9. SERIAL NUMBER:	10. ORS. COMMITTING NC:	11. AREA/LOC. OF NC:	3. DATE OF REV: N/A
N/A	BECHTEL CONSTRUCTION	N MULTIPLE BLDG's	4. FILE NO: 16.0
The following list ments as itemized but is noted that the below was the result installed and inspect the completed P2.10 Specification M 326 extent possible, p: 13. SA RECOMMENDATION FOR PART Of The recommended part on NCR.	of hangers do not conformed and of hangers do not conformed and the identification of the lt of an examination of ected by Field Engineericed/accepted by Quality document for each hange section 5.1.1 states in the supports shall be in evaluate acceptablity of its required, record approvide justification to require X NOT REQUIRED	nonconformances listed hangers completely ng, turned over to Quality Control as evidenced by er. n part: "To the greatest stalled in strict (CONTINUED) lies to all hangers listed of hanger. (LHCurtis) document. (LEDavis, ESmith) to use as is. (LHCurtis)	WRBird DMTurnbul JEBrunner RAWells JWCook JLWood MADietrich ALAB-2 BWMarguglio DBMiller REMcCue/RDJohnson BHPeck JARutgers FSchulmeister DATaggart
YES NO X	As per MPOAD proce	dure F-7M paragraph 5.1.1.	d
16. DOES NO AFFECT Q-LIST ITEM:	YES X NO	17. IS NC REPORTABLE PER 50.55(*):	YES NO +
18. IS NO REPORTABLE PER PART 21	: YES NO TO	19. IF YES, DATE & TIME OF REPORT TO	
20. IF YES, WHO MADE REPORT TO N	RC: N/A	21. IF YES, NAME OF MRC OFFICIAL TO	WHOM REPORTED: N/A
22. NOW ORIGINATED ST: See Alexander 25. PART CA DISPOSITION, JUSTIFIE	23. WRITTEN REPLI TO ESTABLISH CA COM CATION & COMPLETION DATE:	Un	VISOR'S SIGNATURE/DATE:
			*To be determined.
26. DESIGN/PROJECT SIG. AUTH. DI	ISP.: 27. PMD SIG. AUTH. DISP.:	28. PROCUREMENT SIG. COMC. DISP.:	29. SIG. OF ORG. RESP. POR C/A:

35. SIG. OF ORG. RESP. FOR PART C/A SIGNIFYING COMPLETION:

34. METHOD OF PART CA VERIFICATION:

30. PAB/CONST. SIG. AUTH. DMP. DISP.: 31. SIG. OF TEST GROUP ACKNOW. CONDITION:

36. SIG. VERIFTING PART C/A & HOLD TAG REMOVAL/DATE:

32. POR MAJOR MOD - PLT. SUPT. SIG. AUTH, DISP.:

> 37. NOR CLOSED BY DATE: (PART & PROCESS CA COMPLETE)

33. QA AUTH. SIG. TO IMPLEMENT DIS



NONCONFORMANCE REPORT

PROJECTS, ENGINEERING AND CONSTRUCTION QUALITY ASSURANCE DEPARTMENT

36. A ASSESSMENT OF ROOT CAUSE(S):

	Unknown: To be determined.
	terioris per la proper de la compansa de la compans
39-	ACTUAL ROOT CAUSE(S), IF DIFFERENT FROM ABOVE (TO BE COMPLETED BY ORG. RESPONSIBLE FOR PROCESS. CA):
40.	PROCESS CA REQUIRED FROM: DESIGN FABRICATION CONSTRUCTION X PROCUREMENT DESPECTION X OTHER
41.	QA RECOMMENDATION FOR PROCESS CA:
	Unknown: To be determined.
12.	PROCESS CA TO BE TAKEN BY ORG(S) CHECKED IN BLOCK 41 & DATE OF COMPLETION:
43.	NETHOD OF PROCESS CA VERIFICATION:
lak.	SIG. OF ORG. RESPONSIBLE FOR PROCESS CA SIGNIFYING COMPLETION: 45. PROCESS CA COMPLETION VERIFIED BY/DATE:

compliance with the component pipe support design sketches/drawings."

Contrary to the above, the following hangers have violated this specification:

Hanger 2-604-17-2 P2.10 log #76648; support angle welded to place is reversed from design sketch. S/U: 2BGA

Hanger 2-639-13-5 P2.10 log #63333; item #1 rotated 90° from design sketch. S/U:2AE/

Hanger 2-604-16-15 P2.10 log # 81811, pipe stanchion listed on bill of materials to be 1' - 7 13/16"; actual is 1' - 7 3/16". S/U: 2BGA

Hanger 2-604-2-35 P2.10 log #59842; strut not located on 4"m beam as per drawing. S/U: 2BGE

Hanger 2-619-1-19 P2.10 log #124673; item #11 listed as 8" x 12" actual as installed is 7" x 11", S/U: 2EAC

Hanger 2-GCB-21-1-H1 P2.10 log #73127; pgs 104 pipe strap specified, pgs 111 installed. S/U 2BKA

Hanger 2-HBC-219-1-H1 P2.10 log #71982; bill of materials lists item #2 as 3/8" x 4" x 4"; actual as installed is 3/8" x 4" x 3 13/16". S/U: 2GJA

Hanger 2-HBC-216-5-H3 P2.10 log #72035; item #5 on bill of Laterials listed as 3 3/4" x 3 3/4"; actual is 4" x 4". S/U: 2GJA

Hanger 2-604-16-15 P2.10 log #81811 material lists item #2 to be 3/8" thick; actual is 1/2" thick. S/U: 2BGA

Hanger 2-HBC-219-1-H1 P2.10 log #71982 rev 5 item #3 to item #2 welded @ opposite sides than design sketch. S/U: 2GJA

Hanger 2-611-4-4 P2.10 log #12411 hanger clamp assembly indicates 1 3/8" clearance on sketch; actual is 1 1/2" typical on both sides. S/U:2BCA

Hanger 2-616-8-2 P2.10 log #63192; centerline of pipe to top of item #1 (4'M beam) not per drawing. S/U: 1EGA

Specification M-343 section 6.22 states in part: "Acceptable Deviation Vertical Piping: The design location of pipe supports on vertical pipe may deviate from the original approved location, in a direction parallel to the pipe centerline by 4 inches, provided it is not adjacent to as anchor, equipment nozzle or valve, in which case prior approval from the engineer shall be required.

Contrary to the above:

Hanger 2-HBC-217-1-H2 P2.10 log #69460; sketch & isometric calls for hanger to be centered @ elevation 575' - 11 1/2"; actually @ 575' - 5 3/4". S/U: 2GJA

Specification M-326 section 5.11.1 states in part: "The clearance between the concrete walls and the structural attachment plates should not exceed 1/16" over a maximum of 20% of the bearing area;"

Contrary to the above:

Hanger 2-HBC-216-5-H3 #72305 lower right hand corner of base plate exceeds gap tolerance. S/U: 2GJA

Specification M-326 section 4.2.1.9 states: "No undersize welds are permitted".

Contrary to the above:

Hanger 2-619-1-19 P2.10 log #124673 undersire weld @ item #6 to item #11. S/U: 2E

Hanger 2-604-2-35 P2.10 log #59842 undersize weld @ sway strut to 4"M beam. S/U:

Hanger 2-611-7-33 P2.10 log #135884 undersize weld @ item #2 to item #3. S/U: 2B(

Hanger 2-639-13-5 log #63333 insufficient welds for item #1. S/U: 2AEA

PQCI 7220-P2.10, 3.3B states: "Minimum thread engagement shall be that amount necessary to engage all the threads of the nut or threaded component. Hanger load devices which have internally threaded adjustable components are to have sight holes provided to verify adequate thread engagement where required."

Contrary to this:

Hanger 1-616-8-2 P2.10 log #63192; at sight holes of support rods, no threads are visible. S/U: 1EGA

Specification M-326 section 5.1.3.b states: "When the component pipe support design sketch/drawing states the clearance is "1/32 inch typical" on opposite sides of a pipe or 1/16 inch on one side of a pipe or pipe lug, the sum of the actual clearances measured on the opposite sides of the pipe shall not be less than 1/16 inch or more than 1/8 inch. As long as the sum of these actual clearances falls wichin the above allowable limits, the actual individual clearances may be distributed in any manner, including a zero clearance on one side of the pipe.

Contrary to the above;

Hanger 2-657-43-6 P2.10 log #84577; design sketch calls for 1/32" inch clearance around "U bolt" and pipe: a total of 3/16" exists @ top side of pipe and flush on bottom. S/U: 2GJA

Hanger 2-604-16-15 log #81811 design sketch calls for 1/32 clearance around pipe and "U bolt"; no clearance exists due to off set bott holes. S/U: 2BGA

Hanger 2-611-5-98 P2.10 log #70407; welds for 3/8" plates have buckled plates @ weld locations and corners. S/U: 2BNA

- NOTE 1: The preceded conditions of all hangers identified, leave the integrity of hangers indeterminate.
- NOTE 2: All identified non-conforming hangers have been previously inspected & accepted by QC.

QC AI 1517 FE AI J-76 COONER MOI-5-2-014

CONSTRUCTION RESPONSE.

Items listed in this response correspond to the items listed in Block 12 of subject NCR. Information given reflects investigation of actual field conditions and what, if any, construction action has been taken.

Item (1)

- a) Redline has been submitted for evaluation to PE reflecting existing field condition.
- b) Redline has been submitted for evaluation to PE reflecting existing field condition.
- c) There are no shop fabricated welds. This is not a nonconforming condition. No further action required.
- d) Redline has been submitted for evaluation to PE reflecting existing field condition.

Item (2)

Redline SH-10116 has been issued to reflect existing field condition. Basic design not affected and PE approval not required. No further action required.

Item (3)

Redline SH-10117 has been issued to reflect existing field condition. Basic design not affected. PE approval not required. No further action required.

Item (4)

Redline LH-10414 has been issued to reflect existing field condition. Basic design not affected. PE approval not required. No further action required.

Item (5)

- a) Redline has been submitted for evaluation to PE reflecting existing field condition.
- b) Angle clips are attached per Dwg. Nonconforming condition does not exist. No further action required.
- c) Welds are not undersize. Nonconforming condition does not exist. No further action required.

d) No gap exists. Nonconforming condition does not exist. No further action required.

. Item (6)

The subject condition was inspected and evaluated by PE and QC and found to be acceptable as is. No further action required.

Item (7)

- a) Subject condition was inspected and evaluated by PE and QC. Pipe installed on item 1 per dwg the excess is non-critical dimension. Nonconforming condition does not exist. No further action required.
- b) Hgr is installed within tolerance. Nonconforming condition does not exist. No further action required.

Item (8)

- a) Rework Package RSH-1098 issued to correct existing condition. Subject condition would not have gone undetected and would have been corrected on final walkdown inspection.
- b) Condition stated was measured by PE and QC and found to be acceptable. No further action required.

Item (9)

- a) Subject condition does not exist. Nonconformance does not exist. No further action required.
- b) Subject conditions do not exist. Nonconformance does not exist. No further action required.

Item (10)

Redline SH-10120 has been issued to reflect existing field condition. Basic design not affected. PE approval not required. No further action required.

Item (11)

- a) Redline LH-10432 has been issued to reflect existing field condition. Basic design not affected. PE approval not required. No further action required.
- b) Redline LH-10432 has been issued to reflect existing field condition. Basic design not affected. PE approval not required.

Item (12)

Redline LH-10461 has been issued to reflect existing condition. Basic design not affected. PE approval not required. No further action required.

Item (13)

Redline has been submitted for evaluation to PE reflecting existing field condition.

Item (14)

- (a) Based on subsequent specification changes and shim plate(b) criteria clarification, FE and QC evaluated subject conditions to be used as is. No further action required.
- c) Rework Package RLH-621 has been issued to correct deficiency.
- d) Rework Package RLH-621 has been issued to correct weld deficiency.
- e) Redline LH-10435 has been issued to reflect existing field condition. Basic design of hgr not affected and piping is installed within tolerance. RE approval not required. No further action required.

Item (15) (a)(b)(c)

Rework Package RSH-1099 issued to correct existing condition. Existing condition would not have gone undetected and would have been corrected on final walkdown inspection.

Item (16)

- a) Redline made to reflect the existing field condition. Basic design not affected by change. PE approval not required No further action required.
- b) Redline has been submitted for evaluation to PE reflecting existing field condition.

Item (17)

Subject condition on NCR has been documented on Bechtel NCR 4113.

Consumers Company

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NONCONFORMANCE REPORT

PROJECTS, ENGINEERING AND CONSTRUCTION QUALITY ASSURANCE DEPARTMENT

Various Hangers See below) Pipe Hangers 10. GALL CHARTEN HE IN. ANALYDIC OF M. Price Hangers 10. GALL CHARTEN HE IN. ANALYDIC OF M. Various No. 10. CHARTEN HE IN. ANALYDIC OF M. Various No. 10. CHARTEN HE IN. ANALYDIC OF M. Various No. 10. CHARTEN HE IN. ANALYDIC OF M. IN.	ME: 2/3/82
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AS IS NONCONCOMEN CONDITION WEREDS "AS MEMBERS" CONDITION WITH ATTS: The following list of hangers do not conform to applicable requirements as itemized below. Sor all undersized welds see also M-326 4.2.1.a.1 which states. To undersized welds are permitted." For wrong material and material mater	-1-1/40
AS 15 JOHNSTONEON CONSTITUTE VIDENT TO MADURED CONSTITUTE THE ARTS: The following list of hangers do not conform to applicable requirents as itemized below. For all undersized welds see also M-326 4.2.1.a.1 which states, To undersized welds are permitted." For wrong material and material MEDIA MICHAEL MARIENT THE RECOMMENDED THE PROPERTY OF WARDING THE PROPERTY OF THE PROPERT	ATE OF REV: N/A
The following list of hangers do not conform to applicable requireants as itemized below. For all undersized welds see also M-326 4.2.1.a.1 which states, to undersized welds are permitted." For wrong material and material mensions see M-326 5.1.1. A MICHAELTON FOR PART MA: The recommended part Corrective Action applies to MRBI JWCO MADDI BBM DBM REMITTED TO Engineering to evaluate acceptability of hangers 20 If JAR OFFICE TO STATE TO USE ASSESSION AND THE ACTION OF THE AC	TLE NO: 16.0
Entranglement of the provided part corrective Action applies of the Michael States. A Michael Action FOR PART ALL The recommended part Corrective Action applies of Mangers: 1) Engineering to evaluate acceptability of hangers 2: If JAR DAT JORGAN PROPERTION FOR PART ALL THE RECOMMENDED THE ACTION PROPERTIES ACTION FOR PART ALL THE PROPERTIES ACTION FOR PART ALL THE PROPERTIES AND ACTION ACTION AND ACTION	DISTRIBUTION
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Analogers: 1) (Engineering to evaluate acceptability of hangers) 2) (If JAR York/repair is required; record, reinspect and document.) 3) If DAT ceptable, provide justification to use as-is, and revise the drawing reflect actual conditions. Actionee: 1) LHCurtis 2 LLDavis, Esmith DMT reflect actual conditions. Actionee: 1) LHCurtis 3) LHCurtis DMT RAW DESIGN/PROJECT ENG. DISPOSITION REQUIRED X NOT REQUIRED 3) LHCurtis DMT RAW JLW MPQAD Procedure F-7M para 5.1.1.d IS PACKESS CA REQUIRED: YES X NO	
NUMBER, LOCATION & TYPE OF HOLD TADE APPLIED: YES MPOAD Procedure F-7M para 5.1.1.d IS PACKESS ON REQUIRED: YES NO 17 NO. ENTER JUSTIFICATION ZELOW: DOES NO AFFECT Q-LIST LIDE: YES NO 17. IS NO REPORTABLE YER 50.55(e): YES IS NO REPORTABLE YER PART 21: YES NO 19. IF YES, DATE & TIDE OF REPORT TO NEC: IF YES, WHO MADE REPORT TO NEC: 21. IF YES, WHO MADE REPORT TO NEC: 22. VRITTEN REPLY REQUIRED ET: Respond by: 2/22/32 TO ESTABLISH ON COMPLETION DATE: PART ON DISPOSITION, JUSTIFICATION & COMPLETION DATE:	eck outgers aggart ornbull ells
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IS SEE REPORTABLE FOR PART 21: TES SO X 19. IF YES, DAIL & TIME OF REPORT TO MRC: 21. IF YES, NAME OF MRC OFFICIAL TO WHOM REP NOT OFFICIAL TO WHOM REP 23. WRITTEN REPLY REQUIRED EY: Respond by: 2/22/32 TO ESTABLISH CA COMPLETION DAYS PART CA DISPOSITION, JUSTIFICATION & COMPLETION DAYS:	
IF YES, WHO MADE REPORT TO KEC: 21. IF YES, NAME OF KEC OFFICIAL TO WHOM REPORT OF THE OFFIC	NO *
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NCR: M-01-5-2-014 Date: 2/3/82 Page 3 of 5

CONTINUED:

12. "AS IS" NONCONFORMING CONDITION VERSUS "AS REQUIRED" CONDITION WITH REFS:

Hardware Discrepancy

- 1) 2-611-6-5 Q10-2FLB-35-H5) Log #63225 Rev 5 S/U 2BCA
 - a) Where the sway strut fitting is welded to the vertical I-Beam, the welds are undersized both legs per the drawing.
 - b) Three of four welds attaching the horizontal I-Beam to the superstructure I-Beam are undersized on one leg per the drawing
 - c) The beam to beam shop fabricated portion welds are undersized on one leg per the drawing.
 - d) The brace beam angle is supposed to be 44°±1° per the drawing and it is installed at 46½°.
- 2) FSK-M-2HBC-145-1-H5Q Log #87879 Rev 5 S/U 2EGA

Item #1 in bill of materials is a W5 I-Beam and a W6 I-Beam was installed.

3) FSK-M-2HBC-144-1-H&Q Log #73182 Rev 5 S/U 2EGA

Item #3 per drawing bill of material is a plate $\frac{1}{2}$ " x 2 3/4" x 2 3/4" however, a $\frac{1}{2}$ " x 3 3/4" x 3 3/4" plate was installed.

4) 1-612-3-12 Q(8"-1GCB-16-H1) Log #76107 Rev 5 S/U 1BKA

This hanger was installed 4½" West of drawing coordinates perpendicular to the pipe. (Contrary to even the new Appendix K of M-326 allowance of ±2" for a deviation of the pipe)

- 5) 2-613-4-19Q(12-2HBC-5-H1) Log # 68235 Rev 5 S/U 2BCA
 - a) The two welds that attach the spring canister to the channels are undersized on one leg per the drawing.
 - b) The angle clips are attached to the wrong end of the channels per the drawing
 - c) Both bottom welds of the angle clips to the channel are undersized on one leg per the drawing.
 - d) There is a gap between the angle clips and the channel and the drawing shows no gap.

Note:

Although the clip to main beam welds were changed from being an NF5222 weld the detail indicates the clip to channel welds are still per NF5222.

NCR: M01-5-2-014 Date: 2/3/82 Page 4 of 5

6) FSK-M-2-FCC-4-1-H1 (Q) Log # 64107 Rev 5 S/U 2BBB

There is weld burn out causing reduced thickness of up to 3/32" at one end of one of the welds of strap to angle. This also makes the weld undersize.

- 7) FSK-M-2ECB-8-3-H4 (Q) Log #79652 Rev 5 S/U 2BHA
 - a) Item #1 on the bill of material is 13½" long, however, actual installed is 13 3/4" long.
 - b) The isometric drawing locates this hanger ll'-l ll/16" East of reactor building centerline, however, measurement from a benchmark locates it at ll'-9 %" East of the reactor building centerline contrary to para 6.2 of M-343.
- 8) FSK-M-2ECB-4-4-H5(Q) Log #60821 Rev 4 S/U 2BHA
 - a) There is a cotter pin missing on the lower end of the West sway strut.
 - b) The 'm' gap between the sway struts called for in view c-c of the drawing is actually 'm'.
- 9) FSK-M-2HBC-1 -1-H2(Q) Log #78717 Rev 5 S/U 2JEA
 - a) The stiffener plate outer bottom edge thickness is reduced due to weld burn off resulting in an undersize weld.
 - b) The same condition occurs on three (3) places on the pipe strap (this was beveled and a full weld was not made).
- 10) FSK-M-2GCB-22-1-H3 (Q) Log #68259 Rev 5 S/U 2BKA

Item #3 on bill of material is $4" \times 2 3/4" \times 2 3/4"$ per drawing. Actual is $4" \times 3 3/4" \times 3 3/4"$.

- 11) 2-617-11-9 (6"-2HBC-149-H1)(Q) Log #69494 Rev 5 S/U 2EGA
 - a) Section AA of drawing requires 2 31/32" offset between centerline of main beam and centerline of vertical beams of the hanger. Actual is 5/16" offset.
 - b) Centerline of pipe to centerline of vertical beams is actually 12 3/4" and 12 4", however, the drawing requires 12".
- 12) 2-519-1-20RQ(8"-2HEC-109-H20R) Log #64049 Rev 5 5/U 2EAC

The hanger is 5" West of drawing coordinates (perpendicular to the pipe) contrary to para 5.2 of M-326 (note the drawing states "field cut to suit" for "Items 1 and 2 on the bill of material, however, material used was longer than called for).

NCR: M01-5-2-014 Date: 2/3/82 Page 5 of 5

13) 2-619-2-19 Q (10"-2HBC-110-H19) Log #103729 Rev 6 S/U 2EAC

The lugs attaching the sway strut to the vertical I-Beam are rotated +0° from the drawing configuration and contrary to M-326 5.2.1.d.

14) 2-619-6-11 Q (10"-2HBC-100-H3) Log #76640 Rev 5 S/U 2EAD 6F P 2/0 Le. of P 2/10

- a) Item #8 on bill of material requires 1" x 6" x 4½", however, 1" x 6½" x 5" was installed.
- b) Item #7 on bill of material requires 7/8" x 6" x 5", however, 7/8" x 6" x 44" was installed. (a later rev makes a & b acceptable)
- c) Vertical gap, both top and bottom, is not parallel with pipe. Guide pads top and bottom touch the pipe at one end and have gap exceeding the requirements of the drawing and M-326 para 5.1.3.b at the other end.
- d) The welds of the vertical hanger beams to the bottom horizontal beam are undersized per drawing.
- e) The 1'-7 1/8" distance between pipes per drawing was installed as 1'-10 1/8".
- 15) FSK-M-2EBB-3-4-H1 (Q) Log # 71689 Rev 5 S/U 2BMA
 - a) The sway strut has a tie wrap (plastic) instead of a bolt, nut and washers per the manufacturers drawing on one end.
 - b) A cotter pin is missing from the retaining pin at the other end of the sway strut contrary to the manufacturers drawing
 - c) Lock nuts missing on pipe clamp
- 16) 1-612-2-2 Q (8"1GCB-16-H47) Log #63197 Rev 5 S/U 1BKA
 - a) The 2'-5%" dimension from centerline of pipe to centerline of the W14 x 111 I-Beam is 2'-3" installed (this is perpendicular to the pipe)
 - b) The North and South end plates (Item 5) welded to angle have an undersized weld on one leg. Both of these are on the West side.
- 17) 1-612-4-33(Q)(6"-1GCB-18-H10) Log #65882 Rev 5 S/U 1BCA

The small plate (#1 on bill of material) has reduced section and therefore undersized weld at the top.

CONSTRUCTION

QC AI 1506 FE AI J-43 CACO NCR MOI-5-2-017

QA AI 5-1272

Item numbers listed in this response correspond to the item numbers listed in Block 12 of subject NCR. Information given reflects investigation of actual field condition and what, if any, construction action has been taken.

Item (1)

- a) Rework Package RSH-1100 issued to correct existing field condition,
- b) Rework Package RSH-1104 issued to correct existing field condition.
- c) Redline has been submitted to PE reflecting existing field condition.
- d) The clearances as installed are acceptable per requirements. Nonconforming condition does not exist. No further action required.
- e) Redline has been submitted to PE reflecting existing field condition.
- f) Rework Package RSH-1101 issued to field to correct existing condition.
- g) Rework Package RSH-1102 issued to correct existing field condition.

Item (2)

Redline LH-10421 has been issued to reflect existing field condition. Basic design of hgr not affected by change. PE approval not required. No further action required.

Item (3)

Subject condition has been evaluated by FE and QC. Based on weld length and size existing condition is acceptable as is. No further action required.

Item (4)

Redline LH-10418 has been issued to reflect existing field condition. Basic design of hgr not affected. PE approval not required. No further action required.

Item (5)

Rework Package RSH-1103 issued to correct existing field condition.

Item (6)

Rework Package RSH-1102 issued to correct existing field condition.

Item (7)

Redline has been submitted to PE reflecting existing field condition. (Redline #LH-10449)

(P	Consumers Power Company
ó.	PROJECT	NAME:
		rm.

Consumers Power Company	NONCONFORMANCE	REPORT	JECTS. ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT
6. PROJECT NAME: MIDLAND	ORITY: 2 TREND: DNT 7. NOMCONFORMING PART NO: VARIOUS	8. NONCONFORMING PART NAME VARIOUS	Code 83 PAGE 1 OF 3
9. STRIAL NOZER: VARIOUS (See Block 12)	(See Block 12) BECHTEL QC/ BECHTEL CONSTRUCTION	(See Block 12) 11 VARIOUS (See Block 12)	2. DATE 2/5/82 3. DATE OF PEV:
The following list requirements as it below was the rest installed and inspectors of the control	TION VERSUS AS REQUIRED CONDITION WITH RIPS	onconformances list ngers completely , turned over to Qu ntrol as evidenced	ality UPRied RAVells
1) Engineering to	MPQAD Procedure F	rework/repair, s, ESmith) use as is & revise rawing to reflect a onditions. (LHCurti FAPTING: -7M Paragraph 5.1.1	REMcCue/TIFO111D_BHPeck DATaggart DMTurnbull JARutgers
15. IS PROCESS CA REQUIRED:	YES Y NO IF NO, ENTER JUSTIFICA	TION BELOW:	
16. DOES NO AFFECT Q-LIST 1750H:	XXX X NO	17. IS NC REPORTABLE PER 50.	
18. IS NO REPORTABLE PER PART 2		19. IF YES, DATE & TIME OF	
20. IF YES, WHO MADE REPORT TO	N/A	21. IF YES, NAME OF NRC OFF	N/A
2. Ednishup et:	23. WRITTEN REPLY ROOM To be determine to be determine to be taken a complete		REWlitake 2/5/82
26. DESIGN/PROJECT SIG. AUTH. D	DISP.: 31. SIG. OF TEST GROUP ACKNOW.	25. PROCUREMENT SIG. CONC. DI 32. POR MAJOR MOD - PLT. SUP	
	CONDITION:	SIG. AUTH. DISP.:	
34. METHOD OF PART CA VERIFICAT	ION:		

36. SIG. VERITYING PART C/A & HOLD TAG REMOVAL/DATE:

37. NCR CLOSED BY/DATE: (PART & PROCESS CA COMPLETE)

35. SIG. OF ORG. RESP. FOR PART C/A SIGNIFYING COMPLETION:



NONCONFORMANCE REPORT

PROJECTS. ENGINEERING AND CONSTRUCTION -QUALITY ASSURANCE DEPARTMENT

NCR	SERIAL	NUMBER	:	
	-			2

30. WA ASSESSMENT OF ROOT CAU	
Unknown: T	To be determined.
20 ACTIAL ROOT CAUNTE(S). OF	DIFFERENT FROM ABOVE (NO BE COMPLETED BY NRG. RESPONSIBLE FOR PROCESS CA):
39, 20,000 800, 50000(0), 20	
40. PROCESS CA REQUIRED FR	CM: FARRICATION X CONSTRUCTION X PROGUESDANT INSPECTION X
DES148	PABRICATION X CONSTRUCTION X PROCURSONT DESPECTION X
41. QA RECOMMENDATION FOR PR	OCESS CA:
	To be determined.
Unknown:	10 be determined.
42. PROCESS CA TO BE TAKEN I	BY ORG(S) CHECKED IN BLOCK 4) & DATE OF COMPLETION:
43. METHOD OF PROCESS CA VE	RIFICATION:
L. SIG. OF ORG. RESPONSIBLE	FOR PROCESS CA SIGNIFYING COMPLETION: 45. PROCESS CA COMPLETION VERIFIED BI/DATE:

1) Clearances on the following hangers do not conform to the drawing/ specification tolerances:

a) 0-HBC-142-1-H1 SUS: 2-EAD b) 1-HBC-145-1-H9 SUS: 1-EGA c) 1-657-37-9 SUS: 1-GJA d) 1-657-37-22 SUS: 1-GJA e) 1-648-7-58 SUS: 1-KAB f) 1-HBC-144-1-H3 SUS: 1-EGA g) 1-CCB-69-1-H2 SUS: 1-BGA

NOTE: Items b & f contain masking tape under the strap, preventing accurate measurement.

2) 0-617-7-13 SUS: 0-EGA

.

Item #3 (I-BEAM) is not installed in accordance with the drawing. Angle clip & field weld is located incorrectly.

3) 0-617-8-33 SUS: 0-EGA

a) Field weld between items 2 & 3 does not conform to drawing requirements. West weld, south end, contains approximately ½" of undersize weld.

4) 1-633-1-33 SUS: 1-BMA

a) Drawing requires the bottom plate, on one corner, to be beveled \(\frac{1}{2} \).

Contrary to the above, the bevel was determined to be 3/16".

5) 1-CCB-69-1-H1 SUS: 1-BGA

a) PGS-114 requires the jam nuts to be SA-307, GR B Contrary to the above, the jam nuts are SA-194, 2H.

6) 1-CCB-69-1-H2 SUS: 1-BGA

a) Same as 5.a above.

7) 0-618-1-6 SUS: 0-EAA

a) Field welds between items 2 & 8 do not conform to drawings requirements. Drawing requires the welds to be located on the sides of item 8, the welds are located on the ends of item 8.

PROJECT ENGINEERING'S COMPLETE RESPONSE

TO CPCO NONCONFORMANCE REPORT M-01-9-2-007, AI: S-1261

This response supplements Construction and Quality Control's response to the subject NCR. The condition of the discrepancies requiring rework were evaluated for safety while redlined items (to reflect existing condition) submitted for Project Engineering approval were reviewed for acceptability. One discrepancy was also documented on Bechtel NCR number 4112.

Results of the safety evaluation indicate that the identified discrepancies (requiring rework), were they to have remained uncorrected, could not have affected adversely the safety of operation of the plant.

Field Redlined drawings that were submitted by Construction for PE approval were found acceptable. Bechtel NCR 4112 was dispositioned "use as is".

Details are shown below.

- 1. 1HBC-219-1-H1(Q), REV.2 --- REWORK
 - Safety Evaluation: A groove 1" long x 1/32" x 1/16" deep exists at the top of the west weld on the pgs-113 strap. A 5/16" filled is required. The weld is large enough to achieve 5/16" fillet beyond grooved area. The remainder of weld (1") is acceptable.

 Even if effective weld size were reduced to 1/4 fillet for 2" long, the weld would qualify for a 900 pound load (two-directional) on the pgs strap per standard calculation 400-005, REV.2. The maximum load on H1 415 pounds, which is less than 900 pounds (allowable load for 1/4" fillet), hence the weld is still within design allowables. Therefore, there is no safety impact. (Ref. Bechtel calc. number 400-3-208(Q))
- 2. 1-610-4-27(Q), REV.4 --- BECHTEL NCR 4112 WAS ISSUED
 - Acceptability: This NCR was dispositioned "use as is". The gouge in the support has caused very minimal loss of cross sectional area and will not affect the structural integrity of the support, therefore, acceptable.
- 3. 1-616-6-28(Q), REV.1 --- REWORK (THIS WAS ORIGINALLY REDLINED FOR PE APPROVAL)
 - Safety Evaluation: Undersized weld exists. Extensive review by ITT-Grinnel Providence has determined that the 3/8" weld will accommodate the loading conditions. Therefore, there is no safety impact. However, ITT Grinnell prefers to have the weld reworked. (Ref. ITT Grinnell calc. number Z-351)
- 4. 2-604-3-18(Q), REV.1 --- REDLINE FOR PE APPROVAL
 - Acceptability: A non-continuous weldment exists (item 1 to 7). There is a small difference in weld properties from an all around weld to what was made on the support. Based on load and span of the braced cantilevers, the weld that was not made on the edges of the flange willnnot affect the design, therefore, acceptable. (Ref. ITT Grinnell calc. number Z-356)

5. 1-616-10-22(Q), REV.4 --- REDLINE FOR PE APPROVAL

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Acceptability: Item 2 is 5'-0" instead of 4'-8 1/2". After reviewing the forces and stresses from STRUDL analysis, the change in dimension (elevation) will not affect the stability of the structure, therefore, acceptable. (Ref. ITT Grinnell calc. number Z-355)

6. 2-617-8-5(Q), REV. 2 --- REDLINE FOR PE APPROVAL

Acceptability: Several additional 1/4" fillet welds were observed at the vertical support to angle support union. These additional welds at the joint has no adverse effect on the design, therefore, acceptable. (Ref. Bechtel calc. number LBSE 1-617-8)

Prepared by

L. J. Snyder Resident Q. E.

Reviewed by:

D. S. Borlaza / Resident Q. E.

D. Riat

Resident Small Pipe and

Hangers

R Myers

Resident Large Bore Pipe

Hanger Design

PROJECT ENGINEERING'S COMPLETE RESPONSE

TO CPCO NONCONFORMANCE REPORT M-01-9-2-010, AI: S1265

This response supplements Construction and Quality Control's response to the subject NCR. The condition of the discrepancies requiring rework were evaluated for safety while redlined items (to reflect existing condition) submitted for Project Engineering approval were reviewed for acceptability.

Results of the safety evaluation indicate that the identified discrepancies (requiring rework), were they to have remained uncorrected, could not have affected adversely the safety of operation of the plant.

Field redlined drawings that were submitted by Construction for PE approval were found acceptable.

Details are shown below.

- 1. 2-619-1-19(Q), REV.1 --- REWORK
 - Safety Evaluation: Weld for item 6 to 11 is undersized by 1/32" for last 1" of weld. The weld in question is non-load bearing.

 Therefore, undersizing it by 1/32" for the last 1" of weld will not affect the design integrity of the structure. There is no safety impact. (Ref. ITT Grinnell calc. number Z-361)
- 2. 2-604-2-35(Q), REV.1 --- REWORK
 - Safety Evaluation: Rear bracket was rotated 90°. Z- and X-movement is zero. Therefore, rotation of rear bracket has no effect on hanger design. There is no safety impact. (Ref. Bechtel calc. number LBSE 1-601-2)
- 3. 2-611-7-33(Q), REV.1 --- HEWORK
 - Safety Evaluation: Welds for items 2 and 3 are undersized. Section III, Division I Appendices, Appendix XVII, Table XVII-2452.1-1 states minimum size welds. The 1/8" weld stated in NCR is below minimum for 1/2" plate and considered a "cold weld". Based on load and the amount of weld at 1/8"fillet, this weld is within the weld allowable. Therefore, there is no safety impact. (Ref. ITT Grinnell calc. number Z-354)
- 4. 2-639-13-5(Q), REV. 2 --- REDLINE FOR PE APPROVAL
 - Acceptability: Item 1 was rotated 90°. Also, welds for item 1 is insufficient. Item 1 rotated has no effect on design. Y-load is transmitted lengthwise in the beam. The component forces due to the movement of the pipe are small, therefore the forces will have negligible effect on the welds. Weld is sufficient. This is acceptable. (Ref. ITT Grinnell calc. number Z-353)

- 2-604-16-15(Q), REV.O/F1 --- REWORK 5.
 - Safety Evaluation: No clearance exists due to off-set "U-bolt" holes. Specification 7220-M-326(Q) paragraph 5.1.3(b) states, when the component pipe support design sketch/drawing states the clearance is 1/32" typical on opposite sides of the pipe or pipe lug, the actual clearances shall not be less than 1/16" or more than 1/8" inclusive... the actual individual clearances may be distributed in any manner, including a zero clearance on one-side of the pipe. Therefore, there is no specification violation.
- 1-616-8-2(Q), REV.7 HEWORK
 - Safety Evaluation: At sight holes of support rods, no threads are visible. Thread engagement on lower end of extension does not meet requirements. Measured ingagement is 1", minimum required is 1 1/2". Based on calculation, 1" thread engagement is sufficient. Therefore, there is no safety impact. (Ref. ITT Grinnell calc. number Z-360)
- 2HBC-216-5-H3(Q), REV.O --- HEWORK 7.
 - Safety Evaluation: Approximately 21% of the bearing surface exceeds gap requirements of spec. 7220-M-326(Q). All of lower right hand anchor bolt and lower 1/4 of plate has slightly greater than 1/16" gap. An evaluation of support 2HBC-216-5-H3(Q), assuming the bolt on the lower right hand corner of the base plate is nonfunctional, verifies that all the stresses are within design allowables. Therefore, there is no safety impact. (Ref. Bechtel calc. number 400-3-209(Q))
- 2-657-43-6(Q), REV. 1 --- REWORK 8.
 - Safety Evaluation: 3/16" clearance exists between top of pipe and U-bolt. The magnitude of loads could not create enough force to fail U-bolt. Therefore, there is no safety impact. (Ref. Bechtel calc. number LBSE 1-657-43)

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Hanger Design

PROJECT ENGINEERING'S COMPLETE RESPONSE

TO CPCO NONCONFORMANCE REPORT M-01-5-2-014, AI: S-1267

This response supplements Construction and Quality Control's response to the subject NCR. The condition of the discrepancies requiring rework were evaluated for safety while redlined items (to reflect existing condition) submitted for Project Engineering approval were reviewed for acceptability. One discrepancy was also documented on Bechtel NCR 4113.

Results of the safety evaluation indicate that the identified discrepancies (requiring rework), were they to have remained uncorrected, could not have affected adversely the safety of operation of the plant.

Field redlined drawings that were submitted by Construction for approval were found acceptable. Bechtel NCR 4113 was dispositioned "use as is".

Details are shown below.

- 1. 2-611-6-5(Q), REV. 3 --- REDLINE FOR PE APPROVAL
 - Acceptability: Undersized welds and wider brace beam angle was observed. The 3/16" weld on figure 211 rear bracket to item number 2 is well within the allowables. The 3/16" fillet weld is sufficient for the connection of item number 3 to existing steel based on brief calculation. Therefore, it is acceptable. (Ref. ITT Grinnell calc. number Z-352)
- 2. 2-613-4-19(Q), REV. 3 --- REDLINE FOR FE APPROVAL
 - Acceptability: Undersized weld of 3/16" fillet at connection of item number 3 and number 2 is sufficient since subject weld is not a stressed weld. It is only used to stabilize item number 3. Therefore, it is acceptable. (Ref. ITT Grinnell calc. number 2-358)
- 3. 2ECB-4-4-H5(Q), REV. 2 --- REWORK
 - Safety Evaluation: Cotter pin is missing on lower end of west sway strut. In this evaluation, the vertical restraint on the hanger will be non-functional.

There is absolutely no danger or safety hazzard to the piping system. Thermal stresses are actually reduced, weight and seismic stresses are increased, but are still within ASME-Section III Code allowable stress levels. Loading on adjacent restraints increase if it is assumed that hanger 2ECB-4-4-H5(Q) is non-functional.

An evaluation of the adjacent supports, 2ECB-4-4-H4(Q) and 2ECB-4-5-H1(Q), with the increased loads shows that they are still within the acceptable design allowables, therefore, there is no safety impact on the system. (Ref. Bechtel calc. numbers 400-3-201(Q) and 100-3-202(Q))

- 4. 2-619-2-19(Q), REV.1 --- BEDLINE FOR PE APPROVAL
 - Acceptability: Rear end bracket of sway strut was rotated 90°. Review of thermal and seismic movements show that there is no restraint with end bracket rotated. (Ref. Bechtel calc. no. LBSE1-619-2)
- 5. 2-619-6-11(Q), REV.3 --- REWORK
 - Safety Evaluation: No gap exist between pipe and hanger. Also, undersized welds were roted on the vertical hanger beams to the bottom horizontal beam.

The radial expansion of the pipe is less than 0.001" resulting in a very small load. Frictional effects existing from Y-load is very much greater than load due to radial expansion, therefore, its contribution is negligible.

The required weld (per calculation) is 0.05". Therefore, the 3/16" weld is acceptable.

Based on the above, there is no safety impact. (Ref. Bechtel alc. mumber SEC-619-6-1(Q))

- 6. 2EBB-3-4-H1(Q), REV.1 --- REWORK
 - Safety Evaluation: It was observed that plastic tie wrap was used instead of a bolt. Also, lock nuts and cotter pins are missing.

Assuming support 2EBB-3-4-H1(Q) will be non-functional, the piping system would still qualify per spec. M-343, i.e. still within acceptable seismic spans. The adjacent support 2EBB-3-4-H2(Q) would be required to pick up the additional seismic load increase from 14 pounds to 82 pounds. Faulted load increase from 42 pounds to 205 pounds.

Pipe support 2EEB-3-4-H2(Q) was originally designed for a faulted load of 345 pounds. This is greater than the load arrived at by the stress engineer's evaluation, therefore, the hanger is still (Ref. Bechtel calc. number 400-3-200(Q))

- 7. 1-612-2-2(Q), REV.1 --- REDLINE FOR PE APPROVAL
 - Acceptability: Undersized weld on one leg was noted. The 1/4" fillet weld at all shim plates are sufficient and are well within the limits of the welding allowables, therefore, acceptable. (Ref. ITT Grinnell calc. number Z-359)
- 8. 1-612-4-33(Q), REV.1/F1 --- BECHTEL NCR 4113 WAS ISSUED
 - Acceptability: Plate number 1 has reduced section and undersized weld. In accordance with Civil calculation 23c6(Q), the weld is acceptable. This NCR was dispositioned "use as is". (Ref. Bechtel calc. number 23c6(Q))

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Reviewed by: McCollage
D. S. Borlaza
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Hangers

H. Myers Resident Large Bore Pipe

Hanger Design

PROJECT ENGINEERING'S COMPLETE RESPONSE TO

CPCo NONCONFORMANCE REPORT M-01-5-2-017, AI: 1272

This response supplements Construction and Quality Control's response to the subject NCR. The condition of the discrepancies requiring rework were evaluated for safety while Redlined items (to reflect existing condition) submitted for Project Engineering approval were reviewed for acceptability.

Results of the safety evaluation indicate that the identified deficiencies (requiring rework), were they to have remained uncorrected, could not have affected adversely the safety of operation of the plant.

Field Redlined Hanger drawings that were submitted by construction for Project Engineering's approval were found acceptable. Details are shown below.

- 1. OHBC-142-1-H1(Q), REV.4 --- REWORK
 - Safety Evaluation: The actual total clearance between pipe and pgs-104 strap is 3/32". The additional 1/32" clearance is acceptable from a safety stand point. It does not increase stresses on the piping system. Stresses are within code allowables. (Ref. Bechtel calc. number 439-3-1(Q))
- 2. 1HBD-145-1-H9(Q), REV.2 --- REWORK
 - Safety Evaluation: No gap exists between sides of pgs-113 strap and pipe. In this evaluation, it is assumed that the total axial restraint at hanger H9 results in the 6'-11" span between H9 and H10 being totally restrained.

Although the compressive stress is not required to be evaluated by code, this was done. At a maximum temperature of 150°F as listed in spec. M-480, compressive stress is well within the yield strength of the pipe material. Also, the critical buckling load for the span is not developed, and the piping system remains operable. however, a total deflection of 0.0422" will be distributed between supports H9 and H10.

Since there is 1/32" clearance between the lug and the pipe on H10, Hanger H9 and H10 would only be required to deflect 0.01095". However, since it was assumed that the clearance is not there and H10 is also locked, the force required to deflect H9 (0.0422") in the X-direction is Fx = 600 pounds.

An evaluation of supports H9 and H10 with an additional load of 600 pounds shows that the supports are still within design allowables. Therefore, there is no safety impact. (Ref. Bechtel calc. numbers 400-3-204(Q) and 400-3-205(Q))

- 3. 1-657-37-9(Q), REV.2 --- REDLINE FOR PE APPROVAL
 - Acceptability: The clearance in the Z-direction is within specification tolerance. Total movement in Y-direction is ± 0.66", therefore the 0.78 clearance is acceptable. (Ref. Bechtel calc. no. LBSE 1-657-37)
- 4. 1-648-7-58(Q), REV.1/F1 --- REDLINE FOR PE APPROVAL
 - Acceptability: The relationship of forces indicate that support surface in the positive direction will never come into play. Clearance is not critical to design. Therefore, it is acceptable. (Ref. Bechtel calc. number LBSE 1-648-7)
- 5. 1HBC-144-1-H3(Q), REV.2 --- REWORK
 - Safety Evaluation: There is only a 1/32" clearance between side of pgs-113 strap and pipe. The radial expansion of the pipe at maximum temperature of 115°F (listed in spec. M-480) is equal to 0.00067" which is less than 1/32". This qualifies the piping and has no effect on the hanger. Therefore, no safety impact. (Ref. Bechtel calc. number 400-3-203(Q))
- 6. 1CCB-69-1-H2(Q), REV.2 --- REWORK
 - Safety Evaluation: No gap exists between pipe clamp and its supporting structure. In this evaluation, it is assumed that the support 100B-60-1-H2 locks up in three directions.

Add: Jonal restraint for weight and seismic load cases will aid in the pipe stress equations and additional loads will be minimal due to relative locations of adjacent supports. The unrestrained displacements for thermal and seismic anchor movement load cases at H2 (per AAO analysis) are used to approximate additional loads. If these displacements were restrained, the additional pipe stress would be approximately 1/4 the allowable of equations #10 and #11, which is conservatively based on a guided cantilever beam. Therefore, the pipe system would still be operable.

Additional loads on H2 from all load cases combined would be conservatively 200 pounds X-direction and 200 pounds Z-direction. Additional loads on hangers 1CCB-66-1-H1 and 1CCB-69-1-H3 will be approximately 100 pounds in the X- and Z-directions.

An evaluation of the above hangers with the additional loads caused by support 1CCB-69-1-H2 being locked in three directions verifies that the stresses on the hangers are still within design allowables. Therefore, there is no safety impact. (Ref. Bechtel calc. number 400-3-206(Q))

- 7. 1CCB-69-1-H1(Q), REV. 3 and 1CCB-69-1-H2(Q), REV. 2 --- REWORK
 - Safety Evaluation: Pgs-114 requires the jam nuts to be SA-307, GR.B, however, SA-194, 2H was used. Although SA-307, GR.B nut is a standard callout for these support assemblies, the SA-194, 2H nuts have a higher proof load rating per ASME Code. This substitution will have no safety impact on the support.

8. 0-618-1-6(Q), REV.O --- REDLINE FOR PE APPROVAL

Acceptability: Field welds between items 2 and 8 do not conform to drawing. The existing welds are within the welding allowables, therefore, welds are sufficient. (Ref. ITT Grinnell calc. number Z-357)

Prepared by

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Reviewed by:

D. S. Borlaza Resident Q. E.

D. Riat

Resident Small Pipe and

Hangers

A. Myers

Resident Large Bore Pipe

Hanger Design



Midland Project: PO Box 1963, Midland, MI 48640 . (517) 631-0951

May 5, 1982

Messrs W R Bird and B W Marguglio Consumers Power Co 1945 Parnall Road Jackson, MI 49201

Mr M A Dietrich Bechtel Power Corp PO Box 2167 Midland, MI 48640

MIDLAND PROJECT - USNRC EXIT MEETING (Isa Yin) OF APRIL 23, 1982 File 0.4.2 Serial 17009

An unannounced NRC inspection by Mr I T Yin took place from April 21 through April 23, 1982. Entrance and exit meetings were held on April 21 and April 23 respectively. The lists of attendees for each of those meetings are attached to this letter.

The stated (by Mr Yin) purpose of this inspection was to close infractions and unresolved items from the 81-12 inspection and other older items, if time permitted.

- I. The following old items were addressed:
 - Infraction 81-12-11/12 Large Bore Pipe Supports Not Installed Per Drawings/Specifications. This item remains open and is the subject of an additional violation (See Section II on the following page for details).
 - 2. Infraction 81-12-12/13 Pipe Hanger Inspection and Acceptance by Quality Control. This item remains open and is the subject of an additional violation (See Section II on the following page for details).
 - 3. Infraction 81-12-13/14 Installation of Small Bore Pipe Without Committed Preliminary Design Calculations. Closed.
 - 4. Infraction 81-12-14/15 Small Bore Pipe Design Document Control Not Maintained. Closed.
 - 5. Infraction 81-12-16/17 Inadequate QA Audits. Closed.
 - Infraction 81-14-01 Inadequate Design Control (Redlines). Closed.
 - 7. URI 81-12-10/11 Bechtel Specification Applicability. Closed.
 - 8. URI 81-12-15/16 Mechanical Rework Controls. Closed.

2

II. New Items

1. Infraction - Severity Level IV. Piping Suspension QC Inspection Breakdown. In view of the large number of hangers (43.9% of sample) identified as nonconforming in MPQAD NCRs as a result of the MPQAD overinspection of hangers which had been previously inspected and accepted by Bechtel QC, Mr Yin determined that there was breakdown in Quality Control in 1980 and that MPQAD had failed to report this as required by 10 CFR 50.55(e). He noted that a deficiency in 127 of 9401 characteristics served only to demonstrate the complexity of the hangers, not the overall acceptability of the installed condition. Review of the records indicated that 1649 hangers were inspected/accepted in 1980, 3270 in 1981 and 789 to date (through March) in 1982.

The NRC has determined that they will require the licensee to do a 100% (re)inspection of the hangers installed in 1980 and a sample (undetermined size) of those inspected/accepted in 1981 and 1982. Any alternate proposals by MPQAD should be discussed with USNRC Region III management.

 Unresolved item. Design of large bore hangers and other mechanical items. Mr Y'n plans to visit Ann Arbor in the near future to review the design process and records in these areas.

REWSTAR Sect

R E Whitaker, Section Head Fluids and Mechanical Midland Project QA Department

REW/lrb

CC BJCole, Midland JWCook, P26-336B MLCurland, Midland LHCurtis, Bechtel-Ann Arbor LEDavis, Bechtel-Midland WDGreenwall, Bechtel-Ann Arbor DEHorn, Midland JAHorsch, Midland GSKeeley, P14-113B HPLeonard, Midland REMCCue, Midland DBMiller, Midland JARitgers, Bechtel-AA MJSchaeffer, Midland RAWells, P14-113A REWhitaker, Midland JLWood, P14-416 Great Lakes QA Managers

Bechtel Power Corporation

Inter-office Memorandum

Training File

Date

June 28, 1982

Subject

Job 7220 Midland Project Training Session BT-429

From

J. E. Stubbs

Construction

Copies to

Midland, MI

On Thursday, May 13, 1982, a one hour training session was held on hanger inspection. The instructors were: Rick Shaw, Mechanical Field Engineering, Ed Urbanawiz, Q.C., John Low and Ron Cable, Welding Field Engineering. A question and answer period was ir-luded.

Those in attendance were:

-D. Baker

-B. Bis

-J. Borm W. Buckley

8. Burgess

/L. Burton

√G. Cole ✓M. Cole

W. Cruz

JJ. Eddy 10. Egnatuk

N. Elif

JD. Fan

JJ. Franklin

√M. Gallik

vL. Gatz

J. Gawlik

JR. Gordon JC. Graham

D. Green

1D. Haven

JT. Heins

JJ. Hunt

₹R. Hymas JD. John

1 K. Johnson

√M. Jones

vM. Kestly

'S. Kienzle

VA. Kilszek

VP. Konkle JG. Koski

R. Krafft

/D. Lange

VS. Love

√B. Lovell

F. Maalouf MF.M. Mallonee

VK. Mason

JP. Max

J. Miller

D. Ort

A. Osmanski

M. Price

B. Puntney

G. Ritter

VE. Savage

vP. Seibert

D. Seidenzahl

VJ. Sepahrom

R. Shaw

Z. Simanovsky

W. Simonson

1. Slifer

W. Stover

J. Swan

U. Swenson

J. Taggart
JG. Terando
D. Webb
W. Woodward
P. Ziolkowski

g. E. Stubbs J. E. Stubbs

Baker, Dave MB

Bis, Bob ////
Bookley, Joe De

Burgess, Bcb. RCZ

Burton, Lyle

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Hunt, Jeff John Hymas, Randy 7-

John, Dobbie

Johnson, Kevin FRJ Foris, Hurry 707

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Kienzle, Steve DIK

Kiliszek, Andy 🗸

Konkle, Phil Fre-

Koski, Gary All

Krafft, Mike Em/L

Lange, Dennis

Love, Steve Y

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Maalouf, Fadi Fordi

Mallonee, Mike /HJM

Marl, Rich

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Max, Pat On

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Seibert, Paul 25

Seidenzahl, Dave

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Shaw, Rick RES

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Slifer, John Ch

Stover, Wayne

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Webb, Dave

Weiger, Mading

Woodward, Woodie W.

Ziolkowski, Paul 2

May 13, 1982

Hanger Insp. Trainin

Mech. Rep. Rick Shaw Q.C. Rep. Ed Urbanawi

Welding Rep. John Low/

R .. Co6/0

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OJT Checklist & Field Training Summary

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Page 1 of 2

(I.) Rem	arks / Specialized Training		Hours
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- 2. Enter the generic training activites, ie. Activity No. or Subject.
- 3. Enter the name of the QCE in training.
- 4. Enter the date that the QCE commences training.
- 5. The level I or II QCE shall enter a checkmark () in the appropriate block to identify that training was conducted in a specific area.
- 6. Enter the signature of the Level I , II, or III QCE conducting the training.
- 7. Enter the level of certification of the training OCE.
- 8. Enter the date training is conducted.
- 9. Enter the duration of training in hours.
- 10. Enter the total number of training hours.
- 11. Enter specific training which is not catagorized in the activities listed in block 2. Additionally enter the duration of this training.



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SPECIFICATION 7220-M-326(Q)

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