Weekly Status Report Assessment of Embedment Plates Status as of March 8, 1987

Commonwealth Edison Company Dresden Station - Units 2 and 3 Quad Cities Station - Units 1 and 2

March 12, 1987

В703270300 В70313 PDR АДОСК 05000237 R PDR

I. Introduction

This is the first of a series of weekly reports which address the effort to resolve the issue regarding the embedment plates which were constructed with 18 in. strap anchor spacing. The purpose of this report is to update the Nuclear Regulatory Commission, Region III regarding the status for this effort. This first week report provides a brief background of the issue and a plan of action for its resolution. Also included are attachments which will be updated on a weekly basis and provide statistics regarding the number of hangers which are affected and information regarding these hangers. A milestone schedule providing start and completion dates for the major items of work is also included.

II. Background

On February 11, 1987, Commonwealth Edison Company (CECo) notified Sargent & Lundy (S&L) that the embedment plate which supports pipe hanger M-1150D-62 at Dresden Unit 2 had been found to be deformed. Pipe hanger M-1150D-62 consists of a rear-end bracket connected to a rigid strut that supports a 12 inch diameter core spray line. Commonwealth Edison Company asked S&L to investigate this plate and to provide a repair.

In the course of the investigation, S&L found that the strap anchor spacing shown on shop drawings for this embedment plate did not conform to the strap anchor spacing shown on the design drawing. The design drawing required a strap anchor spacing of 9 inches on center staggered, while the shop drawing showed a strap anchor spacing of 18 inches on center staggered (See sketch). A larger strap anchor spacing means that the embedment plate would have a lower load carrying capacity than originally intended.

The repair for the embedment plate supporting hanger M-1150D-62 was issued on February 20, 1987 and has been completed in the field. The cause of the deformation of this plate is being investigated.

III. Immediate Action

To resolve the discrepancy between design drawings and shop drawings, CECo has implemented two actions in parallel.

 Perform ultrasonic inspection on some existing embedment plates at Dresden and Quad Cities Stations. The purpose of the inspection is to verify the strap anchor spacing. A mockup of an embedment plate with strap anchors was constructed and used to calibrate the ultrasonic test equipment. Using this UT equipment, two plates at Dresden have been ultrasonically examined and the strap spacing matches the shop drawing. A number of additional in-place embedment plates are being ultrasonically examined at both Dresden and Quad Caties Stations.

In addition, CECo had reported that there was a loose embedment plate with no hangers attached at Quad Cities. This plate has been examined and the strap spacing matches that shown on shop drawing. No further action on this plate is required.

2) The second action performed in parallel to verifying the strap anchor spacing is to collect large bore pipe hanger drawings showing attachments to embedment plates and perform an engineering assessment as described below.

IV. Data Collection and Engineering Assessment

Assuming that the UT examination will confirm 18" strap anchor spacing, a program of data collection and an engineering assessment of the embedment plates using the shop drawing configuration has been initiated. This assessment is described below.

1) Large bore pipe (≥4" in diameter) hanger drawings showing attachment to embedment plates in the Reactor Buildings and portions of the Turbine Buildings at Dresden and Quad Cities were collected. These pipe hangers along with the embedment plate locations have been plotted on plan drawings for future use. The location of the embedment plate seams were also plotted. The data collected so far includes hanger drawings which are in S&L's possession. Other AEs are being contacted in order to confirm that S&L has all applicable hanger drawings.

Support drawings for conduit, cable tray, HVAC and small bore piping were not collected. Loading from these supports is relatively light compared to that from large bore supports.

2) Generic embedment plate allowable loads have been developed. Originally conservative hand calculations were used to develop the embedment plate allowable loads. For this assessment a refined analysis using a finite element computer program has determined the OBE, SSE and upper limit allowable loads. The allowable loads are dependent on attachment size and attachment location relative to edges of the plate and strap anchors. The allowable loads were based on a conservative (worst) location of the hanger attachment and a conservative (small) size of the hanger attachment. Based on the computer program, load deflection curves were developed for both the interior and exterior regions of the embedment plates. These load deflection curves were used to develop the above mentioned allowable loads.

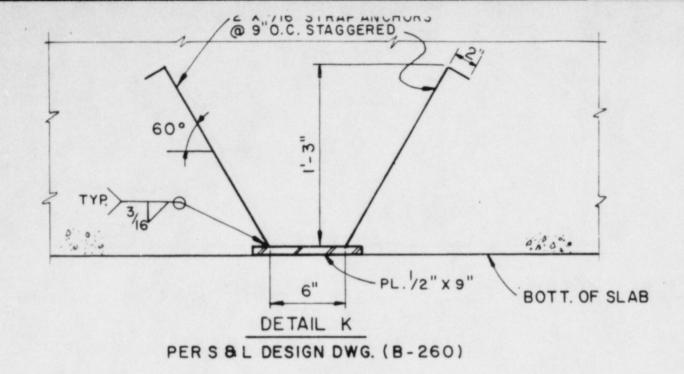
- 3) Using the embedment plate allowable loads discussed in Item IV-2, the pipe hangers were sorted into two categories as follows:
 - Pipe hangers whose loads were within the allowable loads for the embedment plate and require no further action, and
 - b) Pipe hangers whose loads were outside the allowable loads for the embedment plate. This second category was broken down further into the following:
 - i) Pipe hanger loads which are greater than the embedment plate upper limit.
 - (ii) Pipe hanger loads which are less than the embedment plate upper limit but greater than the embedment plate FSAR limits.
- 4) Based on the sort of hangers discussed in Item IV-3, a walkdown of pipe hangers whose loads exceed the embedment plates upper limit will be performed immediately and is in process at Dresden. A second walkdown of pipe hangers whose loads exceed the embedment plate FSAR limit will be performed at a later date. Each walkdown and resulting assessment will consist of the following phases:
 - a) Perform a walkdown to confirm the visible as-built information such as attachment size and attachment location relative to the edges of embedment plates which could vary due to installation tolerances. In addition, the presence of other attachments in the vicinity of the attachment being walked down will be documented and this data will be included in further analysis.
 - b) Based on the information collected during the walkdown, a review will be performed to determine if further field investigation is necessary or if the loading on the embedment plate is acceptable.

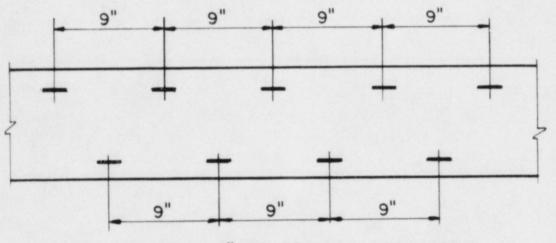
- c) If the hanger load still exceeds the embedment plate allowables, the strap anchor spacing and plate orientation will be determined by using ultrasonic testing.
- d) Using the strap anchor locations another analysis will be performed. During this analysis it may be possible to take advantage of the relative location of the strap anchors with respect to the location of the hanger load, i.e., if a load is located directly over or close to a strap anchor, sufficient embedment plate capacity probably exists. Those hanger loads which exceed the allowable loads derived from this second analysis will require further action.

V. Attachments

The following attachments are included for your information:

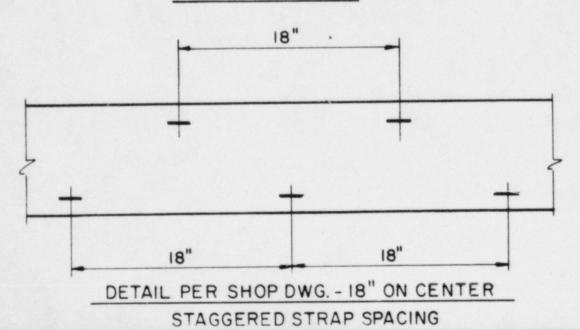
- 1. Milestone bar chart Dresden and Quad Cities
- 2. Summary Status 2A Dresden' 2B Quad Cities
- 3. Number of embedded plates 3A Dresden 3B Quad Cities





PLAN VIEW - 9" ON CENTER STAGGERED

STRAP SPACING



Attachment 1

Dresden 263 Bar Chart for Embedment Plate Issue Resolution

Quad Cities 1&2 Bar Chart for Embedment Plate Issue Resolution

DRESDEN Q

QUAD CITIES

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ACTIVITY CECo requests S&L's assistance for one failed emb. plate at Dresden Unit 2 (2/11/87) S&L assesses failed plate and informs CECo that the strap spacing on emb. plate shop dwg. is different from S&L's design dwg. CECo requests a review of ad- ditional shop dwgs., a mockup	2/9/87	2/16/87	2/23/87	3/2/87	<u>WEE</u> 3/9/87	K B E G I 3/16/87	NNINC M 3/23/87	<u>3/30/87</u>	4/6/87	4/13/87	4/20/87	4/27/87	
for one failed emb. plate at Dresden Unit 2 (2/11/87) S&L assesses failed plate and informs CECo that the strap spacing on emb. plate shop dwg. is different from S&L's design dwg. CECo requests a review of ad-	Approximate and state and international statements in the statement of	2/16/87	2/23/87	3/2/87	3/9/87	3/16/87	3/23/87	3/30/87	4/6/87	4/13/87	4/20/87	4/27/87	
for one failed emb. plate at Dresden Unit 2 (2/11/87) S&L assesses failed plate and informs CECo that the strap spacing on emb. plate shop dwg. is different from S&L's design dwg. CECo requests a review of ad-	•										4/20/0/	4/2//0/	
plate ECN for UT calibration and determination of plate capacity per shop dwg. detail. Repair of failed plate is issued. S&L obtains prints of large bore hanger dwgs. with attach- ment to emb. plate. S&L prepares hanger location dwgs. S&L sorts and plots hanger													
attachments (drafting). In addition, S&L locates seams of emb. plates using piece marks on shop dwgs. S&L generates emb. plate capacity. S&L performs an engineering assessment and identifies those hangers which meet the shop dwg. plate capacity and hence are of no concern. S&L performs a sort of remaining hangers into those which may potentially affect piping system function and those for which the embedment plate FSAR allowables are exceeded.													

Cound	Ciries	162	Bar	Charr	For	Embedment	Plate	Terue	Resolution

ACTIVITY					WEE	K BEGI	NNING M	ONDAY				
	2/9/87	2/16/87	2/23/87	3/2/87	3/9/87	3/16/87	3/23/87	3/30/87	4/6/87	4/13/87	4/20/87	4/27/87
 S&L/CECo performs a walkdown for those hangers which may potentially affect piping system analysis and determine attachment location relative to edges of emb. plate and strap. If necessary, CECo performs UT for strap location. S&L utilizes walkdown dats to perform a sort of these hangers to identify those hangers which still may potentially affect piping system analysis. 							NG CONTINUIN	iG.				
 S&L/CECo perform a walkdown for those hangers which may potentially cause embedment plate FS&R allowables to be exceeded. Assess these hangers based on walkdown data and issue repairs as necessary. 												

Atttachment 2A

Status Summary

			APPROXIM	ATE NUMBER OF L	LARGE BORE PIPE	HANCERS ON FUR				
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Nonsafecy Related	Reactor Bldg.	Turbine	Loads >	Loads>	7
arge bore hangers collected for follow-up work	2230	1060	1170	750			Bldg.	Upper Limit	FSAR	
esult of first sort using generic 25" x 25"				130	1480	1460	770		-	-
ttachment size allowable limits (number of angers requiring follow-up work)	440	230	210	170	270	380	60	250	190	
esults of second sort using generic larger ttachment size allowable limits where applicable number of hangers requiring follow-up work)	288	182	106	108	180	288	0	154	134	See
sult of walkdown and evaluation for hangers th loads > allowable upper limits (number of ngers requiring follow-up work)										
Phase i - Visual data obtained from floor								1		
Phase ii - Utilizing UT data for strap location										
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escribes the results of large bore hanger drawing collection, plotting and sorting. Numerical values represent number of hangers and are approximate numbers. Note 1: The second sort reduced the hangers requiring foilow-up work to 288 from 440. During the week beginning March 9, 1987, it was decided that non-safety related large bore hangers over safety-related equipment in Turbine Building should also be assessed. The changes in the hanger numbers presented on this line due to this will be included in the next weekly report.

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Attachment 2B

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Status Summary

Quad Cities

	APPROXIMATE NUMBER OF LARGE BORE PIPE HANGERS ON EMBEDDED PLATES											
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Nonsafety Related	Reactor Bldg.	Turbine Bldg.	Loads> Upper Limit	Loads> FSAR			
Large bore hangers collected for follow-up work					1			- Inte				
Result of first sort using generic 2 ¹ 5" x 2 ¹ 5" attachment size allovable limits (number of hangers requiring follow-up work)												
Results of second sort using generic larger attachment size allowable limits where applicable number of hangers requiring follow-up work)				Numbers will	be provided/							
Result of walkdown and evaluation for hangers with loads > allowable upper limits (number of hangers requiring follow-up work)					he following							
- Phase i - Visual data obtained from floor												
Phase ii - Utilizing UT data for strap location												
Result of walkdown and evaluation for hangers with load > allowable FSAF limits (number of hangers requiring follow-up work)												
- Phase i - Visual data obtained from floor												
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The table above describes the results of large bore hanger drawing collection, plotting and sorting. Numerical values represent number of hangers and are approximate numbers.

Attachment #3A Number of Embedded Plates Dresden

The following table shows a breakdown of number of embedded plates with large bore pipe hangers attached to them. The numbers indicated are approximate.

Bldg - Unit	Unit #2	Unit #3	Total
Reactor Building	360	470	830
Turbine Building	90	100	190
Total	450	570	1020

Attachment #3B Number of Embedded Plates Quad Cities

The following table shows a breakdown of number of embedded plates with large bore pipe hangers attached to them. The numbers indicated are approximate.

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Bldg - Unit	Unit #1	Unit #1 Unit #2 Tot							
Reactor Building	Number	s will be prov	rided/						
Turbine Building	Numbers will be provided/ updated in the following Weekly Status Reports.								
Total	1								

Weekly Status Report Assessment of Embedment Plates Status as of March 8, 1987

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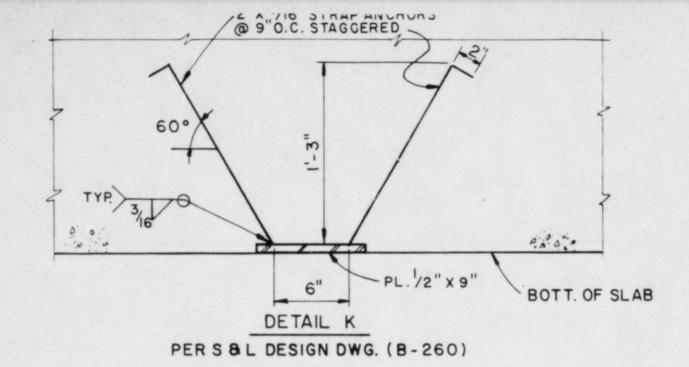
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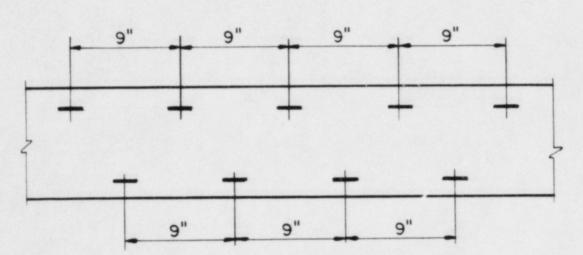
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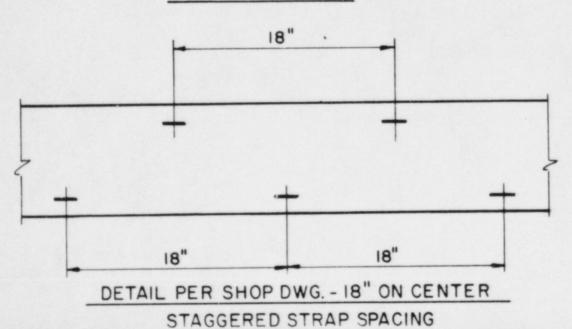
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PLAN VIEW - 9" ON CENTER STAGGERED

STRAP SPACING



Attachment 1 Dresden 263 Bar Chart for Embedment Plate Issue Resolution Page 1 of 2

== E .--QUAD CITIES

				7-24 0			Embedment P		a solution	DRE	SDEN	QUAD CITIES
ACTIVITY	2/0/87	2/14/07	2/22/02	2/2/02		1	NNING M	1	1	T	1	1
CECo requests S&L's assistance for one failed emb. plate at Dresden Unit 2 (2/11/87) S&L assesses failed plate and informs CECo that the strap spacing on emb. plate shop dwg. is different from S&L's design dwg. CECo requests a review of ad- ditional shop dwgs., a mockup plate ECN for UT calibration and determination of plate capacity per shop dwg. detail. Repair of failed plate is issued. S&L obtains prints of large bore hanger dwgs. with attach- ment to emb. plate. S&L prepares hanger location dwgs. S&L sorts and plots hanger	2/9/87	2/16/87	2/23/87	3/2/87	3/9/87	3/16/87	3/23/87	3/30/87	4/6/87	4/13/87	4/20/87	4/27/87
 attachments (drafting). In addition, S&L locates seams of emb. plates using piece marks on shop dwgs. S&L generates emb. plate capacity. S&L performs an engineering assessment and identifies those hangers which meet the shop dwg. plate capacity and hence are of no concern. S&L performs a sort of remaining hangers into those which may potentially affect piping system function and those for which the embedment plate FSAR allowables are exceeded. 					== == =====							

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pressen 20.0 bar Unart for Embedment Flace issue Resolution Quad Cities 162 Bar Chart for Embedment Plate Issue Resolution	BECINNING	3/23/87	46 • CONTINUING				
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Quad CI		3/2/87					
		2/23/87					
		2/16/87					
		2:'9/87					
	ACTIVITY		Jour/CECO performs a waikdown for those hangers which may potentially affect piping system analysis and determine attachment location relative to edges of emb. plate and strap. If necessary, CECO performs UT for atrap location.	 SóL utilizes walkdown data to perform a sort of these hangers to identify those hangers which still may potentially affect piping system analysis. 	 S&L/CECo perform a walkdown for those hangers which may potentially cause embedment plate FSAR allow- ables to be exceeded. 	- Assess these hangers based on walkdown data and issue repairs as necessary.	•

Page 2 of 2

Attachment 1 (Continued) n 263 Mar Chart for Embedment Plate Issue Resol

Atttachment 2A

Status Summary

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			APPROXIM	TE NUMBER OF L	ARGE BORE PIPE	HANGERS ON EMBI	EDDED PLATES			٦
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Nonsafety Related	Reactor Bldg.	Turbine Bldg.	Loads> Upper Limit	Loads> FSAR	
Large bore hangers collected for follow-up work	2230	1060	1170	750	1480	1460	770	-	-	-
Result of first sort using generic 2 ¹ 5" x 2 ¹ 5" attachment size allowable limits (number of hangers requiring follow-up work)	440	230	210	170	270	380	60	250	190	
Results of second sort using generic larger sttachment size allowable limits where applicable (number of hangers requiring follow-up work)	288	182	106	108	180	288	0	154	134	See Note
esult of walkdown and evaluation for hangers with loads > allowable upper limits (number of angers requiring follow-up work)										
Phase i - Visual data obtained from floor										
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Attachment 28

Status Summary

Quad Cities

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Result of first sort using generic 25" x 25" attachment size allowable limits (number of hangers requiring follow-up work)													
Results of second sort using generic larger attachment size allowable limits where applicable (number of hangers requiring follow-up work)				Numbers will									
Result of walkdown and evaluation for hangers with loads > allowable upper limits (rumber of hangers requiring follow-up work)					be provided/ he following s Reports.								
- Phase i - Visual data obtained from floor													
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Result of walkdown and evaluation for hangers with load / allowable FSAF limits (number of hangers requiring follow-up work)													
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1) Large bore pipe (≥4" in diameter) hanger drawings showing attachment to embedment plates in the Reactor Buildings and portions of the Turbine Buildings at Dresden and Quad Cities were collected. These pipe hangers along with the embedment plate locations have been plotted on plan drawings for future use. The location of the embedment plate seams were also plotted. The data collected so far includes hanger drawings which are in S&L's possession. Other AEs are being contacted in order to confirm that S&L has all applicable hanger drawings.

Support drawings for conduit, cable tray, HVAC and small bore piping were not collected. Loading from these supports is relatively light compared to that from large bore supports.

2) Generic embedment plate allowable loads have been developed. Originally conservative hand calculations were used to develop the embedment plate allowable loads. For this assessment a refined analysis using a finite element computer program has determined the OBE, SSE and upper limit allowable loads. The allowable loads are dependent on attachment size and attachment location relative to edges of the plate and strap anchors. The allowable loads were based on a conservative (worst) location of the hanger attachment and a conservative (small) size of the hanger attachment. Based on the computer program, load deflection curves were developed for both the interior and exterior regions of the embedment plates. These load deflection curves were used to develop the above mentioned allowable loads.

- 3) Using the embedment plate allowable loads discussed in Item IV-2, the pipe hangers were sorted into two categories as follows:
 - a) Pipe hangers whose loads were within the allowable loads for the embedment plate and require no further action, and
 - b) Pipe hangers whose loads were outside the allowable loads for the embedment plate. This second category was broken down further into the following:
 - i) Pipe hanger loads which are greater than the embedment plate upper limit.
 - (ii) Pipe hanger loads which are less than the embedment plate upper limit but greater than the embedment plate FSAR limits.
- 4) Based on the sort of hangers discussed in Item IV-3, a walkdown of pipe hangers whose loads exceed the embedment plates upper limit will be performed immediately and is in process at Dresden. A second walkdown of pipe hangers whose loads exceed the embedment plate FSAR limit will be performed at a later date. Each walkdown and resulting assessment will consist of the following phases:
 - a) Perform a walkdown to confirm the visible as-built information such as attachment size and attachment location relative to the edges of embedment plates which could vary due to installation tolerances. In addition, the presence of other attachments in the vicinity of the attachment being walked down will be documented and this data will be included in further analysis.
 - b) Based on the information collected during the walkdown, a review will be performed to determine if further field investigation is necessary or if the loading on the embedment plate is acceptable.

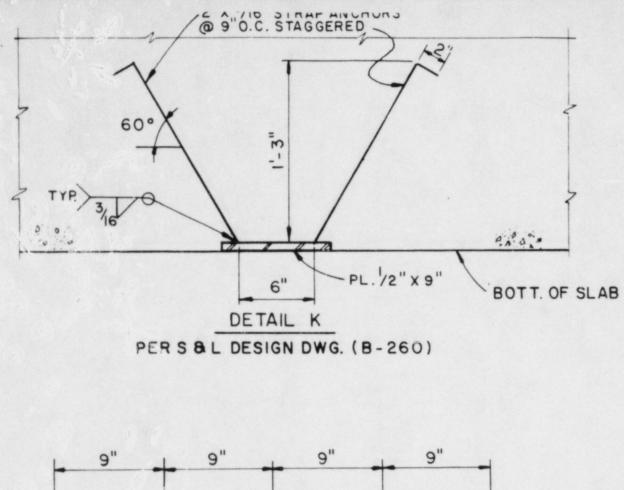
- c) If the hanger load still exceeds the embedment plate allowables, the strap anchor spacing and plate orientation will be determined by using ultrasonic testing.
- d) Using the strap anchor locations another analysis will be performed. During this analysis it may be possible to take advantage of the relative location of the strap anchors with respect to the location of the manger load, i.e., if a load is located directly over or close to a strap anchor, sufficient embedment plate capacity probably exists. Those hanger loads which exceed the allowable loads derived from this second analysis will require further action.

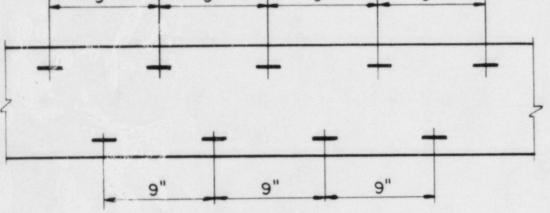
V. Attachments

The following attachments are included for your information:

- 1. Milestone bar chart Dresden and Quad Cities
- 2. Summary Status 2A Dresden 2B Quad Cities
- 3. Number of embedded plates 3A Dresden 3B Quad Cities

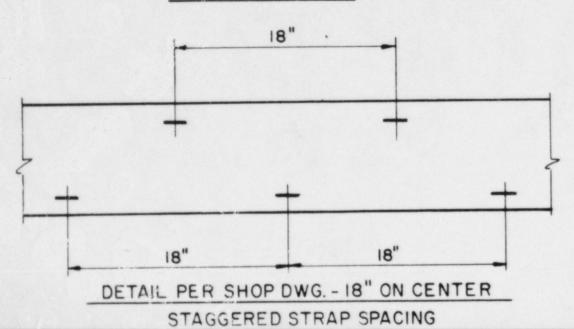
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PLAN VIEW - 9" ON CENTER STAGGERED

STRAP SPACING



Attachment 1 Dresden 263 Wer Chart for Embedment Plate Issue Resolution

Quad Cities 162 Bar Chart for Embedment Plate Issue Resolution

Page 1 of 2

DRESDEN

QUAD CITIES

										DRE	SDEN	QUAD CITI	3
ACTIVITY		1			WEE	KBEGI	NNINCH	ONDAY					
	2/9/87	2/16/87	2/23/87	3/2/87	3/9/87	3/16/87	3/23/87	3/30/87	4/6/87	4/13/87	4/20/87	4/27/87	
 CECo requests S&L's assistance for one failed emb. plate at Dresden Unit 2 (2/11/87) 	1									4/13/0/	4/20/07		
 S&L assesses failed plate and informs CECo that the strap spacing on emb. plate shop dwg. is different from S&L's design dwg. 							1					124	- 34
 CECo requests a review of ad- ditional shop dwgs., a mockup plate ECN for UT calibration and determination of plate capacity per shop dwg. detail. Repair of failed plate is issued. 		•			-								
 S&L obtains prints of large bore hanger dugs. with attach- ment to emb. plate. 													
 S&L prepares hanger location dwgs. 				<u> </u>				1					
 S&L sorts and plots hanger attachments (drafting). In addition, S&L locates seams of emb. plates using piece marks on shop dwgs. 					===								
- S&L generates emb. plate capacity.								1112					
 SoL performs an engineering assessment and identifies those hangers which meet the shop dwg. plate capacity and hence are of no concern. 													
 S&L performs a sort of remaining hangers into those which may potentially affect piping system function and those for which the embedment plate FSAR allowables are exceeded. 		1											

. Page 2 of 2

Quad Cities 162 Bar Chart for Embedment Plate Issue Resolution

				4000 (NNING M					
ACTIVITY	2/9/87	2/16/87	2/23/87	3/2/87	3/9/87	3/16/87	3/23/87	3/30/87	4/6/87	4/13/87	4/20/87	4/27/87
 S&L/CECo performs a walkdown for those hangers which may potentially affect piping system analysis and determine attachment location relative to edges of emb. plate and strap. If necessary, CECo performs UT for strap location. S&L utilizes walkdown data to perform a sort of these hangers to identify those hangers which still may potentially affect piping system analysis. 						CONTINUI	+					
 S&L/CECo perform a walkdown for those hangers which may potentially cause embedment plate FSAR allow- ables to be exceeded. Assess these hangers based on walkdown data and issue repairs as necessary. 												
		-										

Atttachment 2A

Status Summary

	APPROXIMATE NUMBER OF LARGE BORE PIPE HANGERS ON EMBEDDED PLATES										
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Nonsafety Related	Reactor Bldg.	Turbine Bldg.	Loads> Upper Limit	Loads> FSAR	1	
Large bore hangers collected for follow-up work	2230	1060	1170	750	1480	1460	770	-	-	-	
Result of first sort using generic 157" x 257" attachment size allowable limits (number of hangers requiring follow-up work)	440	230	210	170	270	-80	60	250	190		
Results of second sort using generic larger attachment size allowable limits where applicable (number of hangers requiring follow-up work)	288	182	106	108	180	288	0	154	134	See Note	
Result of walkdown and evaluation for hangers with loads > allowable upper limits (number of hangers requiring follow-up work)											
Phase i - Visual data obtained from floor											
Phase ii - Utilizing UT data for strap location											
lesult of walkdown and evaluation for hangers with oad > allowable FSAR limits (number of hangers equiring follow-up work)				I							
Phase i - Visual data obtained from floor							A MARKET				
Phase ii - Utilizing UT data for strap location											

The table above describes the results of large bore hanger drawing collection, plotting and sorting. Numerical values represent number of hangers and are approximate numbers.

Note 1: The second sort reduced the hangers requiring follow-up work to 288 from 440. During the week beginning March 9, 1987, it was decided that non-safety related large bore hangers over safety-related equipment in Turbine Building should also be assessed. The changes in the hanger numbers presented on this line due to this will be

Attachment 28

Status Summary

Quad Cities

	APPROXIMATE NUMBER OF LARGE BORE PIPE HANGERS ON EMBEDDED PLATES									
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Nonsafety Related	Reactor Bldg.	Turbine Bldg.	Loads> Upper Limit	Loads> FSAR	
Large bore hangers collected for follow-up work										
Result of first sort using generic $2^{i_2''}$ x $2^{i_2''}$ attachment size allowable limits (number of hangers requiring follow-up work)										
Results of second sort using generic larger attachment size allowable limits where applicable (number of hangers requiring follow-up work)				Numbers will	be provided/					
Result of walkdown and evaluation for hangers with loads > allowable upper limits (number of hangers requiring follow-up work)					he following					
- Phase i - Visual data obtained from floor										
Phase ii - Utilizing UT data for strap location										
Result of walkdown and evaluation for hangers with load – allowable FSAE limits (number of hangers requiring follow-up work)										
- Phase 1 - Visual data obtained from floor										
Phase if - Utilizing UT data for strap location										

The table above describes the results of large bore hanger drawing collection, plotting and sorting. Numerical values represent number of hangers and are approximate numbers.

Attachment #3A Number of Embedded Plates Dresden

The following table shows a breakdown of number of embedded plates with large bore pipe hangers attached to them. The numbers indicated are approximate.

Bldg - Unit	Unit #2	Unit #3	Total
Reactor Building	360	470	830
Turbine Building	90	100	190
Total	450	570	1020

Attachment #3B Number of Embedded Plates Quad Cities

The following table shows a breakdown of number of embedded plates with large bore pipe hangers attached to them. The numbers indicated are approximate.

Bldg - Unit	Unit #1	Unit #2	Total
Reactor Building	Numbe	rs will be prov	ided /
Turbine Building	update Weekly	owing	
Total			-

Weekly Status Report Assessment of Embedment Plates Status as of March 8, 1987

1

Commonwealth Edison Company Dresden Station - Units 2 and 3 Quad Cities Station - Units 1 and 2

March 12, 1987

I. Introduction

This is the first of a series of weekly reports which address the effort to resolve the issue regarding the embedment plates which were constructed with 18 in. strap anchor spacing. The purpose of this report is to update the Nuclear Regulatory Commission, Region III regarding the status for this effort. This first week report provides a brief background of the issue and a plan of action for its resolution. Also included are attachments which will be updated on a weekly basis and provide statistics regarding the number of hangers which are affected and information regarding these hangers. A milestone schedule providing start and completion dates for the major items of work is also included.

II. Background

On February 11, 1987, Commonwealth Edison Company (CECo) notified Sargent & Lundy (S&L) that the embedment plate which supports pipe hanger M-1150D-62 at Dresden Unit 2 had been found to be deformed. Pipe hanger M-1150D-62 consists of a rear-end bracket connected to a rigid strut that supports a 12 inch diameter core spray line. Commonwealth Edison Company asked S&L to investigate this plate and to provide a repair.

In the course of the investigation, S&L found that the strap anchor spacing shown on shop drawings for this embedment plate did not conform to the strap anchor spacing shown on the design drawing. The design drawing required a strap anchor spacing of 9 inches on center staggered, while the shop drawing showed a strap anchor spacing of 18 inches on center staggered (See sketch). A larger strap anchor spacing means that the embedment plate would have a lower load carrying capacity than originally intended.

The repair for the embedment plate supporting hanger M-1150D-62 was issued on February 20, 1987 and has been completed in the field. The cause of the deformation of this plate is being investigated.

III. Immediate Action

To resolve the discrepancy between design drawings and shop drawings, CECo has implemented two actions in parallel.

 Perform ultrasonic inspection on some existing embedment plates at Dresden and Quad Cities Stations. The purpose of the inspection is to verify the strap anchor spacing. A mockup of an embedment plate with strap anchors was constructed and used to calibrate the ultrasonic test equipment. Using this UT equipment, two plates at Dresden have been ultrasonically examined and the strap spacing matches the shop drawing. A number of additional in-place embedment plates are being ultrasonically examined at both Dresden and Quad Cities Stations.

In addition, CECo had reported that there was a loose embedment plate with no hangers attached at Quad Cities. This plate has been examined and the strap spacing matches that shown on shop drawing. No further action on this plate is required.

2) The second action performed in parallel to verifying the strap anchor spacing is to collect large bore pipe hanger drawings showing attachments to embedment plates and perform an engineering assessment as described below.

IV. Data Collection and Engineering Assessment

Assuming that the UT examination will confirm 18" strap anchor spacing, a program of data collection and an engineering assessment of the embedment plates using the shop drawing configuration has been initiated. This assessment is described below.

1) Large bore pipe (≥4" in diameter) hanger drawings showing attachment to embedment plates in the Reactor Buildings and portions of the Turbine Buildings at Dresden and Quad Cities were collected. These pipe hangers along with the embedment plate locations have been plotted on plan drawings for future use. The location of the embedment plate seams were also plotted. The data collected so far includes hanger drawings which are in S&L's possession. Other AEs are being contacted in order to confirm that S&L has all applicable hanger drawings.

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- 4) Based on the sort of hangers discussed in Item IV-3, a walkdown of pipe hangers whose loads exceed the embedment plates upper limit will be performed immediately and is in process at Dresden. A second walkdown of pipe hangers whose loads exceed the embedment plate FSAR limit will be performed at a later date. Each walkdown and resulting assessment will consist of the following phases:
 - a) Perform a walkdown to confirm the visible as-built information such as attachment size and attachment location relative to the edges of embedment plates which could vary due to installation tolerances. In addition, the presence of other attachments in the vicinity of the attachment being walked down will be documented and this data will be included in further analysis.
 - b) Based on the information collected during the walkdown, a review will be performed to determine if further field investigation is necessary or if the loading on the embedment plate is acceptable.

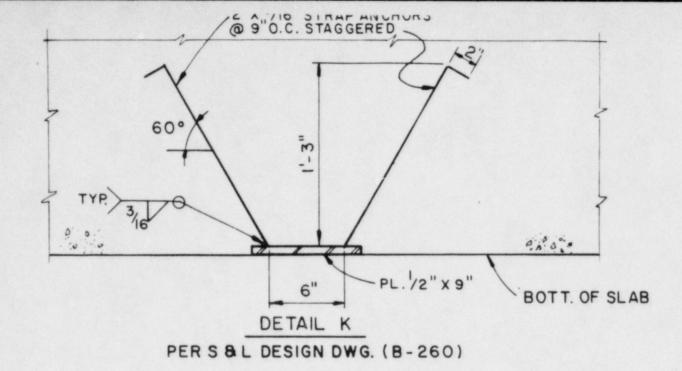
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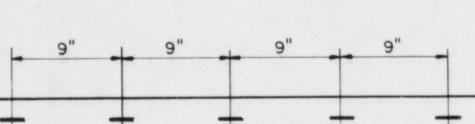
- c) If the hanger load still exceeds the embedment plate allowables, the strap anchor spacing and plate orientation will be determined by using ultrasonic testing.
- d) Using the strap anchor locations another analysis will be performed. During this analysis it may be possible to take advantage of the relative location of the strap anchors with respect to the location of the hanger load, i.e., if a load is located directly over or close to a strap anchor, sufficient embedment plate capacity probably exists. Those hanger loads which exceed the allowable loads derived from this second analysis will require further action.

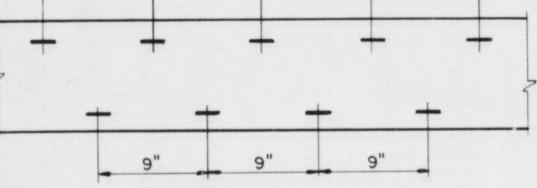
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- 2. Summary Status 2A Dresden¹ 2B Quad Cities
- 3. Number of embedded plates 3A Dresden 3B Quad Cities

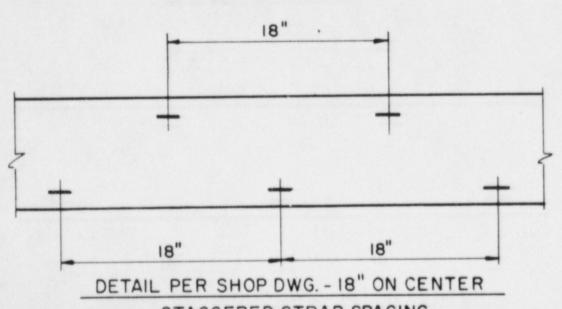






PLAN VIEW - 9" ON CENTER STAGGERED

STRAP SPACING



STAGGERED STRAP SPACING

QUAD CITIES		4/27/87									
DRESDEN		4/20/87									
DRE		4/13/87									
esolution		4/6/87									
late Issue R	MONDAY	3/30/87									
Quad Cities 162 Bar Chart for Embedment Flate Issue Resolution	1 11	3/23/87								:	
r Chart for	K BEGINNING	3/16/87									Ŋ
ities 162 Ba	WEEK	3/9/87					[]	[]		П	
Quad C		3/2/87							П		
		2/23/87									
		2/16/87			•						
		2/9/87	-								
	ACTIVITY		CECo requests SoL's assistance for one failed emb. plate at Dreaden Unit 2 (2/11/87)	Sol. assesses failed plate and informs CECo that the strap spacing on emb. plate shop dwg. is different from Sol's design dwg.	CECo requests a review of ad- ditional shop dwgs., a mockup place ECN for UT calibration and determination of place capacity per shop dwg. detail. Repair of failed place is issued.	S&L obtains prints of large bore hanger dwgs. with attach- ment to emb. plate.	S&L prepares hanger location dugs.	Skl sorts and plots hanger attachments (drafting). In addition, Skl locates seams of emb. plates using piece marks on shop dwgs.	Sol generates emb. plate capacity.	Sol. performs an engineering assessment and identifies those hangers which meet the shop dwg. plate capacity and hence are of no concern.	S&L performs a sort of remaining hangers into those which may potentially affect piping system inction and those for which the embedment plate FSAR allowables are exceeded.

	ACTIVITY		SLI/CECo performs a validown for those hangers which may potentially affect piping system analysis and determine attachment location relative to egges of emb. plate and strap. If mecessary. CECo performs UT for strap location.	SAL utilizes walkdown data to perform a sort of these hangers to identify those hangers which still may potentially affect piping system analysis.	S6L/CECo perform a walkdown for those hangers which may potentially cause embedment piate FSAR allow- ables to be exceeded.	Assess these hangers based on walkdown data and issue repairs as necessary.	
		2.'9/87					
		2/16/87					
		2/23/87					
Quad C		3/2/87					
ities 162 Ba	337	3/9/87					
ir Chart for	WEEKBEGINNING	3/16/87	CONTINUING				
Quad Cities 162 Bar Chart for Embedment Place Issue Resolution		3/23/87	46 CONTINUING				
ate Issue R	MONDAY	3/30/87	a				
esolution		4/6/87					
		4/13/87					
		4/20/87					
		4/27/87					

Attachment 1 (Continued)

Page 2 of 2

Atttachment 2A

Status Summary Dresden

			APPROXIM	ATS NUMBER OF I	ARGE BORE PIPE	HANGERS ON EMBI	EDDED PLATES			٦
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Nonsafety Related	Reactor Bldg.	Turbine Bldg.	Loads> Upper Limit	Loads> FSAR	1
arge bore hangers collected for follow-up work	2230	1060	1170	750	1480	1460	770	-	-	1
esult of first sort using generic 25" x 25" ttachment size allowable limits (number of angers requiring follow-up work)	440	230	210	170	270	380	60	250	190	
esults of second sort using generic larger ttachment size allowable limits where applicable number of hangers requiring follow-up work)	288	182	106	108	180	288	0	154	134	See
esult of walkdown and evaluation for hangers ith loads > allowable upper limits (number of angers requiring follow-up work)										
Phase 1 - Visual data obtained from floor										
Phase ii - Utilizing UT data for strap location										
esult of walkdown and evaluation for hangers with oad > allowable FSAR limits (number of hangers equiring follow-up work)										
Phase i - Visual data obtained from floor										
Phase ii - Utilizing UT data for strap location		1000								

The table above describes the results of large bore hanger drawing collection, plotting and sorting. Numerical values represent number of hangers and are approximate numbers.

Note 1: The second sort reduced the hangers requiring follow-up work to 288 from 440. During the week beginning March 9, 1987, it was decided that non-safety related large bore hangers over safety-related equipment in Turbine Building should also be assessed. The changes in the hanger numbers presented on this line due to this will be

Attachment 2B

Status Summary

Quad Cities

			APPROXIM	TATE NUMBER OF L	ARCE BORE PIPE	RANGERS ON EMBI	EDDED PLATES		
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Nonsafety Related	Reactor Bldg.	Turbine Bldg.	Loads> Upper Limit	Loads> FSAR
arge bore hangers collected for follow-up work									1
esult of first sort using generic 25° x 25° ttachment size allowable limits (number of angers requiring follow-up work)									
sults of second sort using generic larger trachment size allowable limits where applicable number of hangers requiring follow-up work)									
				Numbers will	be provided/				
rsult of walkdown and evaluation for hangers ith loads > allowable upper limits (number of ingers requiring foilow-up work)				updated in t Weekly Statu	he following s Reports.				
Phase i - Visual dota obtained from floor									
Phase 11 - Utilizing UT data for strap location									
esolt of walkdown and evaluation for hangers with oad > allowable FSAF limits (number of hangers equiring follow-up work)									
Phase 1 - Visual data obtained from floor									
Phase ii - Utilizing UT data for strap location									

The table above describes the results of large hore hanger drawing collection, plotting and sorting. Numerical values represent number of hangers and are approximate numbers.

Attachment #3A Number of Embedded Plates Dresden

The following table shows a breakdown of number of embedded plates with large bore pipe hangers attached to them. The numbers indicated are approximate.

Bldg - Unit	Unit #2	Unit #3	Total
Reactor Building	360	470	830
Turbine Building	90	100	190
Total	450	570	1020

Attachment #3B Number of Embedded Plates Quad Cities

The following table shows a breakdown of number of embedded plates with large bore pipe hangers attached to them. The numbers indicated are approximate.

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Bldg - Unit	Unit #1	Unit #2	Total			
Reactor Building	Number	re will be prov	1			
Turbine Building	Numbers will be provided/ updated in the following Weekly Status Reports.					
Total						

Weekly Status Report Assessment of Embedment Plates Status as of March 8, 1987

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Commonwealth Edison Company Dresden Station - Units 2 and 3 Quad Cities Station - Units 1 and 2

March 12, 1987

I. Introduction

This is the first of a series of weekly reports which address the effort to resolve the issue regarding the embedment plates which were constructed with 18 in. strap anchor spacing. The purpose of this report is to update the Nuclear Regulatory Commission, Region III regarding the status for this effort. This first week report provides a brief background of the issue and a plan of action for its resolution. Also included are attachments which will be updated on a weekly basis and provide statistics regarding the number of hangers which are affected and information regarding these hangers. A milestone schedule providing start and completion dates for the major items of work is also included.

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- 4 -

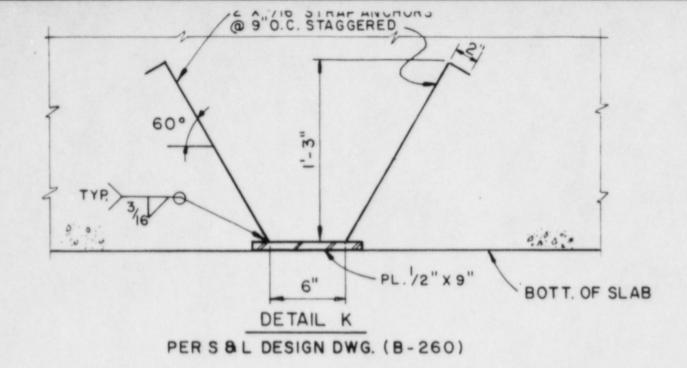
- c) If the hanger load still exceeds the embedment plate allowables, the strap anchor spacing and plate orientation will be determined by using ultrasonic testing.
- d) Using the strap anchor locations another analysis will be performed. During this analysis it may be possible to take advantage of the relative location of the strap anchors with respect to the location of the hanger load, i.e., if a load is located directly over or close to a strap anchor, sufficient embedment plate capacity probably exists. Those hanger loads which exceed the allowable loads derived from this second analysis will require further action.

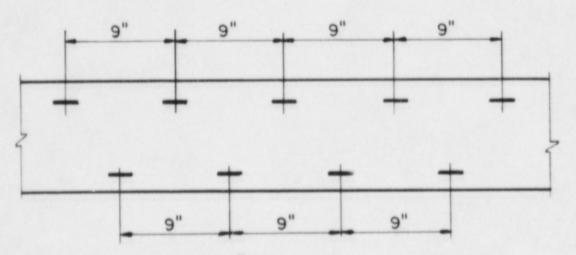
V. Attachments

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The following attachments are included for your information:

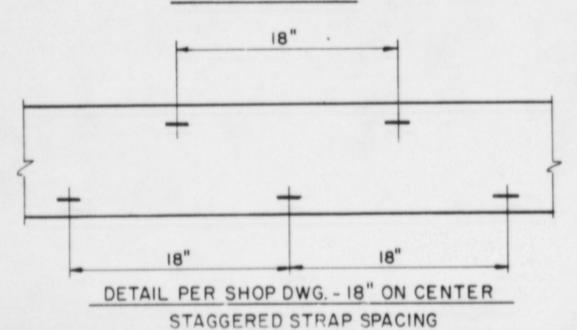
- 1. Milestone bar chart Dresden and Quad Cities
- 2. Summary Status 2A Dresden 2B Quad Cities
- 3. Number of embedded plates 3A Dresden 3B Quad Cities





PLAN VIEW - 9" ON CENTER STAGGERED

STRAP SPACING



Attachment 1 Dresden 263 Bar Chart for Embedment Plate Issue Resolution Page 1 of 2 .

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			Quad C	ities 162 B	ar Chart for	Embedment P	late Issue H	lesolution	DRE	SDEN	QUAD CITI	rs
				<u>W E E</u>	KBEGI	NNINCH	ONDAY					
2/9/87	2/16/87	2/23/87	3/2/87	3/9/87	3/16/87	3/23/87	3/30/87	4/6/87	4/13/87	4/20/87	4/27/87	
	•											
			—									
				===								
				:::								
					c							
	2/9/87			2/9/87 2/16/87 2/23/87 3/2/87	<u>WEE</u> 2/9/87 2/16/87 2/23/87 3/2/87 3/9/87	<u>WEEKBECI</u> 2/9/87 2/16/87 2/23/87 3/2/87 3/9/87 3/16/87	<u>WEEK BEGINNING P</u> 2/9/87 2/16/87 2/23/87 3/2/87 3/9/87 3/16/87 3/23/87	<u>WEEK BECINNING HONDAY</u> 2/9/87 2/16/87 2/23/87 3/2/87 3/2/87 3/16/87 3/23/87 3/30/87	2/9/87 2/16/87 2/23/87 3/2/87 3/9/87 3/16/87 3/23/87 3/30/87 4/6/87	<u>WEEK BECINNINCHONDAY</u> 2/9/87 2/16/87 2/23/87 3/2/87 3/9/87 3/16/87 3/23/87 3/30/87 4/6/87 4/13/87	<u>WEEK BECINNINC MONDAY</u> 2/9/87 2/16/87 2/23/87 3/2/87 3/9/87 3/16/87 3/23/87 3/30/87 4/6/87 4/13/87 4/20/87	<u>WEEK BEGINNING HONDAY</u> 2/9/87 2/16/87 2/23/87 3/2/87 3/9/87 3/16/87 3/23/87 3/30/87 4/6/87 4/13/87 4/20/87 4/27/87

Attachment 1 (Continued)

Dresden 263 Bar Chart for Embedment Plate Issue Resolution

Quad Cities 162 Bar Chart for Embedment Place Issue Resolution

ACTIVITY					WEE	K BEGI	NNING M	ONDAY				
	2.'9/87	2/16/87	2/23/87	3/2/87	3/9/87	3/16/87	3/23/87	3/30/87	4/6/87	4/13/87	4/20/87	4/27/87
 S&L/CECo performs a walkdown for those hangers which may potentially affect piping system analysis and determine attachment location relative to edges of emb. plate and strap. If necessary, CECo performs UT for strap location. S&L utilizes walkdown data to perform a sort of these hangers to identify those hangers which still may potentially affect piping system analysis. 							NG CONTINUIN	16				
 S&L/CECo perform a walkdown for those hangers which may potentially cause embedment plate FSAR allow- ables to be exceeded. Assess these hangers based on walkdown data and issue repairs as necessary. 												
		-										

Atttachment 2A

Status Summary

Dresden

			APPROXIM	ATE NUMBER OF 1	LARCE BORE PIPE	HANGERS ON EMB	EDDED PLATES			7
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Nonsafety Related	Reactor Bldg.	Turbine Bldg.	Loads) Upper Limit	Loads> FSAR	
Large bore hangers collected for follow-up work	2230	1060	1170	750	1480	1460	770	-	-	
Result of first sort using generic 252" x 252" attachment size allowable limits (number of hangers requiring follow-up work)	440	230	210	170	270	380	60	250	190	
Results of second sort using generic larger attachment size allowable limits where applicable (number of hangers requiring follow-up work)	288	182	106	108	180	288	0	154	134	See Note 1
Result of walkdown and evaluation for hangers with trads > allowable upper limits (number of hangers requiring follow-up work)										
- Phase i - Visual data obtained from ficor										
- Phase II - Utilizing UT data for strap location										1
Scault of walkdown and evaluation for hangers with load > allowable FSAF (miles (number of hangers requiring follow-up work)						-				1.0
- Phase i - Visual data opta/sed from floor			100			101				
- Phase ii - Ocilizing UT data for e'r.; ation										

The table above describes the results of large bore hanger drawing collection, plotting and sorting. Numerical values represent numbers of hangers and are pproving e numbers.

Note 1: The second sort reduced the congers requires fill who work to 288 from 440. During the week beginning March 9, 1987, it was decided that non-safety related large borg hangers over safety-related equipment in Turbine Building should also be assessed. The changes in the hanger numbers presented on this line due to this will be included in the second report.

Attachment 28

Status Summary

Quad Citles

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	APPROXIMATE NUMBER OF LARGE BUSE PIPE HANGERS ON EMBEDDED PLATES												
DESCRIPTION	Total	In Unit #2	In Unit #3	Safety Related	Related	Reactor Bldg.	Turbine Bldg.	Loads > Upper Limit	Loads> FSAR				
<pre>Earge bore hangers collected for follow-up work Result of first wort using generic 25" : 25" attachment size sllowable limits (number of hangers requiring follow-up work) Results of second sort using generic larger attachment size allowable limits where applicable (number of hangers requiring follow-up work) Result of walkdown and evaluation for hangers with loads > allowable upper limits (number of hangers requiring follow-up work) - Phase i - Visual data obtained from floor - Phase ii - Utilizing UT data for strap location Result of walkdown and evaluation for hangers with load allowable FSAF limits (number of hangers requiring follow-up work) - Phase i - Visual data obtained from floor Result of walkdown and evaluation for hangers requiring follow-up work) - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase i - Visual data obtained from floor - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for strap location - Phase ii - Utilizing UT data for</pre>					be provided, the following is Reports.								

The table above describes the results of large bore hanger drawing collection, plotting and sorting. Numerical values represent number of hangers and are approximate numbers.

Attachment #3A Number of Embedded Plates Dresden

The following table shows a breakdown of number of embedded plates with large bore pipe hangers attached to them. The numbers indicated are approximate.

Bldg - Unit	Unit #2	Unit #3	Total
Reactor Building	360	470	830
Turbine Building	90	100	190
Total	450	570	1020

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Attachment #3B Number of Embedded Plates Quad Cities

The following table shows a breakdown of number of embedded plates with large bore pipe hangers attached to them. The numbers indicated are approximate.

Bldg - Unit	Unit #1	Unit #2	Total
Reactor Building	Numbers will be provided/		
Turbine Building	updated in the following Weekly Status Reports.		
Total			