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SARGENT & LUNDY
ENGINEERS
CHICAGO

SAFETY-RELATED

ADDENDUM TO CLASS 1
PIPING STRESS REPORT

COMMONWEALTH EDISON COMPANY
LASALLE UNIT 2
PROJECT NO. 4267-00

SYSTEM: MAIN STEAM PIPING
SUBSYSTEM: 2MS-31B REV. 02
EMD- 042129 ISSUED ON: 03-24-83

ADDENDUM: C
ISSUED ON: 06-08-93

For Record Indexing, Use Project No. 4267-00
For Valid Charge No., Use Project No. 9066-50

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ENGINEERING MECHANICS DIVISION

EMD RECORD CENTER

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Design/Stress Report Title: ADDENDUM TO CLASS 1 PIPING STRESS REPORT,
MAIN STEAM SUBSYSTEM 2MS-31B, LASALLE
COUNTY STATION - UNIT 2

Identification No: EMD-042129 Date: 06-08-93

Revision No. 02,

ADDENDUM C

Owner's Review

I, the undersigned, a duly authorized representative of the Commonwealth Edison Company and experienced in nuclear power plant system requirements, have reviewed the attached Design/Stress Report in accordance with ASME, Section III, Division 1.

Concurred by:
Design Superintendent:

B. [Signature]
Signature

4-13-94
Date

Chairman
Nuclear Engineering Committee:

[Signature]
Signature

4-17-94
Date

DESIGN CONTROL SUMMARY DESIGN VERIFICATION		PROJECT NAME: Lasalle PROJECT NO.: 9066-50 CLIENT: Commonwealth Edison Company CALC. NO.: 042129, Add-C PURPOSE: Evaluation of Replacement of Valve 2B21-F019 <input checked="" type="checkbox"/> SAFETY RELATED <input type="checkbox"/> NON SAFETY RELATED	UNIT NO.: 2 C O M M E N T N U M B E R Q U A N T I T Y S E R I A L N U M B E R
SIGNATURE & DATE FOR REV. OF ADDENDUM - C	PREPARED	IDENTIFICATION K. L. Patel 8-26-92 * 6-4-93 **	SUBSYSTEM 2MS-31B REVIEW METHOD: This review was accomplished by detailed review of the original calculation. * Analysis Date ** Addendum Date
APPROVER REVIEWER	APPROVER REVIEWER	CONFIRMATION C. Sirichotiratana 8-26-92 * 6-8-93 **	
APPROVER REVIEWER	APPROVER REVIEWER	OF PAGES & L. Kaushansky 8-26-92 * 6-8-93 **	
APPROVER REVIEWER	APPROVER REVIEWER	REVIEW METHOD REVIEW METHOD REVIEW METHOD REVIEW METHOD REVIEW METHOD REVIEW METHOD	

ES-320.10.4 07/30/92

Acc. No. EMD-042129
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ISSUE SUMMARY

<u>ADDENDUM</u>	<u>DATE</u>	<u>DESCRIPTION</u>
A	04-12-84	An errata to document errors and corresponding corrections
B	05-01-87	Documentation of evaluation of rotation of motor operator on valve 2B21-F020
C	06-08-93	Evaluate replacement of Valve 2B21-F019

CERTIFICATION OF:

Addendum: C

Dated: 06-08-93

I, the undersigned Registered Professional Engineer, competent in the field of piping analysis using the design rules specified by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section III Subarticles NB-3640 and NB-3650, certify that to the best of my knowledge, this addendum is technically adequate, complete and complies with the requirements of the referenced design specification.

L. Kaushansky

Signature

6-8-93

Date



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Eight pages of Computer Output Microfiche (COM) cards as listed in Section 5.0

1.0 PURPOSE AND SCOPE

1.1 Purpose

The purpose of this addendum is to evaluate the replacement of Motor Operated Valve 2B21-F019. This addendum contains only material affected by this change, as explained in Section 1.2. All other material remains unchanged and can be found in the design basis stress report (Reference 7.1).

1.2 Scope

Per Reference 7.2, Valve 2B21-F019 is to be replaced by a heavier valve. This addendum evaluates the effect of this change by reanalyzing Subsystem 2MS-31B in its entirety.

2.0 DESIGN INPUT

Design input for this evaluation is obtained from References 7.1, 7.2, 7.9 and 7.10

3.0 ASSUMPTIONS/GENERAL NOTES

3.1 Design information for this analysis is based on DIT LS-PMED-0178 (Ref. 7.2) which is preliminary. A verified DIT from PMED will be required.

3.2 Per Ref. 7.2, Valve 2B21-F019 was analyzed for a weight of 450 lbs in computer analysis (Run ID SMS31B), dated 08-19-92. The center of gravity was conservatively assumed to be at 1'-8-3/4" from the centerline of the pipe.

4.0 APPROACH

4.1 Methodology

The computer model for this calculation obtained from References 7.9 and 7.10 is updated to include the replacement valve weight and center of gravity (see Sections 3.1 and 3.2). This new model was reanalyzed for all loading cases as shown in Section 5.0.

Two Stress-B analyses will be performed in order to consider the results of SRV Asymmetric analysis and SRV Symmetric analysis in Equation 10 stress combinations.

The resulting combined loads, stresses, accelerations, etc. are then compared to the corresponding allowables.

4.2 Acceptance Criteria

The resulting combined loads, stresses, accelerations, etc. should meet all requirements specified in Reference 7.1.

4.3 Identification of Computer Programs

4.3.1 Sargent & Lundy Computer Program PIPSYS/PC, Program PIP 03.7.026-1.40; Run ID SMS31B, microfiche, dated 04-06-93 and analysis dated 08-19-92.

5.0 CALCULATIONS

Computer Analysis Performed and Microfiche Index

<u>Microfiche RUNID</u>	<u>Microfiche Date</u>	<u>Analysis Date</u>	<u>Loading Case</u>
SMS31B	04-06-93	08-19-92	Basic Data
SMS31B	04-06-93	08-19-92	Weight
SMS31B	04-06-93	08-19-92	Thermal 1-4
SMS31B	04-06-93	08-19-92	Upset Header Displacement
SMS31B	04-06-93	08-19-92	Faulted Header Displacement
SMS31B	04-06-93	08-19-92	OBE 1/2% Response Spectra
SMS31B	04-06-93	08-19-92	SRV SA Response Spectra
SMS31B	04-06-93	08-19-92	SRV SY Response Spectra
SMS31B	04-06-93	08-19-92	Faulted 1% Response Spectra
SMS31B	04-06-93	08-19-92	Faulted 2% Response Spectra
SMS31B	04-06-93	08-19-92	Stress C - Class 2/3
SMS31B	04-06-93	08-19-92	Summ S - Combined Reactions
SMS31B	04-06-93	08-19-92	Stress B - Class 1 (Two Analyses) (See Note 4.1)

6.0 RESULTS

6.1 Summary

6.1.1 Support/Containment Penetration Loads:

Per Support Load Summary Sheets (Pages 28 to 32), supports with load increases were transmitted to SED and MDD through Ref. 7.3 and were found acceptable per Ref. 7.4. Reactions at penetration M-22 also increased and were transmitted to CMED and SED through Ref. 7.3 and were found acceptable per Ref. 7.5. Welded attachments need not be evaluated, since there is no increase in loads and stresses at these locations.

6.1.2 Valve Accelerations:

The new accelerations for valve 2B21-F019 are low (less than 1g in each direction) and were sent to CMED (per their request) via Ref. 7.11. Accelerations on all other valves in subsystem 2MS-31B remain below their corresponding allowables (see Ref. 7.9).

6.1.3 Pipe Stresses and Usage Factors:

All piping stresses and usage factors found in Run ID SMS31B are within the Code (Ref. 7.7) allowables.

6.1.4 The basic data for the analysis documented in this report has been copied into file G:\LASALLE\PIPEDAT\U2\CBC42129.

6.2 Conclusion

6.2.1 The piping subsystem is re-evaluated and it is concluded that the replacement of Valve 2B21-F019 does not cause any overstress in subsystem 2MS-31B. The support and penetration loads are also found to be acceptable.

6.2.2 A final verified DIT is required from PMED in order to confirm all preliminary valve information in DIT LS-PMED-0178 (Ref. 7.2).

6.2.3 This addendum to the stress calculation for subsystem 2MS-31B is issued pending as-built verification. This open item will be closed upon receipt and evaluation of the DCR from Commonwealth Edison incorporating the changes described in this addendum.

7.0 REFERENCES

- 7.1 LaSalle Piping Stress Analysis Report for Subsystem 2MS-31B, EMD-042129, Rev. 02, including Addenda A-B
- 7.2 DIT-LS-PMED-0178, dated 07-29-92 (attached)
- 7.3 DIT-LS-EMD-0684, dated 08-26-92 (attached)
- 7.4 Interoffice Memorandum from W. B. Hilton (SED) to K. L. Patel (EMD), dated 09-09-92, Subject: "Evaluation of Load Increases for DIT-LS-EMD-0684" (attached)
- 7.5 Interoffice Memorandum from A. Ansari (CMED) to K. L. Patel (EMD), dated 11-17-92, Subject: "Revised Loads for Primary Containment Penetration 2PC0022, Subsystems 2MS-31B and 2MS-25" (attached)
- 7.6 Sargent & Lundy Computer Program PIPSYS/PC Program PIP 03.7.026-1.4~~6~~
- 7.7
 - a. Section III ASME Boiler and Pressure Vessel Code, 1974 Edition, without Addenda
 - b. Section III ASME Boiler and Pressure Vessel Code, 1977 Edition, including Addenda through Winter of 1978
 - c. Section III ASME Boiler and Pressure Vessel Code, 1977 Edition, including Addenda through Winter of 1979
- 7.8 Piping Design Specification, DS-MS-01-LS, Rev. 8, dated 07-28-89
- 7.9 LaSalle Piping Stress Analysis Report for Subsystem 2MS-31B, EMD-039432, Rev. 01, including Addenda A-B
- 7.10 LaSalle Piping Stress Analysis Report for Subsystem 2MS-31A, EMD-027046, Rev. 00, including Addendum A
- 7.11 DIT-LS-EMD-0691, dated 09-16-92 (Attached)

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8.0 ATTACHMENTS

	<u>Page</u>
8.1 DIT-LS-PMED-0178, dated 07-29-92	12
8.2 DIT-LS-EMD-0684, dated 08-26-92	13-25
8.3 Interoffice Memorandum from W. B. Hilton (SED) to K. L. Patel (EMD), dated 09-09-92, Subject: "Evaluation of Load Increases for DIT-LS-EMD-0684"	26
8.4 Interoffice Memorandum from A. Ansari (CMED) to K. L. Patel (EMD), dated 11-17-92, Subject: "Revised Loads for Primary Containment Penetration 2PC0022, Subsystems 2MS-31B and 2MS-25"	27
8.5 Support Load Summary Listing	28-32
8.6 DIT-LS-EMD-0691, dated 09-16-92	33-35

<input checked="" type="checkbox"/> SAFETY-RELATED	<input type="checkbox"/> NON-SAFETY-RELATED	DIT No. - <u>LS-PMED-0178</u>
CLIENT <u>CECO</u>		Page <u>1</u> of <u>1</u>
STATION <u>LaSalle</u> UNIT(S) <u>1&2</u>		To <u>L. Kauschansky - 22</u>
PROJECT NO(S) <u>9066-50 BCCM22(U1), BGGM22(U2)</u>		
SUBJECT <u>Replace valve actuator for 1/2 B21-F019</u>		
MODIFICATION OR DESIGN CHANGE NUMBER(S) <u>P01-1-92-557, P01-2-92-551</u>		
<u>D. W. Robinson</u>	<u>PMED</u>	<u>[Signature]</u>
Preparer (Please print name)	Division	Preparer's signature
		<u>7-29-92</u>
		Issue date

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified.)

Preliminary. ACCA NO. ~~EMD-032809~~
 ADDENDUM ~~B~~
 PAGE ~~12~~

IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE
 (List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

The new actuators for valves 1/2B21-F019 will be a SMB-00-10.

Per Limitorque "Approximate Weights" Table, this actuator weighs 290 lbs.

Per seismic report file # EMD-028558, the valve without actuator weighs 145 lbs.

Thus the new valve assembly weighs 435 lbs. Round to 450 lbs for new analysis.

Use conservative estimate to arrive at center of gravity for new analysis.

SOURCE OF INFORMATION

Calc. no. N/A Report no. N/A
 Rev. and/or date _____ Rev. and/or date _____

Other Limitorque "Approximate Weights" Table, SEL-16 dated 10/17/77

DISTRIBUTION

L. Robinson - 21 (orig) Acc. No. EMD-042129
File: WIN 1920 Addendum: C
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Safety-Related Non-Safety-Related DIT No. LS-EMD-0684

Client Commonwealth Edison Company Page 1 of 1

Station LASALLE Unit(s) 2 To W. Hilton - 21

Project No(s) 9066-50 G. Mank - 21

Subject Increased Reactions in Subsystem 2MS-31B due to 2B21-F019

MOV replacement - WIN # 1920

Modification or Design Change Number(s) P01-2-92-551

Kiran Patel EMD *K Patel* 08-26-92
Preparer Division Preparer's signature Issue date

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified)

This information is approved for use, however it requires further verification regarding the weight of the valve 2B21-F019.

IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUED
(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

EMD has completed the reanalysis of Main Steam Piping Subsystem 2MS-31B due to the increased weight of the valve 2B21-F019. Attached for your evaluation are the revised reactions and thermal movements for the supports/anchors which have load increase.

Attachment No. 1 - Detailed Combined Reactions, Total 12 Pages

CMED - Responsible for the qualification of Penetration M-22 only

Upon completion of your evaluation, please respond as to the adequacy of the supports/anchors.

SOURCE OF INFORMATION

Calc. no. EMD-042129 Rev. 02/Add - C Reports no. N/A N/A

Other N/A Rev. and/or date N/A Rev. and/or date

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M. Pressburger - 22	R. Parson - 21
L. Kaushansky - 22	A. Sta Maria - 21
M. Hosain - 22	L. Robinson - 21 (Orig)
D. Robinson - 21	

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 DATE 08/19/92

1 SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP03702614o Program Date Jun 22, 1990 14:35:19
 * COMBINED REACTIONS SUMM S * - DESIGN BASIS C R
 ZMS31B

RESTRAINT ID: MS14-2864G TYPE: RIGID LOCATION: NP 293
 SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 DIRECTION: Y-GLOBAL

COORDINATE (FT) DIRECTION COSINE
 X Y Z CX CY CZ

 -12.27 735.53 -85.38 0.000 1.000 0.000

MAXIMUM THERMAL MOVEMENTS (INCH)

LOCAL RESTRAINT			LOCAL RESTRAINT			GLOBAL			GLOBAL		
A	B	C	A	B	C	X	Y	Z	X	Y	Z
0.000	0.162	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.162	0.000	0.000

MAXIMUM COMBINED LOADS AND DISPLACEMENTS FOR EACH SERVICE LEVEL (LBS, INCHES)

SL	RESTRAINT LOAD	LOCAL RESTRAINT MOVEMENT			GLOBAL MOVEMENT			COMBINATION NUMBER
		A	B	C	X	Y	Z	
A	254.	0.000	0.162	0.000	0.000	0.000	0.000	1 3 2 3 1 3 3
A	83.	0.000	0.000	0.000	-0.162	0.000	0.000	2 3 1 3 2 3 3
B	709.	0.000	0.162	0.000	0.000	0.000	0.000	4 9 6 9 4 9 9
B	-372.	0.000	0.000	0.000	-0.162	0.000	0.000	6 9 4 9 6 9 9
D	813.	0.000	0.162	0.000	0.000	0.000	0.000	13 15 14 15 13 15 15
D	-476.	0.000	0.000	0.000	-0.162	0.000	0.000	14 15 13 15 14 15 15

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1 SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP03702614o Program Date Jun 22, 1990 14:35:19
* COMBINED REACTIONS SUMM \$ * - DESIGN BASIS C R
2MS31B

RESTRAINT ID: MS14-2864G TYPE: RIGID LOCATION: NP 293
SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 DIRECTION: Z-GLOBAL

COORDINATE (FT)

X	Y	Z
-12.27	735.53	-85.38

DIRECTION COSINE

CX	CY	CZ
0.000	0.000	1.000

MAXIMUM THERMAL MOVEMENTS (INCH)

LOCAL RESTRAINT			GLOBAL		
A	B	C	X	Y	Z
0.000	0.000	0.000	0.000	0.000	0.000
0.000	-0.162	-0.001	0.000	0.000	0.000

MAXIMUM COMBINED LOADS AND DISPLACEMENTS FOR EACH SERVICE LEVEL (LBS, INCHES)

SL	RESTRAINT LOAD	LOCAL RESTRAINT MOVEMENT			GLOBAL MOVEMENT			COMBINATION NUMBER
		A	B	C	X	Y	Z	
A	112.	0.000	0.000	0.000	0.000	0.000	0.000	3 1 1 1 3 3
A	-1.	0.000	-0.162	-0.001	-0.162	0.000	0.000	1 3 2 2 2 3 3
B	1100.	0.000	0.000	0.000	0.000	0.000	0.000	9 9 4 4 4 9 9
B	-988.	0.000	-0.162	-0.001	-0.162	0.000	0.000	5 9 6 6 6 9 9
D	1221.	0.000	0.000	0.000	0.000	0.000	0.000	15 15 13 13 13 15 15
D	-1110.	0.000	-0.162	-0.001	-0.162	0.000	0.000	13 15 14 14 14 15 15

SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP03702614o Program Date Jun 22, 1990 14:35:19
 * COMBINED REACTIONS SUMM S * - DESIGN BASIS C R
 ZMS31B

RESTRAINT ID: MS14-2862G TYPE: RIGID LOCATION: NP A330
 SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 DIRECTION: X-GLOBAL

COORDINATE (FT)			DIRECTION COSINE		
X	Y	Z	CX	CY	CZ
7.33	738.30	-68.42	1.000	0.000	0.000

MAXIMUM THERMAL MOVEMENTS (INCH)

LOCAL RESTRAINT			LOCAL RESTRAINT			GLOBAL			GLOBAL		
A	B	C	A	B	C	X	Y	Z	X	Y	Z
0.000	0.000	0.000	0.000	-0.776	-0.042	0.000	0.000	0.000	0.000	0.000	-0.778

MAXIMUM COMBINED LOADS AND DISPLACEMENTS FOR EACH SERVICE LEVEL (LBS, INCHES)

SL	RESTRAINT LOAD	LOCAL RESTRAINT MOVEMENT			GLOBAL MOVEMENT			COMBINATION NUMBER						
		A	B	C	X	Y	Z	1		2		3		
A	88.	0.000	0.000	0.000	0.000	0.000	0.000	1	3	1	1	3	3	1
A	-1404.	0.000	-0.776	-0.042	0.000	0.000	-0.778	2	3	2	2	3	3	2
B	359.	0.000	0.001	0.000	0.000	0.000	0.001	4	9	4	4	9	9	4
B	-1675.	0.000	-0.777	-0.042	0.000	0.000	-0.778	6	9	6	6	9	9	6
D	440.	0.000	0.001	0.000	0.000	0.000	0.001	13	15	13	13	15	15	13
D	-1755.	0.000	-0.777	-0.042	0.000	0.000	-0.778	14	15	14	14	15	15	14

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DIT NO. LS-EMD-0684
 ATTACHMENT 1
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 Addendum: C
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 DATE 08/19/92

1 SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP037026140 Program Date Jun 22, 1990 14:35:19
 * COMBINED REACTIVS SUMM S * - DESIGN BASIS C R
 ZMS318

RESTRAINT ID: MS14-2862G TYPE: RIGID LOCATION: NP A330
 SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 DIRECTION: Y-GLOBAL

COORDINATE (FT) DIRECTION COSINE
 X Y Z CX CY CZ

 7.33 738.30 -68.42 0.000 1.000 0.000

MAXIMUM THERMAL MOVEMENTS (INCH)

LOCAL RESTRAINT			LOCAL RESTRAINT			GLOBAL			GLOBAL		
A	B	C	A	B	C	X	Y	Z	X	Y	Z
0.000	0.000	0.000	0.000	-0.778	0.000	0.000	0.000	0.000	0.000	0.000	-0.778

MAXIMUM COMBINED LOADS AND DISPLACEMENTS FOR EACH SERVICE LEVEL (LBS, INCHES)

SL	RESTRAINT LOAD	LOCAL RESTRAINT MOVEMENT			GLOBAL MOVEMENT			COMBINATION NUMBER
		A	B	C	X	Y	Z	
A	239.	0.000	0.000	0.000	0.000	0.000	0.000	1 3 1 3 3 1
A	89.	0.000	-0.778	0.000	0.000	0.000	-0.778	2 3 2 3 3 2
B	459.	0.000	0.001	0.000	0.000	0.000	0.001	4 9 4 9 9 4
B	-130.	0.000	-0.778	0.000	0.000	0.000	-0.778	6 9 6 9 9 6
D	514.	0.000	0.001	0.000	0.000	0.000	0.001	13 15 13 15 15 13
D	-186.	0.000	-0.778	0.000	0.000	0.000	-0.778	14 15 14 15 15 14

1 SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP03702614o Program Date Jun 22, 1990 14:35:19
 * COMBINED REACTIONS SUMM S * - DESIGN BASIS C R
 ZMSJ1B

RESTRAINT ID: MS14-2023G TYPE: RIGID LOCATION: NP 335
 SUB-SYSTEM NO: ZMS-31 ANALYTICAL DMG NO: M-2000-31 DIRECTION: X-GLOBAL

COORDINATE (FT)
 X Y Z

 7.33 738.45 -52.75

 DIRECTION COSINE
 CX CY CZ

 1.000 0.000 0.000

MAXIMUM THERMAL MOVEMENTS (INCH)

LOCAL RESTRAINT			LOCAL RESTRAINT			GLOBAL		
A	B	C	A	B	C	X	Y	Z
0.000	0.000	0.000	0.000	-0.184	-0.002	0.000	0.000	0.000
-----			-----			-----		
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.184
-----			-----			-----		

MAXIMUM COMBINED LOADS AND DISPLACEMENTS FOR EACH SERVICE LEVEL (LBS, INCHES)

SL	RESTRAINT LOAD	LOCAL RESTRAINT MOVEMENT			GLOBAL MOVEMENT			COMBINATION NUMBER
		A	B	C	X	Y	Z	
A	37.	0.000	0.000	0.000	0.000	0.000	0.000	2 3 1 1 3 3 1
A	-7.	0.000	-0.184	-0.002	0.000	0.000	-0.184	1 3 3 3 3 3 3
B	409.	0.000	0.000	0.000	0.000	0.000	0.000	8 9 4 4 9 9 4
B	-379.	0.000	-0.184	-0.002	0.000	0.000	-0.184	5 9 7 7 9 9 7
D	483.	0.000	0.000	0.000	0.000	0.000	0.000	14 15 13 13 15 15 13
D	-453.	0.000	-0.184	-0.002	0.000	0.000	-0.184	13 15 15 15 15 15 15

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1 SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP03702614o Program Date Jun 22, 1990 14:35:19
 * COMBINED REACTIONS SUMM S * - DESIGN BASIS C R
 ZMS31B

RESTRAINT ID: MS14-2823G TYPE: CP-ID LOCATION: NP 335
 SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 DIRECTION: Y-GLOBAL

COORDINATE (FT)			DIRECTION COSINE		
X	Y	Z	CX	CY	CZ
7.33	738.45	-52.75	0.000	1.000	0.000

MAXIMUM THERMAL MOVEMENTS (INCH)

LOCAL RESTRAINT			LOCAL RESTRAINT			GLOBAL		
A	B	C	A	B	C	X	Y	Z
0.000	0.000	0.000	0.000	-0.184	0.000	0.000	0.000	-0.184

MAXIMUM COMBINED LOADS AND DISPLACEMENTS FOR EACH SERVICE LEVEL (LBS, INCHES)

SL	RESTRAINT LOAD	LOCAL RESTRAINT MOVEMENT			GLOBAL MOVEMENT			COMBINATION NUMBER
		A	B	C	X	Y	Z	
A	328.	0.000	0.000	0.000	0.000	0.000	0.000	1 3 1 3 3 1
A	328.	0.000	-0.184	0.000	0.000	0.000	-0.184	2 3 3 3 3 3
B	977.	0.000	0.000	0.000	0.000	0.000	0.000	4 9 4 9 9 4
B	-322.	0.000	-0.184	0.000	0.000	0.000	-0.184	6 9 7 9 9 7
D	1150.	0.000	0.000	0.000	0.000	0.000	0.000	13 15 13 15 15 13
D	-495.	0.000	-0.184	0.000	0.000	0.000	-0.184	14 15 15 15 15 15

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1 SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP03702614o Program Date Jun 22, 1990 14:35:19
* COMBINED REACTIONS SUMM S * - DESIGN BASIS C R
ZMS318

RESTRAINT ID: MS19-2829S TYPE: SNUBBER LOCATION: NP 392
SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 DIRECTION: X-GLOBAL

COORDINATE (FT)			DIRECTION COSINE		
X	Y	Z	CX	CY	CZ
-11.58	739.50	-85.00	1.000	0.000	0.000

MAXIMUM THERMAL MOVEMENTS (INCH)

LOCAL RESTRAINT			LOCAL RESTRAINT			GLOBAL		
A	B	C	A	B	C	X	Y	Z
0.000	0.000	0.000	-0.162	0.000	-0.340	0.000	0.000	0.000
						-0.162	0.000	-0.340

MAXIMUM COMBINED LOADS AND DISPLACEMENTS FOR EACH SERVICE LEVEL (LBS, INCHES)

SL	RESTRAINT LOAD	LOCAL RESTRAINT MOVEMENT			GLOBAL MOVEMENT			COMBINATION NUMBER
		A	B	C	X	Y	Z	
A	0.	0.000	0.000	0.000	0.000	0.000	0.000	3 1 3 1 1 3 1
A	0.	-0.162	0.000	-0.340	-0.162	0.000	-0.340	3 3 3 3 3 3 3
B	86.	0.000	0.000	0.000	0.000	0.000	0.000	7 5 9 5 5 9 5
B	-86.	-0.162	0.000	-0.340	-0.162	0.000	-0.340	7 9 9 9 9 9 9
D	147.	0.000	0.000	0.000	0.000	0.000	0.000	15 13 15 13 13 15 13
D	-147.	-0.162	0.000	-0.340	-0.162	0.000	-0.340	15 15 15 15 15 15 15

RESTRAINT ID: MS19-2800S TYPE: SNUBBER LOCATION: NP 392
 SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 DIRECTION: Z-GLOBAL

COORDINATE (FT)			DIRECTION COSINE		
X	Y	Z	CX	CY	CZ
-11.38	739.50	-85.00	0.000	0.000	1.000

MAXIMUM THERMAL MOVEMENTS (INCH)

LOCAL RESTRAINT			LOCAL RESTRAINT			GLOBAL			GLOBAL		
A	B	C	A	B	C	X	Y	Z	X	Y	Z
0.000	0.000	0.000	-0.340	-0.162	0.000	0.000	0.000	0.000	-0.162	0.000	-0.340

MAXIMUM COMBINED LOADS AND DISPLACEMENTS FOR EACH SERVICE LEVEL (LBS, INCHES)

SL	RESTRAINT LOAD	LOCAL RESTRAINT MOVEMENT			GLOBAL MOVEMENT			COMBINATION NUMBER						
		A	B	C	X	Y	Z							
A	0.	0.000	0.000	0.000	0.000	0.000	0.000	3	1	1	3	1	3	1
A	0.	-0.340	-0.162	0.000	-0.162	0.000	-0.340	3	3	3	3	3	3	3
B	180.	0.000	0.000	0.000	0.000	0.000	0.000	9	5	5	9	5	9	5
B	-180.	-0.340	-0.162	0.000	-0.162	0.000	-0.340	9	9	9	9	9	9	9
D	224.	0.000	0.000	0.000	0.000	0.000	0.000	15	13	13	15	13	15	13
D	-224.	-0.340	-0.162	0.000	-0.162	0.000	-0.340	15	15	15	15	15	15	15

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DIT NO. LS-EMD-0684
 ATTACHMENT 1
 PAGE 8

2MS31B

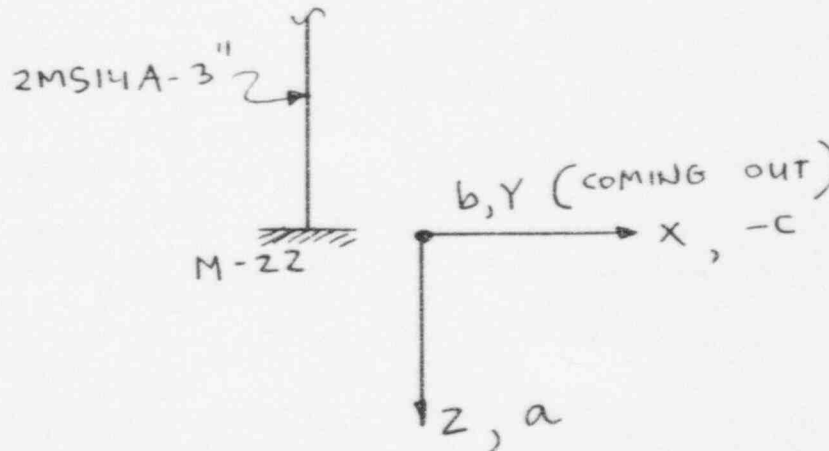
ANCHOR OUTPUT

ANCHOR ID: LOCATION: NP 360 TYPE: PENETRATION M-22

SUB-SYSTEM NO: 2MS-31 ANALYTICAL DWG NO: M-2000-31 GLOBAL AXIS

MAXIMUM COMBINED LOAD FOR EACH SERVICE LEVEL (FT -LBS)

SL	FX	FY	FZ	MX	MY	MZ	FR	MR	COMBINATION NUMBERS					
A	4.	285.	1.	189.	21.	1.	285.	863.	1	1	1	1	2	1
A	-19.	275.	-53.	161.	-7.	-847.			2	3	2	3	1	2
B	294.	678.	384.	806.	409.	348.	850.	1481.	5	4	4	4	8	5
B	-308.	-118.	-436.	-456.	-394.	-1194.			8	7	7	7	5	8
D	393.	781.	419.	971.	512.	549.	990.	1761.	13	13	13	13	14	13
D	-408.	-221.	-470.	-621.	-498.	-1395.			14	15	15	15	13	14



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DIT NO. LS-EMD-0684
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SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP03702614o Program Date Jun 22, 1990 14:35:19

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* COMBINED REACTIONS SUMM S * - DESIGN BASIS C R

DATE 08/19/92

ZMS31B

ANCHOR OUTPUT

ANCHOR ID: LOCATION: NP 360 TYPE: PENETRATION M-22

SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 LOCAL AXIS

MAXIMUM COMBINED LOAD FOR EACH SERVICE LEVEL (FT -LBS)

SL	FA	FB	FC	MA	MB	MC	FR	MR	COMBINATION NUMBERS					
A	5.	285.	19.	1.	31.	-161.	285.	863.	1	1	2	1	2	3
A	-50.	275.	-4.	-847.	-7.	-189.			3	3	1	2	1	1
B	385.	680.	308.	351.	416.	456.	849.	1485.	4	4	8	5	8	7
B	-430.	-120.	-294.	-1197.	-392.	-806.			7	7	5	8	5	4
D	420.	783.	408.	553.	518.	621.	990.	1765.	13	13	14	13	14	15
D	-465.	-223.	-393.	-1399.	-494.	-971.			15	15	13	14	13	13

1

DIT NO. LS-EMD-7684
 ATTACHMENT 1
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ANCHOR OUTPUT

ANCHOR ID: LOCATION: NP 360 TYPE: PENETRATION M-22

SUB-SYSTEM NO: 2MS-31 ANALYTICAL DWG NO: M-2000-31 GLOBAL AXIS

SUMMARY OF INDIVIDUAL LOADS (FT-LBS)

LOAD TITLE	LOAD ID	FX	FY	FZ	MX	MY	MZ
WEIGHT	WHGT	4.	285.	1.	189.	-7.	1.
THERMALMODE1	THM1	-23.	-11.	-54.	-27.	27.	-849.
THERMALMODE2	THM2	-23.	-11.	-54.	-27.	27.	-849.
UPSEYHEADERDISP	UCHD	0.	0.	0.	0.	0.	0.
FAULTEDHEADERDISP	FCHD	0.	0.	0.	0.	0.	0.
OBHALFPERCENT	OBH1	258.	387.	378.	613.	367.	218.
SRVENVONEPERCENT	SM11	39.	69.	60.	76.	48.	55.
SRVENVONEPERCENT	SM21	132.	34.	45.	42.	125.	269.
FAULTED CONDITION	FCBV	375.	458.	411.	714.	469.	543.
FAULTED CONDITION	FC1V	389.	496.	417.	783.	491.	548.

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DIT NO. LS-EMD-0684
 ATTACHMENT 1
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SARGENT & LUNDY ENGINEERS - PROGRAM NO. PIP03702614o Program Date Jun 22, 1990 14:35:19
* COMBINED REACTIONS SUMM S * - DESIGN BASIS C R
ZMS31B

ANCHOR OUTPUT

ANCHOR ID: LOCATION: NP 360 TYPE: PENETRATION M-22

SUB-SYSTEM NO: ZMS-31 ANALYTICAL DWG NO: M-2000-31 LOCAL AXIS

SUMMARY OF INDIVIDUAL LOADS (FT-LBS)

LOAD TITLE	LOAD ID	FA	FB	FC	MA	MB	MC
WEIGHT	WGT	5.	285.	-4.	1.	-7.	-189.
THERMALMODE1	THM1	-54.	-10.	23.	-848.	37.	27.
THERMALMODE2	THM2	-54.	-10.	23.	-848.	37.	27.
UPSETHEDRDISP	UCHD	0.	0.	0.	0.	0.	0.
FAULTEDHEADERDISP	FCHD	0.	0.	0.	0.	0.	0.
OBEHALFPERCENT	OBH1	376.	389.	258.	221.	365.	613.
SRVENVONEPERCENT	SN11	60.	69.	39.	56.	47.	76.
SRVENVONEPERCENT	SN21	45.	34.	132.	270.	122.	42.
FAULTED CONDITION	FCBV	409.	460.	375.	547.	464.	714.
FAULTED CONDITION	FC1V	415.	498.	389.	552.	487.	783.

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Addendum: C
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DIT NO. LS-EMD-0664
ATTACHMENT 1
PAGE 1c/FINAL

SARGENT & LUNDY

INTEROFFICE MEMORANDUM

W. B. Hilton
From W. B. Hilton, 21, X-7731

Date 9/9/92

Dept./Div. SED

Project No. 9066-50

Spec. No. _____

File No. _____

Page No. 1

Client CECO

Stn. LaSalle

Unit ~~1~~ 2

Subject Evaluation of Load Increases For DIT Number LS-EMD-0684

MOV replacement (WIN # 1920)

To: Kiran Patel - 22

cc: A. N. Gandhi - 21

M. A. Pressburger - 22

D. Robinson - 21

The Structural Engineering Division (SED) has completed reviewing the load increases per DIT Number LS-EMD-0684. All affected auxiliary steel and main structure are acceptable for these load increases. Calculations for this evaluation are filed in SED Calculation Book 8896-30EP, Revision Q. *

Please call if you have any questions regarding this matter.

* VERIFICATION REQUIRED.

SED ASSESSMENT CALC'S ARE PRELIMINARY.

Also, support in DIT should be as follows:

MS14-2862 G should be MS14-2403 G

MS14-2823 G & should be MS14-2823 X.

Acc. No. EMD-042129

Addendum: C

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S A R G E N T & L U N D Y

INTEROFFICE MEMORANDUM

WIN 1920

From A. Ansari - 22 x6478 Date November 17, 1992
 Dept./Div. Mechanical/CMED Project No. 9066-50
 Spec. No. _____
 File No. CMED-038710, Rev. 02
 Page No. 1 of 1

Client CECO Stn. LaSalle County Unit 2

Subject Revised Loads for Primary Containment Penetration 2PC0022,
Subsystems 2MS-31B and 2MS-25 (Preliminary) (Safety-Related)

To: K. L. Patel - 22
 A. I. Gershman - 22
 cc: M. A. Hosain - 22
 M. M. Hassaballa/A. Ansari - 22
 RLK/APD/GHD/RDR - 22
 CMED File - 22

Acc. No. EMD-042129
 Addendum: C
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- References:
1. DIT LS-EMD-0684, dated 08/26/92,
with revised loads
 2. DIT LS-EMD-0701, dated 11/04/92,
with revised loads
 3. CQD File CQD-038710, Rev. 01, dated 01/11/90

CMED has analyzed the subject penetration for the primary containment and found that the revised loads provided in References 1 & 2 are acceptable.

By copy of this memorandum, the formal report is submitted to the CMED Library under CMED-038710, Rev. 02.

Please call if you have any questions.

A. Ansari

SARGENT & LUNDY
ENGINEERS

Preparer _____ Date _____
Reviewer _____ Date _____
Approver _____ Date _____

SUBSYSTEM 2MS31B REV. 00 ACCESSION NO. 042129 ADDENDUM C

SUPPORT LOAD SUMMARY LISTING

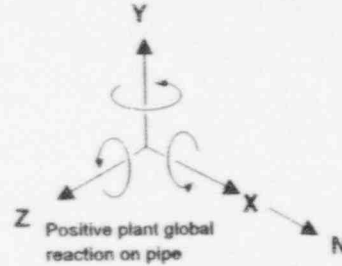
REV. 00

Notes: 1. %Load Change = $\frac{|DESIGN BASIS LOAD| - |OLD LOAD|}{|OLD LOAD|} \times 100$

2. Loads are given in lbs
Moments are given in ft-lbs.

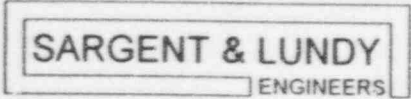
*New loads have changed an analytically insignificant amount (less than 5%) compared to the old loads. Therefore, the old load still applies. Any future reconciliation calculations should be based on the latest analysis.

**The load change is less than 20 lbs and is deemed insignificant. Therefore the old load still applies. Any future reconciliation calculations should be based on the latest analysis.



SUPPORT DWG NUMBER	SUPPORT TYPE	REVISION	NODE		DIRECTION	SERVICE LEVEL	OLD LOADS		NEW LOADS		DESIGN BASIS LOADS		% LOAD CHANGE (Note 1)		DEFLECTION	STIFFNESS VALUES lb/ft	PIPE CLASS	REMARKS		
			AE	S&L			PREVIOUS DESIGN BASIS		RUN ID 2MS31B		DATE 4/14/93		INCR	DECR						
							POS	NEG	POS	NEG									POS	NEG
			POS	NEG			POS	NEG	POS	NEG	POS	NEG	POS	NEG						
MS14-2864G	R		293	Y	A	253		254	0	253	0	**								
					B	704	-367	709	-372	704	-367	*								
					D	816	-479	813	-476	816	-479	0								
MS14-2864G	R		293	Z	A	115	-1	112	-1	115	-1	0								
					B	1118	-1004	1100	-988	1118	-1004	0								
					D	1024	-911	1221	-1110	1221	-1110	22								
MS14-2820R	R		305	Y	A	315		315	0	315	0	0								
					B	551	-76	555	-80	551	-76	*								
					D	607	-132	617	-142	607	-132	**								
MS14-2821X	R		315A	X	A	1387	-87	1384	-87	1387	-87	0								
					B	1744	-444	1700	-404	1744	-444	0								
					D	1822	-522	1790	-493	1822	-522	0								
MS14-2862G	R		A330	X	A	88	-1402	88	-1404	88	-1402	*								
					B	347	-1660	359	-1675	347	-1660	*								
					D	414	-1727	440	-1755	440	-1755	6								
MS14-2862G	R		A330	Y	A	240		239	0	240	0	0								
					B	459	-127	459	-130	459	-127	*								
					D	487	-156	514	-188	514	-188	19								

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Preparer _____	Date _____
Reviewer _____	Date _____
Approver _____	Date _____

SUBSYSTEM 2MS31B REV. 00 ACCESSION NO. 042129 ADDENDUM C

SUPPORT LOAD SUMMARY LISTING

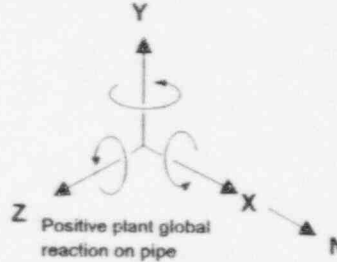
REV. 00

Notes: 1. %Load Change = $\frac{|\text{DESIGN BASIS LOAD} - \text{OLD LOAD}|}{|\text{OLD LOAD}|} \times 100$

2. Loads are given in lbs
Moments are given in ft-lbs.

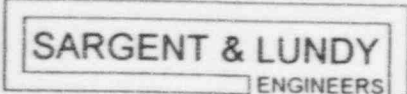
*New loads have changed an analytically insignificant amount (less than 5%) compared to the old loads. Therefore, the old load still applies. Any future reconciliation calculations should be based on the latest analysis.

**The load change is less than 20 lbs and is deemed insignificant. Therefore the old load still applies. Any future reconciliation calculations should be based on the latest analysis.



SUPPORT DWG NUMBER	SUPPORT TYPE	REVISION	NODE		DIRECTION	SERVICE LEVEL	OLD LOADS		NEW LOADS		DESIGN BASIS LOADS		% LOAD CHANGE (Note 1)		DEFLECTION	STIFFNESS VALUES lb/ft	PIPE CLASS	REMARKS
			AE	S&L			PREVIOUS DESIGN BASIS		RUN ID 2MS31B		POS	NEG	INCR	DECR				
							POS	NEG	POS	NEG								
MS14-2823G	R		335	X	A	36	-7	37	-7	36	-7	*						
						B	426	-397	409	-379	426	-397	0					
						D	448	-419	483	-453	483	-453	8					
MS14-2823G	R		335	Y	A	284		328	0	328	0	15						
						B	973	-406	977	-322	973	-406	*					
						D	1070	-502	1150	-495	1150	-502	7					
MS18-2800G	R		355B	X	A		-2	0	-2	0	-2	0						
						B	14	-17	14	-17	14	-17	0					
						D	31	-33	27	-30	31	-33	0					
MS18-2800G	R		355B	Y	A	67		67	0	87	0	0						
						B	86		99	0	86	0	**					
						D	94		110	0	94	0	**					
MS19-2802R	R		392	Y	A	669		668	0	669	0	0						
						B	762		771	0	762	0	**					
						D	812		847	0	812	0	*					
MS19-2811R	R		480	X	A	200		202	0	200	0	**						
						B	377	-175	368	-165	377	-175	0					
						D	412	-210	398	-195	412	-210	0					

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Reviewer _____	Date _____
Approver _____	Date _____

SUBSYSTEM 2MS31B REV. 00 ACCESSION NO. 042129 ADDENDUM C

SUPPORT LOAD SUMMARY LISTING

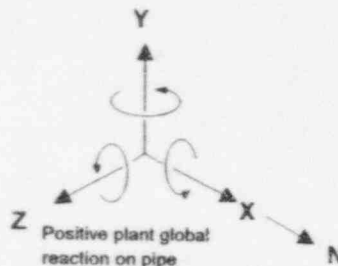
REV. 00

Notes: 1. %Load Change = $\frac{|DESIGN BASIS LOAD| - |OLD LOAD|}{|OLD LOAD|} \times 100$

2. Loads are given in lbs
Moments are given in ft-lbs

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SUPPORT DWG NUMBER	SUPPORT TYPE	REVISION	NODE		DIRECTION	SERVICE LEVEL	OLD LOADS		NEW LOADS		DESIGN BASIS LOADS		% LOAD CHANGE (Note 1)		DEFLECTION	STIFFNESS VALUES lb/ft	PIPE CLASS	REMARKS		
			AE	S&L			PREVIOUS DESIGN BASIS		RUN ID 2MS31B				INCR	DECR						
							POS	NEG	POS	NEG										
											DATE 4/14/93									
MS19-2810R	R		480	Y	A	98		97	0	98	0	0								
					B	123	-23	116	-18	123	-23	0								
					D	131	-32	124	-26	131	-32	0								
MR19-2816S	R		530	X	A	36	-12	36	-13	36	-12	**								
					B	185	-161	176	-153	185	-161	0								
					D	237	-213	223	-201	237	-213	0								
MS19-2815R	R		530	Y	A	86	-32	86	-33	86	-32	*								
					B	107	-53	101	-49	107	-53	0								
					D	116	-62	110	-57	116	-62	0								
MS19-2820R	R		580	Y	A	55		55	0	55	0	0								
					B	67	-4	68	-5	67	-4	**								
					D	72	-9	74	-11	72	-9	**								
MS14-2861V	V		318	Y	A	173		173	0	173	0	0								
					B	173		173	0	173	0	0								
					D	173		173	0	173	0	0								
MS19-2806V	V		435	Y	A	172		172	0	172	0	0								
					B	172		172	0	172	0	0								
					D	172		172	0	172	0	0								

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SARGENT & LUNDY
ENGINEERS

Preparer _____	Date _____
Reviewer _____	Date _____
Approver _____	Date _____

SUBSYSTEM 2MS31B REV. 00 ACCESSION NO. 042129 ADDENDUM C

SUPPORT LOAD SUMMARY LISTING

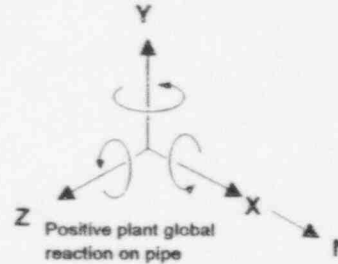
REV. 00

Notes: 1. %Load Change = $\frac{|\text{DESIGN BASIS LOAD}| - |\text{OLD LOAD}|}{|\text{OLD LOAD}|} \times 100$

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SUPPORT DWG NUMBER	SUPPORT TYPE	REVISION	NODE		DIRECTION	SERVICE LEVEL	OLD LOADS		NEW LOADS		DESIGN BASIS LOADS		% LOAD CHANGE (Note 1)		DEFLECTION	STIFFNESS VALUES lb/in	PIPE CLASS	REMARKS		
			AE	S&L			PREVIOUS DESIGN BASIS		RUN ID 2MS31B		DATE 4/14/93		INCR	DECR						
							POS	NEG	POS	NEG									POS	NEG
			POS	NEG			POS	NEG	POS	NEG	INCR	DECR								
MS19-2808V	V			450	Y	A	69		69	0	69	0	0							
						B	69		69	0	69	0	0							
						D	69		69	0	69	0	0							
MS19-2829S	S			392	X	A	0		0	0	0	0	0							
						B	75	-75	86	-86	75	-75	**							
						D	115	-115	147	-147	147	-147	28							
MS19-2800S	S			392	Z	A	0		0	0	0	0	0							
						B	123	-123	180	-180	180	-180	46							
						D	161	-161	224	-224	224	-224	39							
MS19-2804S	S			425	X	A	0		0	0	0	0	0							
						B	23	-23	22	-22	23	-23	0							
						D	32	-32	32	-32	32	-32	0							
MS19-2803S	S			425	Y	A	0		0	0	0	0	0							
						B	37	-37	39	-39	37	-37	*							
						D	54	-54	61	-61	54	-54	**							
MS19-2830S	S			430	Z	A	0		0	0	0	0	0							
						B	28	-28	29	-29	28	-28	*							
						D	39	-39	40	-40	39	-39	*							

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Preparer _____	Date _____
Reviewer _____	Date _____
Approver _____	Date _____

SUBSYSTEM 2MS31B REV. 00 ACCESSION NO. 042129 ADDENDUM C

SUPPORT LOAD SUMMARY LISTING

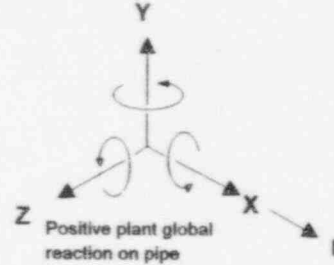
REV. 00

Notes: 1. %Load Change = $\frac{|DESIGN BASIS LOAD| - |OLD LOAD|}{|OLD LOAD|} \times 100$

2. Loads are given in lbs
Moments are given in ft-lbs

*New loads have changed an analytically insignificant amount (less than 5%) compared to the old loads. Therefore, the old load still applies. Any future reconciliation calculations should be based on the latest analysis.

**The load change is less than 20 lbs and is deemed insignificant. Therefore the old load still applies. Any future reconciliation calculations should be based on the latest analysis.



SUPPORT DWG NUMBER	SUPPORT TYPE	REVISION	NODE		DIRECTION	SERVICE LEVEL	OLD LOADS		NEW LOADS		DESIGN BASIS LOADS		% LOAD CHANGE (Note 1)		DEFLECTION	STIFFNESS VALUES lb/in	PIPE CLASS	REMARKS	
			AE	S&L			PREVIOUS DESIGN BASIS		RUN ID 2MS31B				INCR	DECR					
							POS	NEG	POS	NEG									DATE 4/14/93
			POS	NEG			POS	NEG	POS	NEG	POS	NEG							
MS19-2807S	S			435	X	A	0		0	0	0	0	0						
									37	-37	31	-31	37	-37	0				
									48	-48	42	-42	48	-48	0				
MS19-2827S	S			440	Y	A	0		0	0	0	0	0						
									43	-43	45	-45	43	-43	*				
									58	-58	70	-70	58	-58	**				
MS19-2828S	S			A460	Y	A	0		0	0	0	0	0						
									69	-69	53	-53	69	-69	0				
									90	-90	74	-74	90	-90	0				
MS19-2813S	S			495	Z	A	0		0	0	0	0	0						
									111	-111	91	-91	111	-111	0				
									140	-140	113	-113	140	-140	0				
MS19-2818S	S			545	Z	A	0		0	0	0	0	0						
									81	-81	68	-68	81	-81	0				
									108	-108	90	-90	108	-108	0				

Acc. No. EMD-042129
Addendum: C
Page 32

SAFETY-RELATED

NON-SAFETY-RELATED

DIT No. - LS-EMD-0691

CLIENT Commonwealth Edison Company

Page 1 of 3

STATION LaSalle County UNIT(S) 1 & 2

To M. Hosain - 22

PROJECT NO(S) 9066-50

SUBJECT Accelerations for Valves 1ES1-F013, 2ES1-F013
and 2B21-F019 WIN 1920

MODIFICATION OR DESIGN CHANGE NUMBERS(S) P01-1-92-510; P01-2-92-506;
P01-2-91-551

A. I. Gershman EMD A. I. Gershman 9-16-92
Preparer (Please print name) Division Preparer's signature Issue date

STATUS OF INFORMATION (This information is approved for use. Design information, approved for use, that contains assumptions or is preliminary or requires further verification (review) shall be so identified.)

Design information approved for use that contains preliminary information.

IDENTIFICATION OF THE SPECIFIC DESIGN INFORMATION TRANSMITTED AND PURPOSE OF ISSUE

(List any supporting documents attached to DIT by its title, revision and/or issue date, and total number of pages for each supporting document.)

CMED : Per your request, attached are the new accelerations for valves 1ES1-F013, 2ES1-F013 and 2B21-F019 due to the replacement of the valve actuators.

Acc. No. EMD-042129
Addendum: C
Page 33

SOURCE OF INFORMATION

Calc no see below Report no. see below
Rev. and/or date Rev. and/or date

Other EMD-062301 Add B; EMD-062183 Add B; EMD-042129 Add C

DISTRIBUTION

L. Kaushansky - 22; R.A. Parson - 21; M.A. Pressburger - 22
L. Robinson - 21 (orig); D.W. Robinson - 21

Form GQ-3.17.1 Rev. 2 (01-08-87)

Calc. For	
Safety-Related	Non-Safety-Related

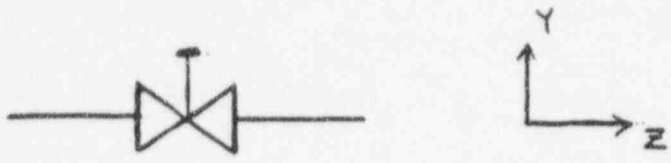
Calc. No.	
Rev.	Date
Page	of

Client	
Project	
Proj. No.	Equip. No.

Prepared by	Acc. No. EMD-042129
Reviewed by	Addendum: C
Approved by	Page 34

Valve 2B21-F019

DIT No. LS-EMD-0691
Page 2 of 3



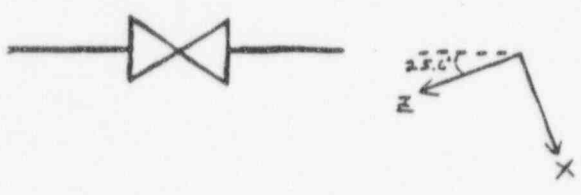
Upset accelerations (g's)

Faulted accelerations (g's)

<u>X</u>	<u>Y</u>	<u>Z</u>
.475	.464	.346

<u>X</u>	<u>Y</u>	<u>Z</u>
.746	.594	.465

Valve 2E51-F013



Upset accelerations (g's)
global coordinates

Faulted accelerations (g's)
global coordinates

<u>X</u>	<u>Y</u>	<u>Z</u>
.409	.448	.524

<u>X</u>	<u>Y</u>	<u>Z</u>
.717	.568	.706



Calcs. For	
Safety-Related	No

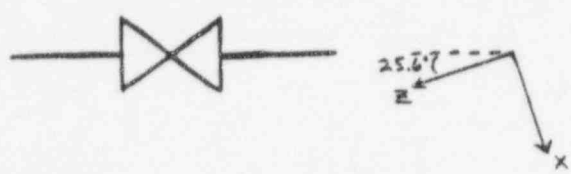
Acc. No. EMD-042129
 Addendum: C
 Page 35 / FINAL

Client	
Project	
Proj. No.	Equip. No.

Prepared by	Date
Reviewed by	Date
Approved by	Date

Valve IES1-F013

DIT No. LS-EMD-0691
 Page 3 of 3



Upset accelerations (g's)
global coordinates

<u>X</u>	<u>Y</u>	<u>Z</u>
.503	.448	.449

Faulted accelerations (g's)
global coordinates

<u>X</u>	<u>Y</u>	<u>Z</u>
.942	.576	.734

000000093

SAFETY RELATED

YES

NO

PROJECT NO.: 4267-00
ACC. NO. EMD-042129
ADDENDUM : A
DATE: 4-12-84
PAGE 1 OF 10

ADDENDUM TO
PIPING STRESS REPORT

SUBSYSTEM: 2MS-31B REVISION: 02
PROJECT NAME LASALLE -2

DATED ON: 3-24-83
UNDER ACCESSION NO: EMD-042129

ADDENDUM ACC. No. EMD- 042129
DATE: 4-12-84

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ENGINEERING MECHANICS DIVISION

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ACC. NO.: EMD-042129
ADDENDUM: A
PAGE 2A

Revision 8
NSED Procedure Q.3
Exhibit B

Design/Stress Report Title: ADDENDUM TO PIPING STRESS REPORT, MAIN
STEAM, ANALYSIS: ZMS-31B

Identification No: EMD-042129 Date: 04-12-84 Revision No. 02, ADDENDUM A

Owner's Review

I, the undersigned, a duly authorized representative of the Commonwealth Edison Company and experienced in nuclear power plant system requirements, have reviewed the attached Design/Stress Report in accordance with ASME, Section III, Division 1.

Concurred by:
Project Engineer:

MJ Reed
Signature

11-21-89
Date

BWR/PWR Engineering
Manager:

[Signature]
Signature

12-2-89
Date

TABLE OF CONTENTS

	<u>PAGE</u>
Title Page	1
Sign-Off and Issue Summary	2
<i>Owner's Certification Page</i>	<i>2A</i>
1.0 Purpose	4
2.0 Changed Input Design Documents	5
3.0 Conclusions and Recommendations	6
4.0 Documentation References	7
5.0 Errata	8
6.0 Checklists	9-10
7.0 Attachments . . . . .	.

- a. None
- b.

DO NOT FILM

RESTRAINT DRAWING MS14-2818A Sheets 1&2

1.0 Purpose

The purpose of this Addendum to the Stress Report for subsystem ZMS-31B, Rev. 2 is:

- I - Validation of current Stress Report for record Document Package information.
- IIa - documentation of revised restraint - support information;
- b - documentation of a review to reconcile minor analytical drawing, design document, or construction modifications;
- c - documentation of manual reconciliation calculations which were required by a design change;
- d - documentation of manual reconciliation calculations for restraint-support and piping design change reconciliations.
- III - Other (provide a detailed description of purpose).
To document a list of errors and corresponding corrections and resolutions. These errors were found during an internal audit.

This Addendum addresses material identified by the specific design changes as well as those items identified in all prior addenda. All other material will remain unchanged and can be obtained in the specified Stress Report.

2.0 Changed Input Design Documents

2.1 Sargent & Lundy Drawings:

N/A

2.2 Change Request Documents:

N/A

2.3 Other:

N/A

3.0 Conclusions & Recommendations

The piping subsystem was re-evaluated and the following was concluded:

- Changes do not warrant reanalysis based on engineering judgement; Identified in Article 4.1 and/or 4.2.
- Changes do not warrant reanalysis, but the subsystem must be modified as instructed by EMD ACC. Nos. _____. Identified in Article 4.3.
- All Analytical Evaluations satisfy the Criteria set forth in the Documentation of the Current Stress Report and Applicable Addenda. File# _____.
- Other (describe in detail on an attachment).

The errors which have been found and documented in this addendum along with the corresponding corrections have no impact on the design information contained in this report. No further action is required.

4.0 Documentation References

4.1 Hand Calculations and Documentations:

<u>TITLE</u>	<u>PAGE</u>
N/A	

4.2 Computer Output Microfiche Cards:

<u>RUN ID</u>	<u>DATE</u>	<u>NO. OF COM</u>	<u>COMMENTS</u>
	N/A		

4.3 Memorandums:

	<u>TITLE</u>	<u>DATE</u>	<u>ACC. NO.</u>
4.3.1	"LaSalle Piping Stress Analysis Report Review"	9/12/83	EMD-045185

4.4 Other References (provide sufficient documentation)

N/A

5.0 Errata (a list of errors along with their corrections)

Subsystem Name: 2MS-31B

Revision No.: 02

Accession No.: EMD-042129

Date: 3-24-83

PROJECT NO.: 4267-00

ACC. NO. EMD-042129

ADDENDUM : A

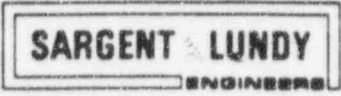
DATE: 4-12-84

PAGE 8 OF 10

Seq. No.	Page	Errors and Explanation	Correction/Action	Comments
1	1,17	Page 17 is not legible.	Stamped "Information on the following Page 17 is adequate for the purpose of use" on Page 1.	Per Ref. 4.3.1
2	20	Table 9.1 contains various calculations which do not appear in this report.	All calculations described in Table 9.1 have calculation No. 039432.	
3	21	Model Node 355B for restraint ID MS18-2800G is not correct.	Correct Node is 366. for Restraint ID MS18-2800G.	
4	21	Anchor Drawing for MS14-2818A at Node 275 does not appear in this report as indicated.	Anchor Drawing for MS14-2818A is included in the DO NOT FILM section of this addendum.	
5	23	PIPSYS is checked off as a validated program use in this subsystem.	PIPSYS was not used in this revision of the subsystem report.	

STANDARD EMD CHECKLIST
FOR ADDENDUM
PIPING SYSTEM STRESS ANALYSIS

Description	Checked	Comments
<p>1.0 <u>Engineering Judgements</u></p> <p>1.1 Do the modifications to this subsystem cause any significant change to the original input basic data?</p> <p>1.2 Do the modifications to this subsystem cause any significant change to the applicable loadings on the subsystem?</p> <p>1.3 The following judgements are concluded:</p> <p>a. Are stresses within the allowables?</p> <p>b. Is Functional Capability assured?</p> <p>c. Are support reactions within the acceptable limits?</p> <p>d. Are equipment reactions or displacements within the allowables?</p> <p>e. Are valve accelerations within acceptable limits?</p> <p>f. Will the new results require hardware changes?</p> <p>g. Are the new supports and equipment loads significantly different from original analysis?</p> <p>1.4 Other (specify)</p>	<p>✓</p>	<p>N/A</p>



PROJECT NO.: 4267-00
ACC. NO. EMD-042129
ADDENDUM : A
DATE: 4-12-84
PAGE 10 OF 10

Description	checked	Comments
2.0 <u>Computer Analysis</u> 2.1 Validated Program Used: 2.2 Is the program applicable for items investigated in this addendum? 2.3 Has the input data source been documented and properly referenced? 2.4 Has it been approved for use? 2.5 Does the coding correctly reflect the change in the input data? 2.6 Are the piping stresses within the allowables? 2.7 Is Functional Capability assured?	✓	N/A
3.0 <u>Hand Calculation</u> 3.1 If the hand calculations are not attached to this addendum, are they referenced? 3.2 Are the calculations reviewed in accordance with GQ-3.08? <input type="checkbox"/> A detailed review of original calculation. <input type="checkbox"/> A review by an alternate, simplified or approximate method of calculation. <input type="checkbox"/> A review of a representative sample of repetitive calculations. <input type="checkbox"/> A review of the calculation against a similar calculation previously performed.	✓	↓
3.3 Are there any special procedures used? If yes, are they referenced properly?	✓	NO
4.0 Is addendum technically adequate?	✓	YES

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SARGENT & LUNDY
ENGINEERS
CHICAGO

~~Nov 22 89 4870~~
Jed

SAFETY RELATED

ADDENDUM TO CLASS 1
PIPING STRESS REPORT

COMMONWEALTH EDISON COMPANY
LASALLE - UNIT 2
PROJECT NO.: 4267-00

SYSTEM: MAIN STEAM PIPING

SUBSYSTEM: 2MS-31B REV.: 02

EMD-042129 ISSUED ON: 03-24-83

ADDENDUM: B

ISSUED ON: 05-01-87

For Indexing and Microfilming Purposes for the Entire Report,
Use Project Number 4267-00

For Accounting Purposes, Use Valid Charge Number 7343-94

The following pages(s)

14-18, 20

are adequate copies for use.

Signature John Sidman
11/21/89

PAGE 1

ENGINEERING MECHANICS DIVISION

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ACC. NO.: EMD-042129
ADDENDUM: B
PAGE 2

Revision 8
NSED Procedure Q.3
Exhibit B

Design/Stress Report Title: ADDENDUM TO CLASS 1 PIPING STRESS REPORT,
MAIN STEAM, SUBSYSTEM: 2MS-31B

Identification No: EMD-042129 Date: 05-01-87 Revision No. 02, ADDENDUM B

Owner's Review

I, the undersigned, a duly authorized representative of the Commonwealth Edison Company and experienced in nuclear power plant system requirements, have reviewed the attached Design/Stress Report in accordance with ASME, Section III, Division 1.

Concurred by:
Project Engineer: M. Reed
Signature

10-18-89
Date

BWR/PWR Engineering
Manager: [Signature]
Signature

11-4-89
Date

SIGNATURE PAGE

ASME BOILER & PRESSURE VESSEL CODE
SECTION III PIPING ANALYSIS
FOR SUBSYSTEM: 2MS-31B REV. 02
ADDENDUM: B

ANALYSIS PREPARED BY: M. W. Gonzalez DATE: 5-1-87
M. W. GONZALEZ

ANALYSIS REVIEWED BY: Ran Madugula DATE: 5/1/87
R. MADUGULA

ANALYSIS RESULTS APPROVED BY: KR Panucci DATE: 5/1/87
K. R. PANUCCI

ADDENDUM PREPARED BY: M. W. Gonzalez DATE: 5-1-87
M. W. GONZALEZ

ADDENDUM REVIEWED BY: Ran Madugula DATE: 5/1/87
R. MADUGULA

ADDENDUM APPROVED BY: KR Panucci DATE: 5/1/87
K. R. PANUCCI

CERTIFICATION OF:

Addendum: B

Dated: 5-1-87

I, the undersigned Registered Professional Engineer, competent in the field of piping analysis using the design rules specified by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section III Subarticles NB-3640 and NB-3650, certify that to the best of my knowledge, this addendum is technically adequate, complete and complies with the requirements of the design specification.

KR Panucci

Signature

5/1/87

Date

Seal



ISSUE SUMMARY

<u>ADDENDUM</u>	<u>DATE</u>	<u>DESCRIPTION</u>
A	04-12-84	An Errata to Document Errors and Corresponding Corrections.
B	05-01-87	Documentation of Evaluation of Rotation of Motor operator on Valve 2B21-F020

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2.0 General Notes.....	6
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4.0 References.....	7
5.0 Reconciliation of Design Document..... Modifications	7
6.0 Hand Calculations.....	9-11
7.0 Check lists.....	12-13

ATTACHMENTS

A. LaSalle County Station Engineering Work Request, dated 03-31-87, prepared by Commonwealth Edison Company Technical Staff (attached).....	14-18
B. CQD-035939, Interoffice Memorandum from L. Sorkin to F. Gonzalez, "Center of Gravity for Crane Company 3" - 900# Globe Valve with SMB-00 Activator, Tag No. 2B21-F020," dated 04-16-87 (attached).....	19-20
C. EMD-062574, Interoffice Memorandum from R. Madugula to R. Parson, Subject: "Rotation of Motor Operator on Valve 2B21-F020 by 90°," dated 05-01-87 (attached).....	21 (FINAL)

1.0 PURPOSE AND SCOPE

1.1 Purpose of Addendum

The purpose of this addendum to the Stress Report for subsystem 2MS-31B is to document the evaluation of the following modification to the subsystem:

Rotation of the motor operator of valve No. 2B21-F020.

This addendum addresses material identified by the specific design changes as well as those items identified in all prior addenda. All other material will remain unchanged and can be obtained in the specified Stress Report.

2.0 GENERAL NOTES

- 2.1 Commonwealth Edison Company Technical Staff has requested Sargent & Lundy to determine if rotating motor operator on valve 2B21-F020 will affect the seismic analysis of 2MS-31B. Valve operator needs to be rotated to eliminate clearances near motor.
- 2.2 Component Qualification Division has determined the center of gravity for valve 2B21-F020 with the motor operator rotated 90° from the current position. See Reference 4.4 for new location of center of gravity.
- 2.3 Engineering Mechanics Division has reviewed the difference in the coordinates of the center of gravity - current and after the proposed change. See calculation on pages 9 to 11 for EMD review which shows that the differences are minor and will not affect the seismic or weight analysis.
- 2.4 Project Management Engineering Division has been informed per Reference 4.5 that the proposed change is acceptable.

3.0 CONCLUSIONS & RECOMMENDATIONS

The piping subsystem was reevaluated and the following was concluded:

Changes do not warrant reanalysis based on engineering judgment; Identified in Hand Calculations in Section 6.0.

Rotation of the motor operator will not affect the weight and/or seismic analyses of subsystem 2MS-31B. This proposed change is thus considered acceptable. There would be no change to pipe stresses and/or support loads.

4.0 DOCUMENTATION REFERENCES

- 4.1 EMD-042129, Stress Report for Subsystem 2MS-31B, Rev. 02, dated 03-24-83, including Addenda A, dated 04-12-84.
- 4.2 EMD-027046, Stress Report for Subsystem 2MS-31B, Rev. 00, dated 03-04-82
- 4.3 LaSalle County Station Engineering Work Request, dated 03-31-87, prepared by Commonwealth Edison Company Technical Staff (attached).
- 4.4 CQD-035939, Interoffice Memorandum from L. Sorokin to F. Gonzalez, "Center of Gravity for Crane Company 3" - 900# Globe Valve with SMB-00 Activator, Tag No. 2B21-F020," dated 04-16-87 (attached).
- 4.5 EMD-062574, Interoffice Memorandum from R. Madugula to R. Parson, Subject: "Rotation of Motor Operator on Valve 2B21-F020 by 90°," dated 05-01-87 (attached).
- 4.6 ASME Boiler and Pressure Vessel Code, Section III, 1974 Edition without Addenda.

5.0 RECONCILIATION OF DESIGN DOCUMENT MODIFICATIONS

5.1 Introduction

Paragraph NA-3355 of Reference 4.6 requires that all modifications of the design documents on which the calculations in this report are based be reconciled with the calculations. All modifications reported to Sargent & Lundy after the completion of Reference 1 and prior to this addenda, have been reconciled with their associated calculations and the activities involved in reconciling the changes are documented in this section of the addendum.

5.2 Record of Reconciled Changes

Table 5.1 contains a record of all modifications to the base design documents that have been reconciled. Listed with each modification is a reference to the document containing the reconciliation calculation.

TABLE 5.1
Reconciliation Log

Revision Addendum Number	Document Reporting Change	Description of Change	Accession Number of Calculation	Date Released
Rev. 2/B EMD-042129	See Ref. 4.3	Rotation of Motor Operator on Valve 2B21-F020	042129	05-01-87
Rev. 1/Base EMD-039432	SPR-1402LS	Sizing of Welded Attachment	035042	02-03-82
Rev. 1/Base EMD-039432	SPR-0589LS	Reconciliation of Loads	035003	01-15-82
Rev. 1/Base EMD-039432	SPR-0589LS	Sizing of Welded Attachment	035550	02-19-82
Rev. 1/Base EMD-039432	SPR-1402LS	Sizing of Welded Attachment	035043	02-03-82
Rev. 1/Base EMD-039432	SPR-1402LS	Sizing of Welded Attachment	035048	02-04-82
Rev. 1/Base EMD-039432	SPR-1402LS	Reconciliation of Loads	035038	02-02-82
Rev. 0/Base EMD-027046	PRABNL 49153	Reconciliation of As-Built	027046	03-04-82

6.0 HAND CALCULATIONS

All hand calculations required to prepare the current issue of this report are documented in this report.

6.1 Table of Content

<u>DESCRIPTION</u>	<u>ADDENDUM</u>	<u>PAGES</u>
Valve 2B21-F020, Rotated Motor Operator Evaluation	A	10-11

*Calculation is included in the design basis stress report.



Calcs. For VALVE 2B21-F020, ROTATED MOTOR	
OPERATOR EVALUATION	
<input checked="" type="checkbox"/> Safety-Related	<input type="checkbox"/> Non-Safety-Related

EMD-042129
 Addendum: B
 Page 10

Client Commonwealth Edison Company	Prepared by M.W. Gonzalez	Date 5-1-87
Project LaSalle County	Reviewed by	Date
Proj. No. Equip. No.	Approved by	Date

PURPOSE: The purpose of this calculation is to compare the design position of the valve 2B21-F020 center of gravity to the proposed position with the motor operator rotated 90°. This calculation will show that the differences are minor and that there is no need for seismic or weight reanalysis.

ASSUMPTIONS: The weight of the valve + Motor operator remains the same, only the position of the valve-motor operator center of gravity changes.

REFERENCES:

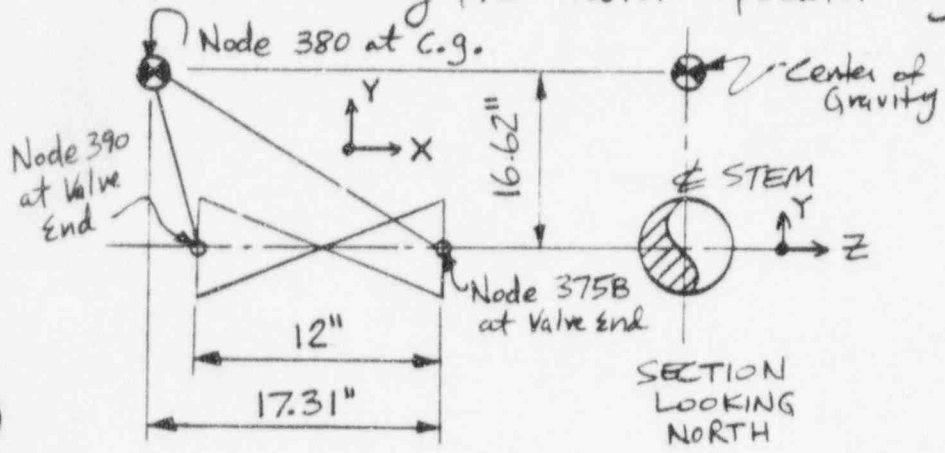
- 1) EMD-027046, STRESS REPORT FOR ZMS-31B, REV. 00, dated 3-4-82 (RUNID= SJ2S, 3-27-81)
- 2) CQD-035939, Interoffice Memorandum from L. Sorkin to F. Gonzalez, Subject: "Center of Gravity for Crane G. 3" - 900# Globe Valve with SMB-00 Actuator, Tag No. 2B21-F020," dated 4-16-87
- 3) LaSalle County Station Engineering Work Request, dated 3-31-87 prepared by Commonwealth Edison Company Tech Staff.

CONCLUSION: The changes in the coordinates of the valve-motor C.g. are minor (max $\Delta = 3.93''$) and will not significantly affect the weight and/or seismic analyses. The proposed 90° rotation of the valve 2B21-F020 motor operator is acceptable.

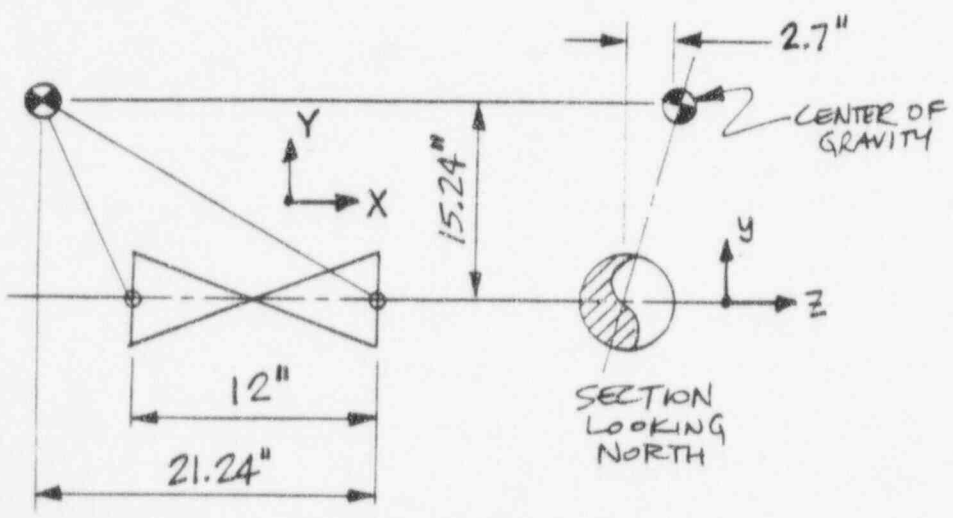
Client		Prepared by	Date
Project		Reviewed by	Date
Proj. No.	Equip. No.	Approved by	Date

CALCULATIONS:

The following shows the valve c.g. orientation before and after rotating the motor operator by 90°:



VALVE ORIENTATION BEFORE ROTATION OF MOTOR OPERATOR
SEE REFERENCE 1



VALVE ORIENTATION AFTER ROTATING VALVE OPERATOR BY 90°
SEE REFERENCE 2

$$\Delta X = 21.24 - 17.31 = 3.93''$$

$$\Delta Y = 15.24 - 16.62 = -1.38''$$

$$\Delta Z = 2.7 - 0 = 2.70''$$

∴ MAX Δ = 3.93'', NO SIGNIFICANT CHANGE IN SEISMIC RESPONSE AND/OR WEIGHT LOADING.

PROJECT: LASALLE - 2

EMD FILE NO.: EMD - 042129

PROJECT NO.: 7343-94

REVIEWER: A. Madyle DATE: 5/1/87

Address each of the following items in your review of the analysis. For each item, check "Yes" or "No" and enter any comments in the designated area.

Yes	No		Comments
<input type="checkbox"/>	<input type="checkbox"/>	1 Is the calculation properly documented (per GO-3 08)?	1 <u>checked calculations only</u>
<input type="checkbox"/>	<input type="checkbox"/>	2 Have all of the following been included in the calculation: purpose, input data, assumptions, and references?	2 _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3 Has the input data been approved for use?	3 _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is it applicable for this calculation?	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4 Is the calculation technically adequate? If the design calculation is not technically adequate, recommend a course of action.	4 _____

5 If the answer to 4 is yes, indicate type of calculation (hand-prepared and/or computer-aided) and method of review:

Hand-Prepared Design Calculation

The review of this hand-prepared design calculation was accomplished by one or a combination of the following (as checked):

- A review of a representative sample of repetitive calculations
- A detailed review of the original calculation
- A review of the calculation against a similar calculation previously performed
- A review by an alternate, simplified or approximate method of calculation

Computer-Aided Design Calculation

N/A

Program Acronym: _____

EMD-042129

Program No.: _____

Addendum: B

Run I.D.: _____ Date: _____

Page 12

Yes	No		Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	a Is the program applicable for this calculation?	<input type="checkbox"/>	<input type="checkbox"/>	f If the answer to d is no, has the program used in this calculation been validated in accordance with CSD Standards and Procedures Manual, Book 10, Procedure 10.3.5, Computer Program Validation, and is it on file in the EMD Library?
<input type="checkbox"/>	<input type="checkbox"/>	b Does the input data conform with the design input?	<input type="checkbox"/>	<input type="checkbox"/>	g If the answer to d is no, have you, as the reviewer, verified through the program file table of contents that the ABSOLUTE element time and date precede the computer-aided calculation time and date? What is the file no? EMD-_____
<input type="checkbox"/>	<input type="checkbox"/>	Correctly define the problem for the program algorithm?	<input type="checkbox"/>	<input type="checkbox"/>	h If a programmable calculator or microcomputer-generated program was used in this analysis, are you, as reviewer, satisfied with the adequacy of the program file audit trail as used by the preparer? <input type="checkbox"/> Not Applicable
<input type="checkbox"/>	<input type="checkbox"/>	c Contain sufficient accuracy to produce results within any numerical limitation of the program?	<input type="checkbox"/>	<input type="checkbox"/>	i Are you, as reviewer of this calculation, satisfied that the methods used in the validation adequately validate the program for this application? <input type="checkbox"/> Not Applicable
<input type="checkbox"/>	<input type="checkbox"/>	Are the results consistent with the input?			
<input type="checkbox"/>	<input type="checkbox"/>	Correct and within the stated assumptions and limitations of the program?			
<input type="checkbox"/>	<input type="checkbox"/>	d Has the program been issued from CSD-controlled files?			
<input type="checkbox"/>	<input type="checkbox"/>	e If the answer to d is yes, have the execute statement and computer output date been included in the output?			

FOR OFFICE USE ONLY - NOT TO BE SENT OUTSIDE OF SARGENT & LUNDY

MECHANICAL DEPARTMENT STANDARD

STANDARD EMD CHECKLIST FOR REVIEW DOCUMENTATION OF CALCULATIONS

REV.	DATE	APPROVED
B	11-18-86	<i>Jeffrey D. [Signature]</i>



MAS-EMD-2.1
Page 1 of 1

PROJECT: LOSALLE - 2

EMD FILE NO.: EMD-042129

PROJECT NO.: 7343-94

REVIEWER: R. Madryga DATE: 5/1/87

Address each of the following items in your review of the analysis. For each item, check "Yes" or "No" and enter any comments in the designated area.

Yes	No		Comments
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Is the calculation properly documented (per GO-3.08)?	1 _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Have all of the following been included in the calculation: purpose, input data, assumptions, and references?	2 _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Has the input data been approved for use?	3 _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is it applicable for this calculation?	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Is the calculation technically adequate? If the design calculation is not technically adequate, recommend a course of action.	4 _____

5. If the answer to 4 is yes, indicate type of calculation (hand-prepared and/or computer-aided) and method of review:

Hand-Prepared Design Calculation

The review of this hand-prepared design calculation was accomplished by one or a combination of the following (as checked):

- A review of a representative sample of repetitive calculations
- A detailed review of the original calculation
- A review of the calculation against a similar calculation previously performed
- A review by an alternate, simplified or approximate method of calculation

Computer-Aided Design Calculation

MA Program Acronym: _____

EMD-042129

Program No.: _____

Addendum: B

Run I.D.: _____ Date: _____

Page 13

Yes	No		Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	a. Is the program applicable for this calculation?	<input type="checkbox"/>	<input type="checkbox"/>	f. If the answer to d. is no, has the program used in this calculation been validated in accordance with CSD Standards and Procedures Manual, Book 10, Procedure 10.3.5, Computer Program Validation, and is it on file in the EMD Library? What is the file no? EMD-_____
<input type="checkbox"/>	<input type="checkbox"/>	b. Does the input data conform with the design input?	<input type="checkbox"/>	<input type="checkbox"/>	g. If the answer to d. is no, have you, as the reviewer, verified through the program file table of contents that the ABSOLUTE element time and date precede the computer-aided calculation time and date?
<input type="checkbox"/>	<input type="checkbox"/>	Correctly define the problem for the program algorithm?	<input type="checkbox"/>	<input type="checkbox"/>	h. If a programmable calculator or microcomputer-generated program was used in this analysis, are you, as reviewer, satisfied with the adequacy of the program file audit trail as used by the preparer? Not Applicable
<input type="checkbox"/>	<input type="checkbox"/>	Contain sufficient accuracy to produce results within any numerical limitation of the program?	<input type="checkbox"/>	<input type="checkbox"/>	i. Are you, as reviewer of this calculation, satisfied that the methods used in the validation adequately validate the program for this application? Not Applicable
<input type="checkbox"/>	<input type="checkbox"/>	c. Are the results consistent with the input?			
<input type="checkbox"/>	<input type="checkbox"/>	Correct and within the stated assumptions and limitations of the program?			
<input type="checkbox"/>	<input type="checkbox"/>	d. Has the program been issued from CSD-controlled files?			
<input type="checkbox"/>	<input type="checkbox"/>	e. If the answer to d. is yes, have the execute statement and computer output date been included in the output?			

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MECHANICAL DEPARTMENT STANDARD

STANDARD EMD CHECKLIST FOR REVIEW DOCUMENTATION OF CALCULATIONS

REV.	DATE	APPROVED
B	11-18-86	<i>Jeffrey D. I. G. H.</i>



MAS-EMD-2.1

Page 1 of 1

Engineering Work Request

To J. Engleman (S & L Res. Eng.)

Date 3-31-87

Modification NIA
Work Request No. L66752
Other _____
Unit 1 2

Requesting Dept. T&H STAFF
Requested By G. FORD
Priority H M L
Complete By 4/2/87
_{13 14414}

Description:

DETERMINE IF ROTATING MOTOR OPERATOR 2021-2020
90° WILL AFFECT SEISMIC ANALYSIS OF LINE. VALVE OP
NEEDS TO ROTATED TO ELIMINATE CLEARANCES NEAR MOTOR

TSS Approval 

Reply

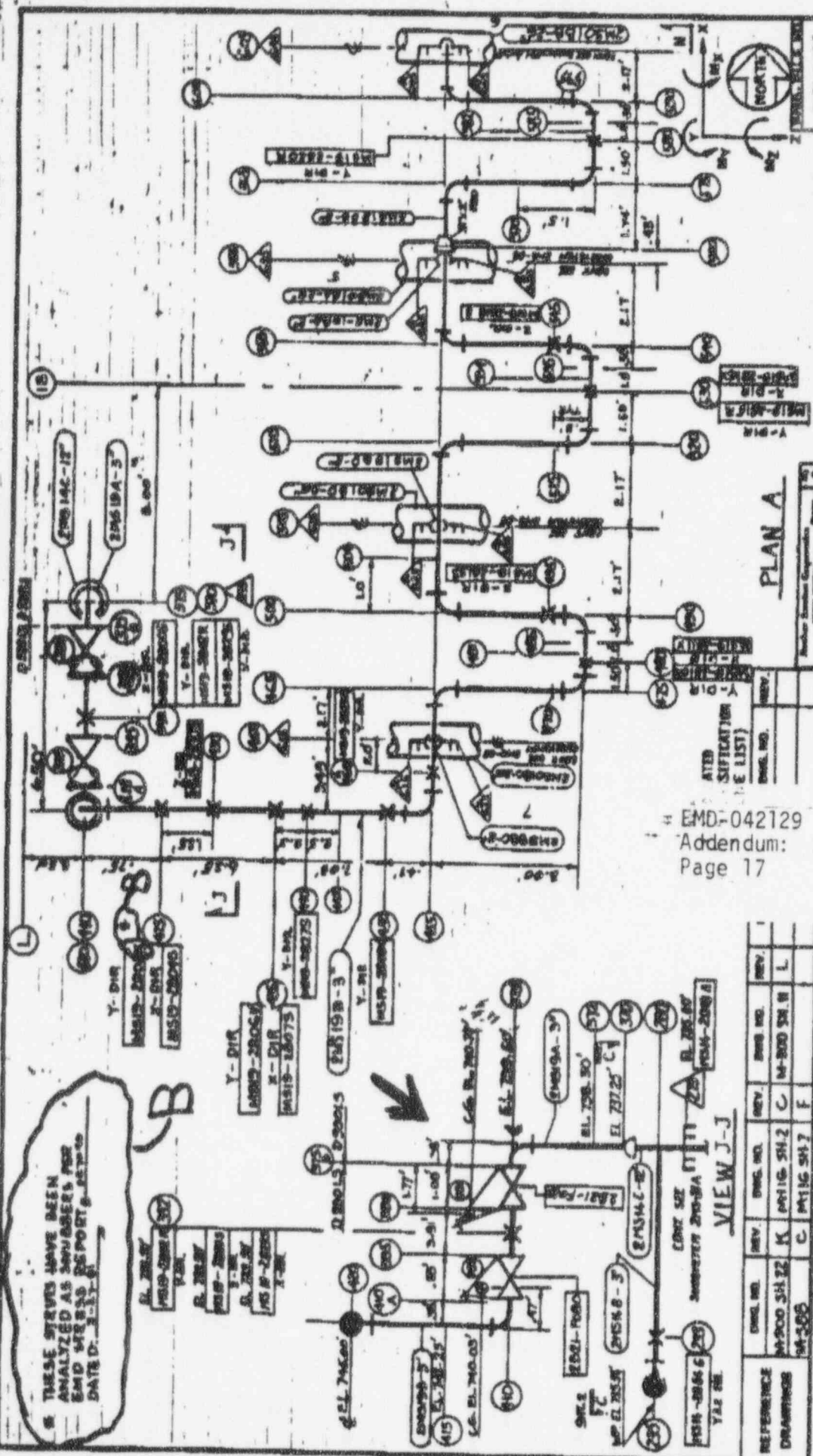
Completion Date _____
S & L Project No. 7343-25
Man-hours Expended _____

Comments:

EMD-042129
Addendum: B
Page 15

Completion Verified _____

This form is to be used for requests for on-site assistance for work not associated with Unit 2 First Refueling Modifications.



IF THESE STEVES HAVE BEEN ANALYZED AS SUBGERS FOR EMD HRS AS REPORT 8-25-70 DATED 3-17-71

80 SCALE 2MS-518
 SARGENT & LORNEY
 DRAWING NO. REV.
 M 2000-518
 SHEET 1 OF 5

FORMING ANALYTICAL & PHYSICAL DATA
 FOR AUXILIARY BLDG. MISC. PIPING SYSTEM
 PROJECT LA SALLE COUNTY-2
 CLIENT COMMONWEALTH EDISON CO
 PROJECT NO. 4267

EMD-042129
 Addendum: B
 Page 17

REV.	DATE	PREPARED	REVIEWED	APPROVED
A	5-4-71			
B	1-19-73			

REFERENCE	DWG. NO.	REV.	DATE	REV.	DATE	REV.	DATE
DRAWINGS	M-2000-518-22	K	0411G-518-2	C	M-2000-518	L	
	M-2000-518-300	C	M-11G-518-7	F			

REV.	DATE	PREPARED	REVIEWED	APPROVED
A	5-4-71			
B	1-19-73			

REV. A DATED 05-04-71
 AS RECEIVED FROM QUADREX

SUBSYS 2MS-518
 G.P.

00000092

SAFETY RELATED

YES

NO

PIPING STRESS ANALYSIS

COMMONWEALTH EDISON COMPANY
LASALLE COUNTY-UNIT 2

4267-00
MAIN STEAM

2MS-31B

Rev.: 02

Date: 3/24/83

ACCESSION NO. EMD- 042129

EMD RECORD CENTER

MAY 02 1983

RECEIVED

Information on the following

page(s) 17

is adequate for the purpose of
use.

Approved by

J. D. Gillian

Page 1 of 28



ENGINEERING MECHANICS DIVISION

195 EHCJC

Stress Report Title: Main Steam - Unit 2

Identification No: 2MS-31B Date: 3-24-83 Revision No. 02

Owner's Review

I, the undersigned, a duly authorized representative of the Commonwealth Edison Company and experienced in nuclear power plant system requirements, have reviewed the attached Stress Report in accordance with ASME Section III, and certify that this report does satisfy the requirements of the Design Specification.

Concurred by:
Project Engineers:

BA 4/2/83 J E Watts
Signature

4/8/83
Date

Project Manager:

B R Shelton for
Signature

4-8-83
Date

ISSUE SUMMARY

ASME BOILER & PRESSURE VESSEL CODE
SECTION III PIPING ANALYSIS
FOR SUBSYSTEM: 2MS-31B REV: 01

CERTIFIED
STRESS ANALYSIS
(Sect. 2.3.5&7)

Prepared by: Lisa Boyd Date: 12-29-82
Reviewed by: Craig Boyd Date: 12-29-82
Approved by: J. J. Pate Date: 1/3/83
A. D. Killian

This Stress Report Supplements Rev.: 00 Acc. No.: 027046 Date: 3-4-82

Only the Class 1 Portion of 2MS-31B

CERTIFICATION FOR REVISION 01

I, the undersigned Registered Professional Engineer, competent in the field of Piping Analysis using the design rules specified by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section III Sub-subarticles NB36.3 and PD550, certify that to the best of my knowledge, this Stress Report is technically adequate, complete, and complies with the requirements of the Referenced Design Specification.

A. D. Killian
Signature

1/3/83
Date



SEAL

PROJECT NO.: 4267-00
 ACC. NO.: EMB-042129
 CALC. NO.: 2MS-31B
 REV. 02 DATE: 03/24/83
 PAGE 4 OF 28

ISSUE SUMMARY
 (Continued)


				DATE
REV.	02	Prepared: E. S. Louvaris <i>Angel S. Louvaris</i>		03/24/83 03/24/83
DESCRIPTION:		Reviewed: B. P. Patel <i>B. Patel</i>		3/24/83 03/24/83
CLOSEOUT PER FINAL LINE-WALK LETTER Issued 02/25/83		Approved: G. H. Deboo <i>Guy H. Deboo</i>		03/24/83 03/24/83
				
SEAL				
REV.		Prepared:		
DESCRIPTION:		Reviewed:		
		Approved:		
SEAL				
REV.		Prepared:		
DESCRIPTION:		Reviewed:		
		Approved:		
SEAL				
REV.		Prepared:		
DESCRIPTION:		Reviewed:		
		Approved:		
SEAL				

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1.0 Introduction

1.1 Introduction

The purpose of this revision is to document the changes made to the original stress report for piping subsystem 2MS-31B. The revision contains only material affected by the design changes made to the piping configuration. All other material will remain unchanged and can be found in the original stress report (Reference 1.4.1).

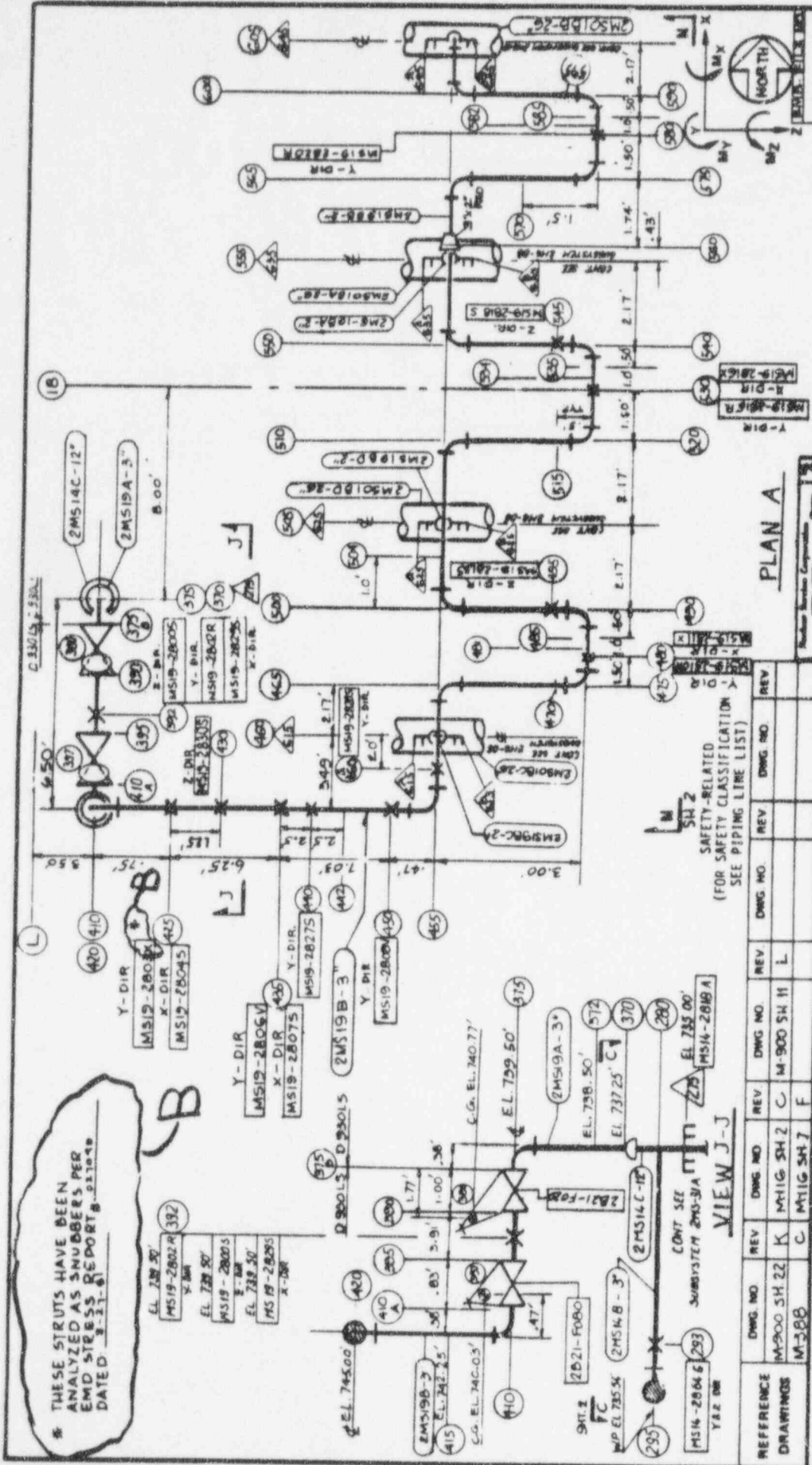
All calculations required for reconciliation of design document modifications are documented, as required by NA-3355, in Section 9 of this report.

1.2 Scope of Report

The purpose of this revision is:

- Documentation of verification that the current stress report configuration is identical to the as-built configuration.
- Documentation of revised restraint-support information;
- Documentation of a review to reconcile minor design drawing, design document, or construction modifications;
- Documentation of manual reconciliation calculations for restraint-support and piping design changes.
- Other (provide a detailed description of purpose)

To confirm agreement between the information on the final line walk letter and the analysis input data.



NO SCALE 2MS-31B

SARBERT & LEBBY
CHICAGO

DRAWING - REV. M 2000 - 31B SHEET 1 OF 5

PROJECT NO. 4267

CLIENT COMMONWEALTH EDISON CO

PROJECT NO. 4267

PIPING ANALYTICAL & PHYSICAL DATA FOR AUXILIARY BLDG. MISC. PIPING SYSTEM PROJECT LA SALLE COUNTY - 2

REV	DATE	PREPARED	REVIEWED	APPROVED	PURPOSE
A	5-4-81	John H. ...	...	...	AS DESIGNED
B	1-18-83	J. M. ...	...	...	SNUBBER TO START PROGRAM

REFERENCE DRAWINGS	DWG NO	REV	DWG NO	REV	DWG NO	REV	DWG NO	REV
M-900 SH 22	K	M-116 SH 2	C	M-900 SH 11	L			
M-388	C	M-116 SH 7	F					

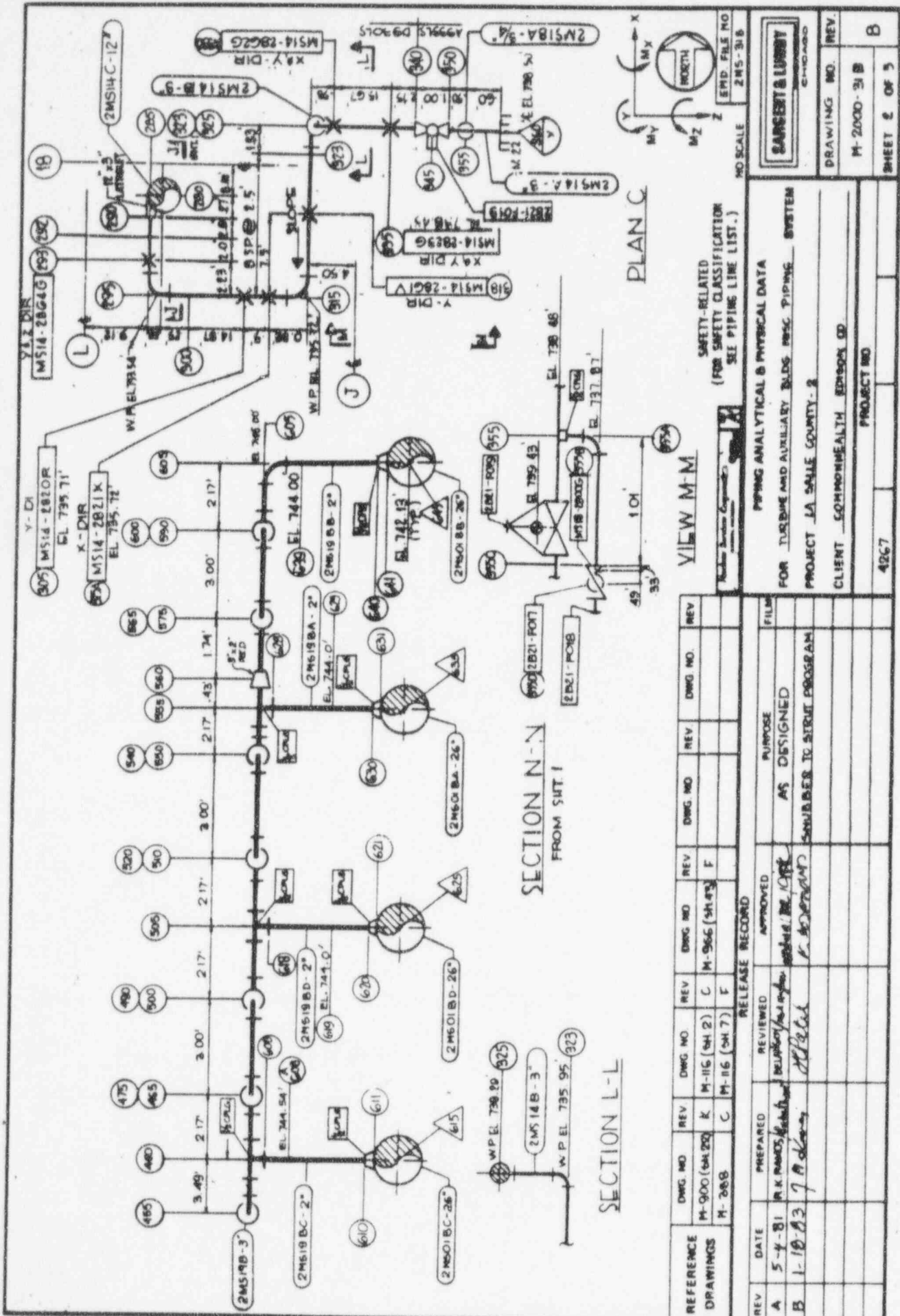
RELEASE RECORD

THESE STRUTS HAVE BEEN ANALYZED AS SNUBBERS PER EMD STRESS REPORT B DATED 3-27-83

REV A DATED 05-04-81 AS RECEIVED FROM QUADREX

SUBSYS 2MS-31B
-SAR-B-223
G-PH

PROJECT NO.: 4267-00
ACC. NO.: EMD-042129
CALC. NO.: 2MS-31B
REV. 02 DATE: 03/28/83
PAGE 10 OF 28



REV. A DATED 05-04-81
AS RECEIVED FROM QUADREX

TOK 10-14-77

2MS-31B
SAH-P-265
Q-PH

REFERENCE DRAWINGS	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.
M-900 (GAS)	K	M-116 (4H 2)	C	M-966 (4H 4)	F							
M-268	C	M-116 (4H 7)	F									

REV.	DATE	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM
A	5-4-81	R.K. MANNING			AS DESIGNED	
B	1-10-83	J. A. ...			SUBMITTER TO SIBUT PROGRAM	

SAFETY-RELATED
(FOR SAFETY CLASSIFICATION
SEE PIPING LINE LIST.)

PIPING ANALYTICAL & PHYSICAL DATA
FOR TURBINE AND AUXILIARY BLDG. PISC. PIPING SYSTEM
PROJECT LA SALLE COUNTY - 2
CLIENT COMMONWEALTH EDWARDS CD

EMD FILE NO. 2MS-31B
NO. SCALE 2MS-31B
SARGENT & LUNDY
CHICAGO
DRAWING NO. REV. M-2000-31B
SHEET 2 OF 5 B

PROJECT NO.: 4267-00
ACC. NO.: EMD-042129
CALC. NO.: 2MS-31B
REV. DATE: 03/24/83
PAGE 11 OF 28

REV. A DATED 05-04-81
AS RECEIVED FROM QUADREX

REV		NODE POINTS		LINE NUMBER	CLASS	PIPE	SCHED	PIPING DESIGN TABLE	MATERIAL		DESIGN PRESS		MAX OPER		OD	SCHED	WALL THICK	INSUL	WEIGHTS - LBS./LINEAL FT					
FROM	TO	SPEC	GR						PRESS	TEMP	PIPE	OPER FLUID	INSUL	OPER TOTAL					1-2-3	4 WATER	HYDRO 1-4			
		275	370	2MS14C-12"	D	N		930LS	ASTM A-335	PS	1250	1025	550	12.75	80	.687	A 30	88.51	1.673	11.80	101.98	44	132.51	
		355	355D	2MS18A-3/4"	D	N		903LS	ASTM A-106	PS	1250	1025	550	1.05	80	.154	N -	1.47	.01	-	1.48	.19	1.66	
		370	375B	2MS19A-3"	D	N		930LS	ASTM A-335					3.50										
		290	340	2MS14B-3"	D	N		930LS						3.50										
		340	360	2MS14A-3"	D	A		939LS						3.50										
		390	560	2MS19B-3"	D*	B		+930LS						3.50						3.80				
		460	610	2MS19BC-2"	D*	B		+930LS						2.375						3.80	14.16	2.864	13.11	
		505	620	2MS19BD-2"	D*	B		+930LS						2.375						3.1	8.17	1.280	6.30	
		555	630	2MS19BA-2"	D*	B		+930LS						2.375										
		560	640	2MS19BB-2"	D*	B		+930LS	ASTM A-335	PS				2.375	80	.218	A 25	5.02	-.049	3.1	8.17	1.280	6.30	
		A615	B615	2MS01BC-26"	D*	B		+900LS	ASTM A-155	NER-70 CLASS-1				26.00	SPECIAL WALL	.967	A 30	259	7.76	22.00	288.76	197.21	456.21	
		A625	B625	2MS01BD-26"	D*	B		+900LS						26.00										
		A635	B635	2MS01BA-26"	D*	B		+900LS						26.00										
		A645	B645	2MS01BB-26"	D*	B		+900LS	ASTM A-155	NER-70 CLASS-1	1250	1025	550	26.00	SPECIAL WALL	.967	A 30	259	7.76	22.00	288.76	197.21	456.21	

REV		NODE POINTS		TYPE	PRESSURE RATING	VAL STROKING TIME (SEC)		VAL / FIT WT LBS		OPERATOR WT LBS		FLEXIBILITY INFO		VENDOR	DRAWING NO	REV	REMARKS
FROM	TO	OPEN	CLOSE			PRELIM	ACTUAL	PRELIM	ACTUAL	OD	THICK						
		355C	355D	DOUBLE Y	900				40					AND GREENW CO. J-2950-01	N03-6480520	C	2821-F017
		340	350	GATE	900				230			4.02	.55	AND NOR/MARLING J-2988-01	94-13751	D	2821-F018
		375B	390	GLOBE	900				380			3.60	.33	CRANE CO J-2565-02	H-32509	A	2821-F019
		395	410A	GLOBE	900				85			3.5	.28	AND GREENW CO. J-2950-01	04-4010-530	B	2821-F080

DEPT. MGR. REV. 10K 10 19 81

248-31B
-San-B-265

SAFETY-RELATED
(FOR SAFETY CLASSIFICATION SEE PIPING LINE LIST.)

EMD FILE NO
2MS-31B

RELEASE RECORD					
REV	DATE	PREPARED	REVIEWED	APPROVED	PURPOSE
A	5-4-81	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	AS DESIGNED
B	1-18-83	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	SNUDDER TO STRT PROGRAM

PIPING ANALYTICAL & PHYSICAL DATA	
FOR	AUXILIARY BLDG. MISC. PIPING SYSTEM
PROJECT	LA SALLE COUNTY-2
CLIENT	COMMONWEALTH EDISON CO.
PROJECT NO.	4267

SARGENT & LORRY
CHICAGO

DRAWING NO. REV.
M2000-31B B

SHEET 3 OF 5

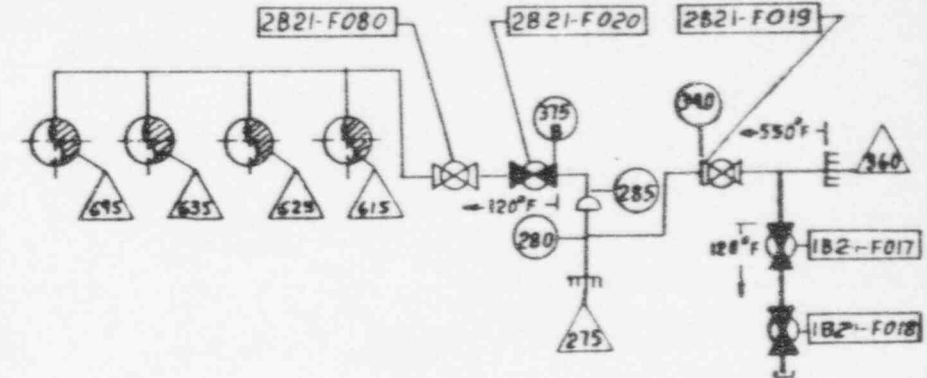
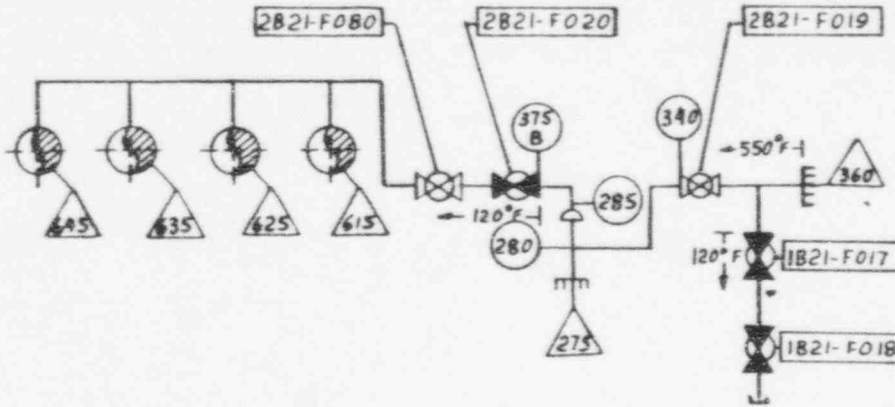
PROJECT NO.: 4267-00
ACC. NO.: EMD-042129
CALC. NO.: 2MS-31B
REV. DATE: 03/24/83
PAGE 12 OF 28

SCHEMATIC OF MODES TO BE ANALYZED

TOTAL NO. OF MODES REQUIRED

MODE NO. 1 MODE DESCRIPTION NORMAL OPERATION

MODE NO. 2 MODE DESCRIPTION START-UP: HEAT-UP OF INBOARD MAIN STEAM LINES



SAFETY-RELATED
(FOR SAFETY CLASSIFICATION
SEE PIPING LINE LIST.)

Richard Services Corporation
CHICAGO, ILL.

REV	MODE NO. 1					EQUIPMENT INFORMATION							MODE NO. 2						
	NODE POINT	TEMP	TERMINAL MOVEMENTS			CALC BY	EQUIPMENT NUMBER	EQUIPMENT TITLE	VENDOR	DRAWING NO.	REV.	REMARKS	REV.	NODE POINT	TEMP	TERMINAL MOVEMENTS			CALC BY
			ΔX	ΔY	ΔZ											WDR	SBL	ΔX		ΔY	ΔZ	WDR	SBL
	360	550	.000	.000	.000		M-22	SLEEVE PENETRATION											
	65	550	.000	.006	-.883		2MS018C-26	HEADER CONNECTION											
	625	550	-.003	.006	-.853		2MS018D-26	"											
	635	550	-.003	.006	-.849		2MS018A-26	"											
	695	550	-.004	.006	-.888		2MS018B-26	"											

NOTE:
TERMINAL MOVEMENTS
ARE SAME AS MODE-1.

RELEASE RECORD

REV.	DATE	PREPARED	CHECKED	ENG'R/APPL.	REV. DESCRIPTION	FILM
A	5-4-81	John R. ...	...	...	AS DESIGNED	
B	1-18-83	J.P. ...	...	...	NUMBER TO START PROGRAM	

2MS-31B
PIPING ANALYTICAL & PHYSICAL DATA
FOR MAIN STEAM LINE DRAINS SYSTEM
PROJECT LA SALLE COUNTY-2
CLIENT COMMONWEALTH EDISON CO.
PROJECT NO. 4267

2MS-31B
SARGENT & Lundy
CHICAGO
DRAWN BY & SBL. REV.
M2000-31B
SHEET 4 OF 5
B

PROJECT NO.: 4267-00
ACC. NO.: EMD-042829
CALC. NO.: 2MS-31B
REV. 02 DATE: 03/20/83

REV A DATED 05-04-81
AS RECEIVED FROM QUADREX

SUBSYS 2MS-31B
-SMB- 2-265
D-PM

10-18-15-16-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100

1.2.1 Conclusions & Recommendations

The piping subsystem was re-evaluated and the following was concluded:

- Changes do not warrant reanalysis based on engineering judgment;
- Changes do not warrant reanalysis, but the subsystem must be modified as described by EMD memorandum, see Reference 11.0;
- All hand calculations satisfy Code criteria;
- All restraint-support and equipment loads increase less than 5% or decrease less than 15%;
- For piping less than 2 inches NPS, restraint-support loads increase less than 10 lb or decrease less than 25 lb;
- Other (describe in detail on an attachment).

The Final Linewalk letter agrees with the piping analysis input data. Unit 2 is a mirror image of Unit 1.

The linewalk letter applies only to the seismic part of this subsystem..

DATE: 02-25-83

NOTIFICATION #: 2-289

PROJECT NO.: 4267-00
ACC. NO.: ERD-092129
CALC. NO.: ZMS-31B
REV. 02 DATE: 03/24/83

TO: C. Diestel
FROM: D. L. Shamblin
SUBJECT: Piping Support Final Line Walk - Unit #2

RECEIVE
MAR 02 1983

SARGENT & LUNDY
MECHANICAL DESIGN & DRAWING
HGR. DES. SECT.

The final line walk for the subsystem listed below has been completed. The supports have been installed to the revision or ECR listed on the attached computer listing. The individual supports were installed

- within tolerance
- within tolerance; with interferences and discrepancies as noted on the attached sheet
- please expedite the review of this subsystem

Subsystem # 2MS-31B
ECR's: FCR 34137

W. E. V. L. O.
D.L. SHAMBLIN: 26 SUPPORTS.

REV. 02/83
Attachments

cc: J. Zappia - Morrison (1/1)
E.D. Watts (1/0)
W.P. Harris (1/1)
Ken. Fus (1/1)

PI-LS-33	
SUBSYSTEM FINAL LINE WALK REVIEW STEPS	
1. ISSUE VERIFIED ECR'S	SIGNED: <u>W. E. V. L. O.</u> DATE: <u>03/10/83</u>
2. UPDATE HANGMAN & FREEZE SUPPORTS	SIGNED: <u>W. E. V. L. O.</u> DATE: <u>03/10/83</u>
3. LETTER TO LMD	.....
4. FILE LETTER WITH PACKAGE	.....

UNIQUE TO UNIT 1.

COMMONWEALTH EDISON COMPANY
PIPE SUPPORT REPORT
LASALLE COUNTY STATION

LINE NUMBER	SUPPORT NUMBER	DR	DATE	AS	R	L	LINE NUMBER	P	REMARKS
		EE		T	R	E		H	
		SV		BTPAI	HS	ALW		A	
		II		LVETN	OT	NUA	ISO	S	
		OS		DPSUS	LA DESIGN	LOL DRAWING		S	
		N		GEPS	TTDT	HOLD	SSK		
MS21B	MS14-2402X	A	06-21-82	R	L N F V A N			N V	1 SPR 1385 CLOSED OUT
MS21B	MS14-2403Q	D	12-18-82	R	L N F V D N			N N V	1 SPR 8730 CLOSED OUT
MS21B	MS14-2820X	B	06-01-82	R	L N F V B N			N V	1 SPR 1965 CLOSED OUT
MS21B	MS14-2921X	B	03-17-82	R	L N F V B N		AB710	N V	1 SPR 1373 CLOSED OUT
MS21B	MS14-2923X	B	03-12-82	R	L N F V B N			N V	1 SPR 1369 CLOSED OUT
MS21B	MS14-2961C	B	12-16-82	R	L N F V B N			N V	1 SPR 8482 CLOSED OUT
MS21B	MS14-2964G	B	05-04-82	R	L N F V B N			N N V	1 FUT 8598 SPR 1372 CLOSED OUT
MS21B	MS19-2300Q	B	07-16-82	R	L N F V B N		AB710	N N V 306	1 FUT 2963 SPR 1365 CLOSED OUT
MS21B	MS19-2500S	A	04-21-81	R	L N F V A N			N V	1 CLOSED OUT
MS21B	MS19-2502R	B	05-04-82	R	L N F V B N			N V	1 ECN 8441 CLOSED OUT
MS21B	MS19-2503X	B	06-29-82	R	L N F V B N			N V	1 FUT 3210 SPR 8934 CLOSED OUT
MS21B	MS19-2704S	C	12-23-82	R	L N F V C N			N V 306	1 FUT 5357 SPR 8933 CLOSED OUT
MS21B	MS19-2906V	B	07-01-82	R	L N F V B N			N V 306	1 ECN 8231 FOR 51070 SPR 1691 CLOSED OUT
MS21B	MS19-2907S	B	12-16-82	R	L N F V B N			N V	1 SPR 8998 CLOSED OUT
MS21B	MS19-2909V	A	04-21-81	R	L N F V A N			N V	1 CLOSED OUT
MS21B	MS19-2910X	C	07-28-82	R	L N F V C N			N V 306	1 ECN 3006 SPR 8993 CLOSED OUT
MS21B	MS19-2911X	B	05-04-82	R	L N F V B N			N I V 306	1 ECN 8737 SPR 1969 CLOSED OUT
MS21B	MS19-2913S	C	05-03-82	R	L N F V C N			N I V	1 ECN 8672 FOR 51170 SPR 1721 CLOSED OUT
MS21B	MS19-2915X	D	07-01-82	R	L N F V D N			N I V 306	1 SPR 3443 ECN 3405 CLOSED OUT
MS21B	MS19-2916X	B	06-08-82	R	L N F V B N			N I V	1 ECN 8931 CLOSED OUT
MS21B	MS19-2918S	C	06-03-82	R	L N F V C N			N I V 306	1 ECN 8931 FOR 51170 SPR 8241 CLOSED OUT
MS21B	MS19-2920R	B	06-01-82	R	L N F V B N		AB731	N V	1 HP 560 ECN 2949 CLOSED OUT
MS21B	MS19-2927S	A	04-21-81	R	L N F V A N			N V	1 CLOSED OUT
MS21B	MS19-2928S	C	07-28-82	R	L N F V C N			N V 306	1 FUT 3828 CLOSED OUT
MS21B	MS19-2929S	B	12-09-81	R	L N F V B N			N I V	1 B-REF CLOSED OUT
MS21B	MS19-2930S	A	04-21-81	R	L N F V A N			N I V	1 CLOSED OUT

PROJECT NO.: 4267-00
ACC. NO.: EMD-042129
CALC. NO.: ZMS-318
REV. 02 DATE: 03/24/83
PAGE 17 OF 28

1.4 Reference Design Documents

1.4.1 2MS-31 BStress Report, Rev. 01

Accession Number: 039432 Date: December 29, 1982

1.4.2 Modified S&L Piping Design Drawings and Documents :

Piping Design Specification

System: DS-MS-01-LS Rev: 3 Date: December 15, 1982

Design Dwg. No. M 900 Sheet 22 Rev: P Date: February 4, 1983

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

1.4.3 Change Request Documents:

FCR No. _____

ECN No. _____

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

1.4.4 Other:

FCR #34137 Incorporates: ME #3931A, ME #3931B, ME #3931C,
ME #3931D, ME #3931E

9.0 Reconciliation of Design Document Modifications

9.1 Introduction

Paragraph NA-3355 of Reference 1 requires that all modifications of the design documents on which the calculations in this report are based be reconciled with the calculations. All modifications that were reported to Sargent & Lundy prior to the date of the current amendment of this report have been reconciled with their associated calculations. The activities involved in reconciling the changes are documented in this section of the report.

9.2 Record of Reconciled Changes

Table 9.1 contains a record of all modifications to the base design documents that have been reconciled to date. Listed with each modification is a reference to the document containing the reconciliation calculations. Table 9.2 lists all the support and restraint design drawings used for this subsystem.

10.0 Hand Calculations

All hand calculations required to prepare the original issue of this report are documented in this section.

10.1 Table of Contents


Item	Description	Pages *
1	NB3640 Calculations	Rev.1
2	Parameter used in Unit 1 NOHEAT Calculations	EMD-022848
3	Welded Attachment Calculations	Rev.00
4	Valve Acceleration Calculations	Rev.00
5	Class 1 As-Built Comparison	Rev.1
6	Parameter used in Unit 2 NOHEAT Calculations	Rev.1
7	As-Built Routing Comparison	Rev.00

*Report Accession No. if not included in this report

VALIDATED PROGRAMS USED:

PIPSYS NOHEAT SRVA

PROJECT NO.: 4267-00
 ACC. NO.: EMD-042129
 CALC. NO.: 2MS-31B
 REV. 03 DATE: 03/24/83
 PAGE 23 OF 28

DESCRIPTION	CHECKED*	COMMENTS
<p>1.0 <u>Basic Design Data</u> (Output Section C)</p> <p>1.1 Have all branch lines met the criteria $I_R/I_B \leq 7.0$?</p> <p>1.2 Are all material types coded correctly?</p> <p>1.3 Are all pipe/fitting thicknesses and uniform weights coded correctly?</p> <p>1.4 Are all motor or pneumatic-operated valves modeled using lumped masses and cg's?</p> <p>1.5 Is the system modeled correctly (length ratios, etc.)?</p> <p>1.6 Are all hangers/restraints modeled correctly?</p> <p>1.7 Are there any special modeling techniques used in the analyses (equipment flexibility, special restraint configurations, etc.)?</p> <p>1.8 Are all node types coded correctly?</p> <p>1.9 Is the internal pressure (max. op. pressure) coded in psig?</p>		<p>Refer to Rev. of Acc. No. 039432</p> 

SAFETY-RELATED
MECHANICAL DEPARTMENT STANDARD
 CHECKLIST FOR
 PIPING SYSTEM STRESS ANALYSIS

* In this column on this Form, a check mark (✓) indicates an affirmative answer (yes).

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SARGENT & LUNDY
ENGINEERS

Form MAJ-EMD-2.2 Approved by *M. S. Bagon*
 Rev. Orig. (7-31-80)
 Dept. Mgr.

CALC. NO.:	REV.:	DATE:
PROJECT NUMBER:		EMD FILE NO.:

DESCRIPTION	CHECKED	COMMENTS
<p>2.0 <u>Thermal Analysis</u> (Output Section D)</p> <p>2.1 Are all specified thermal modes analyzed correctly?</p> <p>2.2 Is the anchor movements input correct?</p> <p>2.3 Are all the deflections reasonable? (If over 1.5", specify)</p> <p>3.0 <u>Weight Analysis</u> (Output Section E)</p> <p>3.1 Is the overall support system balanced?</p> <p>3.2 Are all pipe deflections within 0.2 inches?</p> <p>4.0 <u>Equivalent Static Load Analyses</u> (Output Section D)</p> <p>The following analyses are performed using the PIPSYS static analysis routine:</p> <p>a-</p> <p>b-</p> <p>c-</p> <p>d-</p> <p>e-</p> <p>f-</p> <p>g-</p> <p>h-</p> <p>4.1 Are all design parameters in agreement with the stress analysis?</p> <p>4.2 Are the forces input correctly in the PIPSYS with respect to magnitude, direction and point of action?</p> <p>4.3 Has the effect of seismic differential anchor movements been considered and have the data sources been documented?</p>		<p>Refer to Row. 01 Acc. No. 039432</p>

a	b	c	d	e	f	g	h

Form MAS-EMD-2.2
 Rev. Orig. (7-31-80)

CALC. NO.:	REV.:	DATE:
PROJECT NUMBER:	EMD FILE NO.:	

DESCRIPTION	CHECKED								COMMENTS
	a	b	c	d	e	f	g	h	
5.0 <u>Dynamic Analyses</u> (Output Section F)									Refer to Review Acc. No. 039432.
5.1 The following analyses are performed using response spectra method (Seismic in PIPSYS Output):									
a-Seismic									
b-									
c-									
d-									
e-									
f-									
g-									
h-									
5.1.1 Are the latest revisions of response spectra used for the analysis?									
5.1.2 Are the length ratios acceptable?									
5.1.3 Does cutoff frequency cover the peak acceleration value?									
5.1.4 Is the square root of the double sum method used to combine the modal responses?									
5.1.5 Are all the deflections reasonable? (If over 1.0" OBE, specify)									
5.1.6 Has the effect of seismic differential anchor movements been considered?									
5.2 The following analyses are performed using the forcing function method (Transient in PIPSYS Output):									
a-									
b-									
c-									
d-									
e-									
f-									
g-									
h-									

Form MAS-EMD-2.2
 Rev. Orig. (7-31-80)

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CALC. NO.:	REV.:	DATE:
PROJECT NUMBER:		END FILE NO.: EMI

DESCRIPTION	CHECKED								COMMENTS
	a	b	c	d	e	f	g	h	
5.2.1 Is the force calculation design basis listed or referenced?									Refer to Rev. 01 Acc. No. E32432
5.2.2 If force calculations are not attached to this analysis, are they referenced?									
5.2.3 Are all necessary design parameters specified in this analysis (opening/closing times, flow rates, etc.)?									
5.2.4 If a safety/relief valve analysis is performed:									
a. Does the steam stagnation pressure and density reflect the S/RV set point?									
b. Are the pipe ID and segment lengths input correctly in the SRVA program?									
c. Is the pipe submerged length correctly calculated and input?									
d. Is the correct density used in the calculation?									
5.2.5 Are the forces input correctly in the PIPSYS with respect to magnitude, direction and point of action?									
5.2.6 Are the equipment reactions included with the correct load set?									
6.0 <u>Thermal Transient Analysis</u> (ASME Class 1 Piping Only)									
6.1 Are the results of transient analysis attached to this report?									

Form MAS-EMD-2.2
Rev. Orig. (7-31-80)

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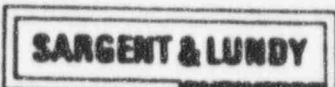



CALC. NO.:	REV.:	DATE:
PROJECT NUMBER:		EMD FILE NO.:

DESCRIPTION	CHECKED	COMMENTS
6.2 Are all transient stresses identified and are the NOHEAT RUNS properly documented?		Refer to Rev. 01 Acc. No. 039432
6.3 Are thermal transient conditions and cycles correct?		
6.4 Are all discontinuities considered?		
6.5 Are the film coefficients, densities and material thermal conductivity correct?		
6.6 Are correct time steps used in performing the transient analysis?		
7.0 <u>Hand Calculations</u>		
7.1 If hand calculations are not attached to this analysis, are they properly referenced?		↓
7.2 Are the calculations reviewed in accordance with GQ-3.08?		
<input type="checkbox"/> A detailed review of original calculation.		
<input type="checkbox"/> A review by an alternate, simplified or approximate method of calculation.		
<input type="checkbox"/> A review of a representative sample of repetitive calculations.		
<input type="checkbox"/> A review of the calculation against a similar calculation previously performed.		
8.0 <u>Combined Stresses</u> (Output Section A)		
8.1 Are the stresses within the allowables?		
8.2 Are the allowable stresses for the materials used in the analysis in agreement with the Code?		
8.3 Is the design pressure correct?		

Form MAS-EMD-2.2
 Rev. Orig. (7-31-80)

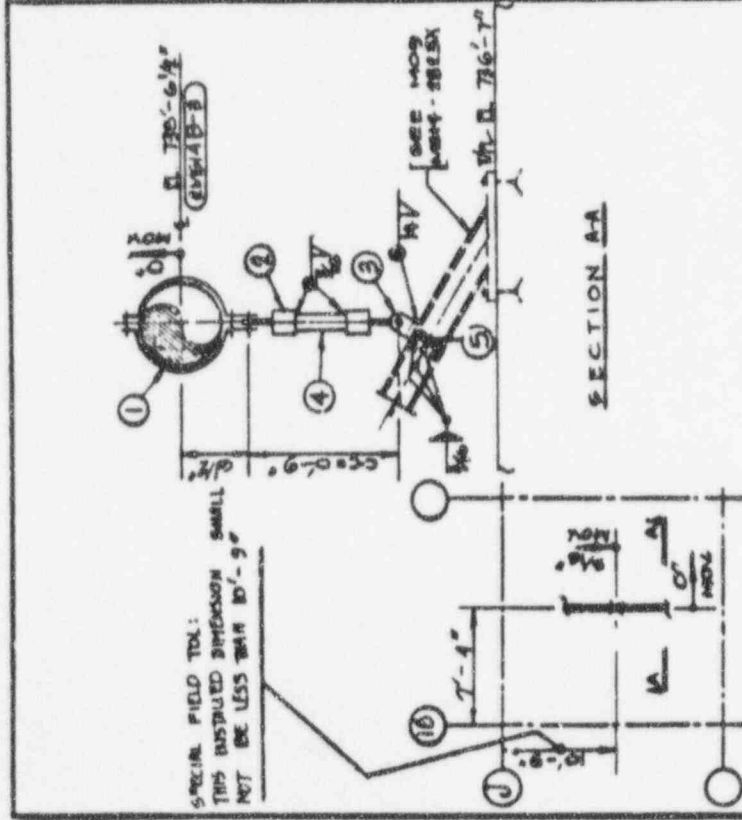
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CALC. NO.:	REV.:	DATE:	PROJECT NO.: 4267-00 ACC. NO.: EMD-042129 CALC. NO.: 2MS-31B REV. 01 DATE: 03/24/83 PAGE 28 OF 28	
PROJECT NUMBER:		EMD FILE NO.		
DESCRIPTION		CHECKED	COMMENTS	
8.4 Are all thermal load combinations specified in accordance with the design specification?			Refer to Rev. 01 Acc. No. 039432.	
8.5 Are all mechanical loads listed, per the design specification, as service level B, C or D?				
8.6 Are the number of earthquake cycles calculated per the design specification or per SRP-3.7.3?				
8.7 Are all high-stress/usage factor (over 0.1) points run with the detailed output?				
9.0 <u>Combined Reactions</u> (Output Section B)				
9.1 Are all applicable forces and moments considered for both service levels B and C?				
9.2 Are all the equipment nozzles identified correctly?				
9.3 Are equipment loads and valve accelerations acceptable? Have they been forwarded to the EMD/CAS?				
9.4 Are the vendor supplied component supports able to carry the imposed loads?				
9.5 Are all Type 3 restraints reviewed to determine if they can be replaced by rigid restraints?				
9.6 Method used to combine the loads:				
<input type="checkbox"/> Absolute Sum <input type="checkbox"/> SRSS				

Form MAS-EMD-2.2
Rev. Orig. (7-31-80)

TRM	QTY	FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT WEIGHT (LBS.)
1	1	11-11-101	3" PIPE CLAMP	6.10
2	1	11-11-102	ADAPTER NUT PER FIG. 1	2.00
3	1	11-11-103	REAR BRACKET PER FIG. 1	1.13
4	1	11-11-104	1" SCH. 40S EXT. FIELD S.L.	1.03
5	2	11-11-105	3/8" X 1/4" X 1/4" C.S. STIFF.	1.21
1	1		BUNDLE TAG FC-43	
TOTAL WEIGHT				11.97



WELD NO.	WELD PROCEDURE	EXAMINATION PROCEDURE

DESIGN	OPERATING	HYDRO. TEST	EMERGENCY	FAULTED
9737-206				10707-202

LOADS (LBS.)	NO. SCALE	PROJECT NO.	DATE
		437 40	

LA SALLE CREDIT STATION
SHEET - 2
COMMERCIAL TRADING COMPANY
CHICAGO ILLINOIS

APPLICARY BLDG. MISC. PIPING SYS.

NO. SCALE: 437 40
PROJECT NO.: 437 40
DATE: 11/21/50

DESIGN: 9737-206
REVIEW: 9737-206

DESIGNER: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]

DATE: 11/21/50

REVISION TO THIS DRAWING REQUIRES PROJECT MANAGER APPROVAL

PURPOSE ISSUED PER: 98-R 1385, REV. A

FIG. NO. 11-11-101
PART NO. 11-11-101

CLASS: D

PIPE CLASS: D

CEC-58222 SPEC. 3-67-50

COMPONENT WEIGHT (LBS.)

LA SALLE CREDIT STATION
SHEET - 2
COMMERCIAL TRADING COMPANY
CHICAGO ILLINOIS

APPLICARY BLDG. MISC. PIPING SYS.

NO. SCALE: 437 40
PROJECT NO.: 437 40
DATE: 11/21/50

DESIGN: 9737-206
REVIEW: 9737-206

DESIGNER: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]

DATE: 11/21/50

REVISION TO THIS DRAWING REQUIRES PROJECT MANAGER APPROVAL

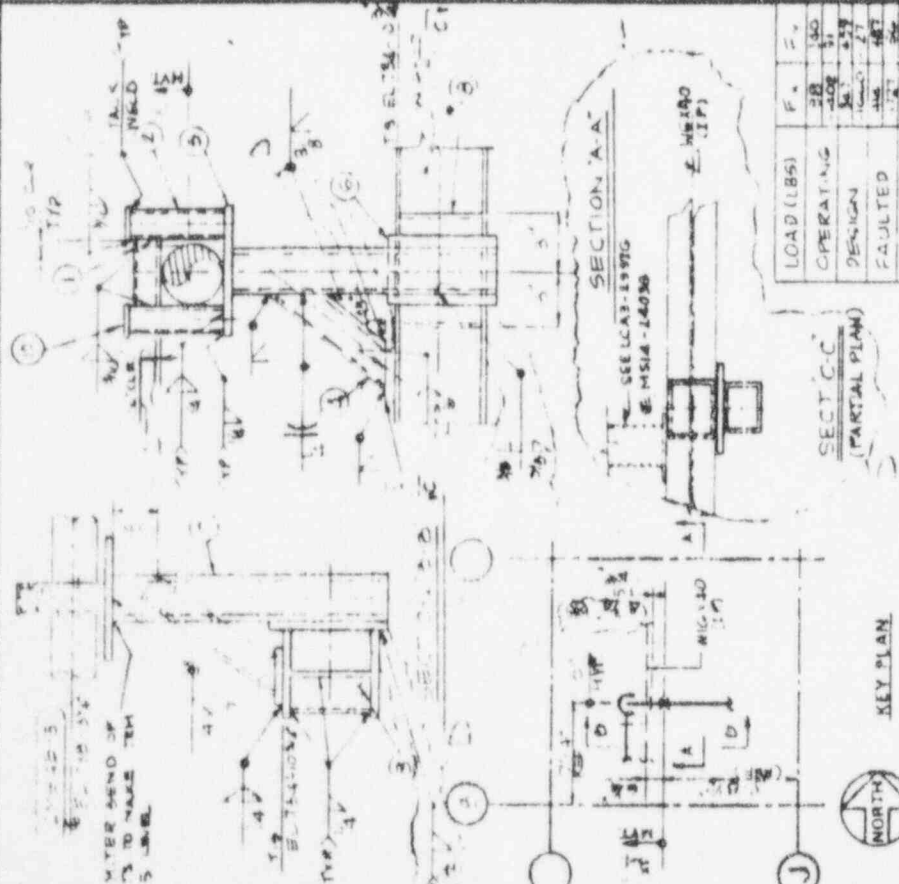
PURPOSE ISSUED PER: 98-R 1385, REV. A

FIG. NO. 11-11-101
PART NO. 11-11-101

CLASS: D

PIPE CLASS: D

CEC-58222 SPEC. 3-67-50



REV	DATE	RELD	PREPARED	REVIEWED	APPROVED	FILM
A	04-22-82		J.P. Goya			
B	07-03-82		J.S. King			
C	10-01-82		J. Frank			
D	12-10-82		A.A. King			

FROZEN
 REVISION TO THIS ANALYSIS
 REQUIRES PROJECT MANAGER
 APPROVAL

244-24 NR A 350 (K & Y) DRAWING RELEASE RECORD OUTPUT: 05/27/84

REFERENCE DRAWINGS
 DWG NO. 5-595 REV. P DWG NO. REV. DWG NO. REV. DWG NO. REV.
 LOAD (LBS) F. 20
 OPERATING 28 31
 DESIGN 30 33
 FAULTED 32 35
 HYDRO-TEST 32 37

PURPOSE: REVISED PER SP# K 8730 (REV D)

ITEM	QUAN	FIG. NO.	OR PART NO.	DESCRIPTION	WELD NO.	WELD PROCEDURE	EXAMINATION PROCEDURE	LOADS (LBS)	HYDRO TEST	EMERGENCY	FAULTED	
1	1	1	1	15 2' x 2' x 1/4" D-3-28' LG								
2	1	2	2	15 5' x 5' x 1/4" D-6' LG								
3				DELETED								
4	1	4	4	15 4' x 3' x 1/4" D-3-9' LG								
5	1	5	5	3/4" x 5' x 1/4" D-2 PLATE								
6	1	6	6	1/2" x 5' x 1/4" D-2 PLATE								
7	1	7	7	15 4' x 3' x 1/4" D-4-1/2' LG								
8	4	8	8	1/2" x 3' x 1/4" D-1-2' LG								
9	1	9	9	1/4" x 3 1/2" x 3 1/2" D-3 PLATE								
10	2	10	10	1/4" x 3 1/2" x 3 1/2" D-3 PLATE								
11	1	11	11	PURPLE TAG								
				FC-37								
								183.22	TOTAL WEIGHT			
								M09-M514-2403G REPLACES M09-M514-2622A & M09-M514-2622B				



LA SALLE COUNTY STATION
 UNIT-2
 COMMONWEALTH EDISON COMPANY
 CHICAGO ILLINOIS

NO SCALE PROJECT NO. 1517 G

SUPPORT NO. M09-1514-2403G

REV. D

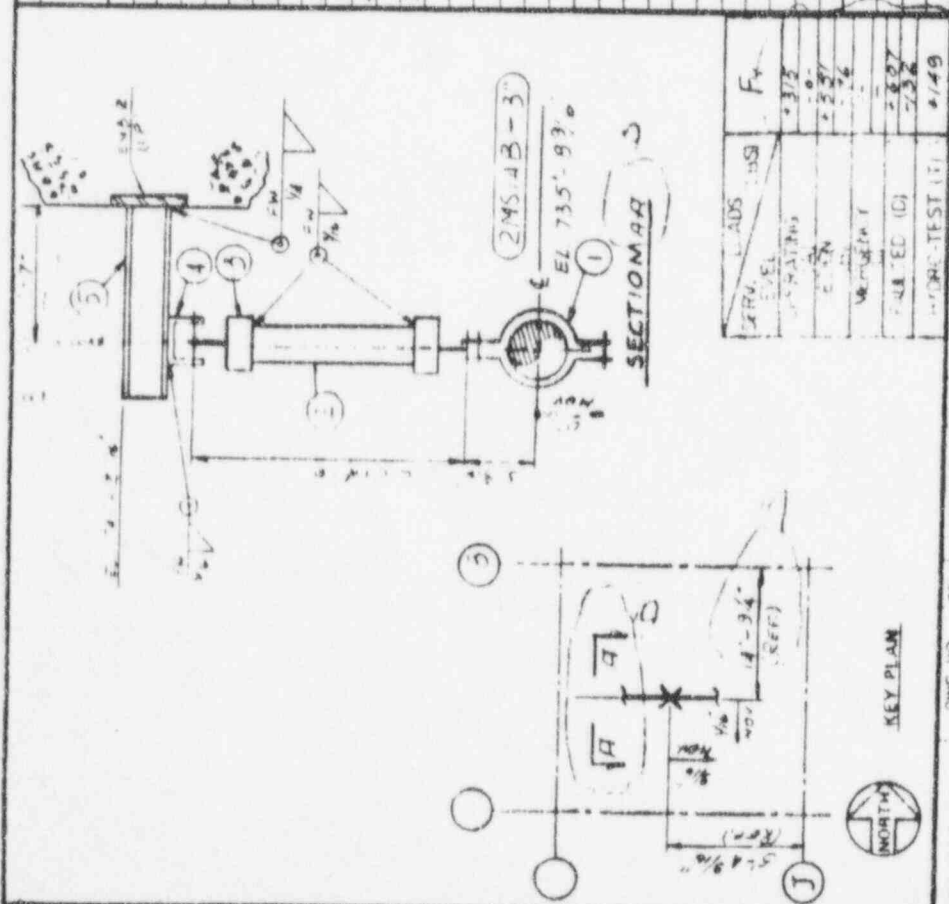
SHEET 1 OF 1

SARGENT & LUNDY
 CHICAGO

ZAGG

PIPE CLASS D

CEO-6219



REV	DATE	BY	CHKD	REV	NO.	DESCRIPTION
1	4-21-81	S. K. Saha				PREPARED
2	5-1-81	B. G. Gormley				REVIEWED
3						APPROVED

DRAWING RELEASE RECORD
 OUTPUT: 3-27-81
 APPROVED: [Signature]
 PROJECT: [Signature]

FROZEN
 REVISION TO THIS ANNUAL
 REQUIRES PROJECT MANAGER
 APPROVAL

PURPOSE REV B PER SP-R-1965, REV B
 CED-5-17 D. S. P. C. J. 2310

ITEM	FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT PART NAME	QUANTITY	UNIT	MATERIAL	WEIGHT	TOTAL WEIGHT	EXAMINATION PROCEDURE	WELD NO.	WELD PROCEDURE	LOADS (LBS)	OPERATING	HYDRO TEST	EMERGENCY	FAULTED	CLASS	PIPE	PE SEAL	NO. SCALE	PROJECT NO.	DRAWING NO.	REV	
																								CONSTITUTION
1	1	3" 20" PIPE	PIPE	1	3'	20"																		
2	1	34" SCH 40S EXT PIPE	PIPE	1	10.57'																			
3	2	808201 PS-2 ADAPTER	PS-2	2																				
4	1	808202 PS-2 PEER BRACKET ASSY	PS-2	1																				
5	1	W-1-3	W-1-3	1																				
										BUNDLE # 13														
										TOTAL WEIGHT		38.08												



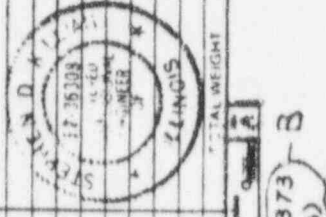
LA SALLE COUNTY STATION
 UNIT - 2
 COMMONWEALTH EDISON COMPANY
 CHICAGO ILLINOIS
AUXILIARY BLDG MISC. PIPING SYSTEM

SARGENT & LUNDY
 CHICAGO

DRAWING NO. MS. 11-2320X
 REV B
 SHEET 1 OF 1

CED-5-17

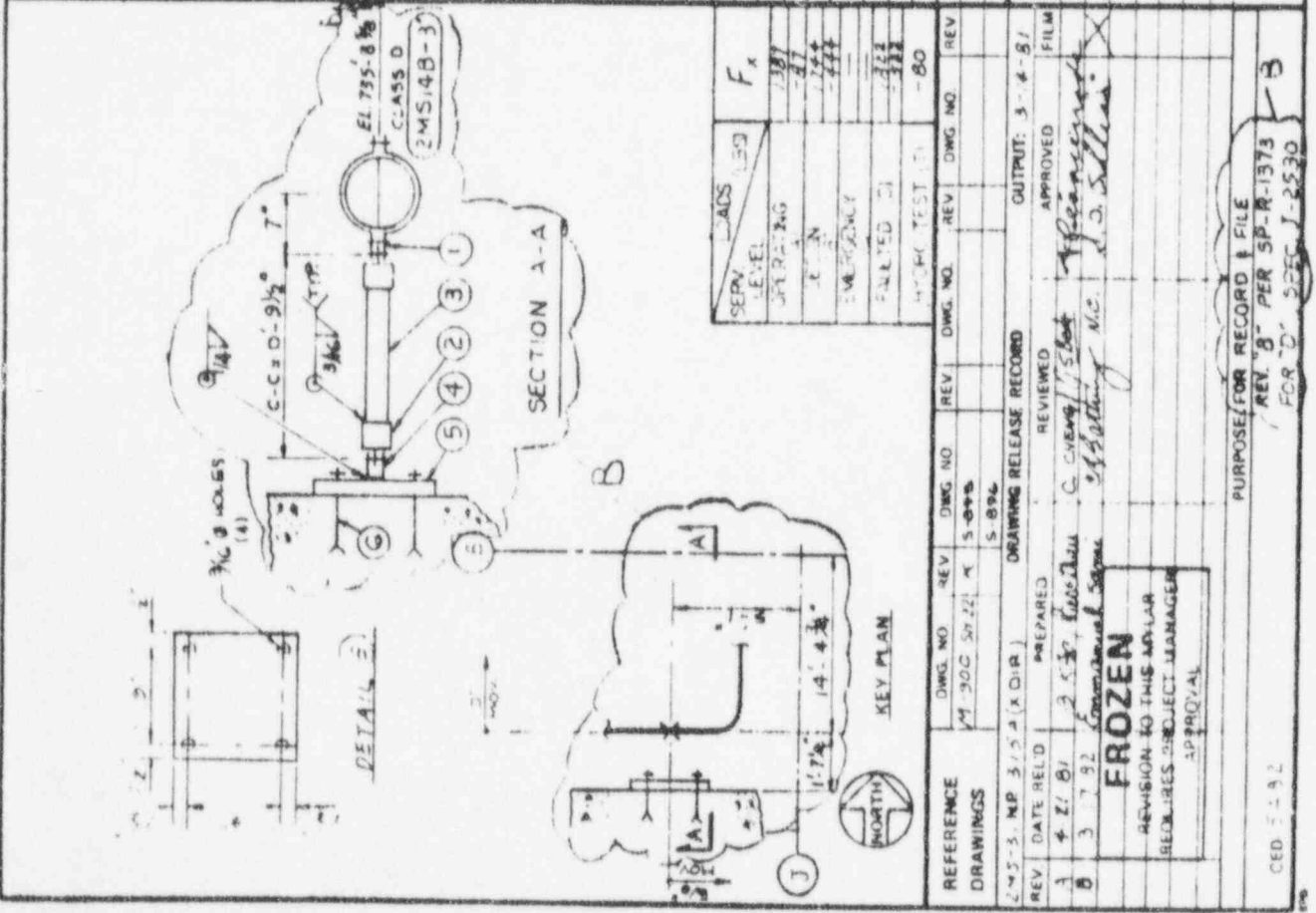
ITEM	QUANTITY	DESCRIPTION	COMPONENT WEIGHT (LB)
1	3A 3-2	3" P 2.5 LAMP	2.2
2	2 2 2-04	2SA-3 ADAPTER ASST	0.5
3	1	2 P 5CH X 4.5 10'-4 LG	2.25
4	1	2SA-3 REAR BRACKET	3.5
5	1	2" X 2" X 3" X 2" - 0.4	2.0
6	1	3" X 1" X 1" X 1" BRACKET	2.0



SP-R-1373-B
(REV. B)

LA SALLE COUNTY STATION
UNIT-2
COMMONWEALTH EDISON COMPANY
CHICAGO ILLINOIS

NO SCALE	DRAWING NO.	REV.
PROJECT NO.	MOB	
DATE	M.S.P. - 12/1/88	B
SARGENT & LUNDY ENGINEERS CHICAGO		SHEET NO. OF
		666A



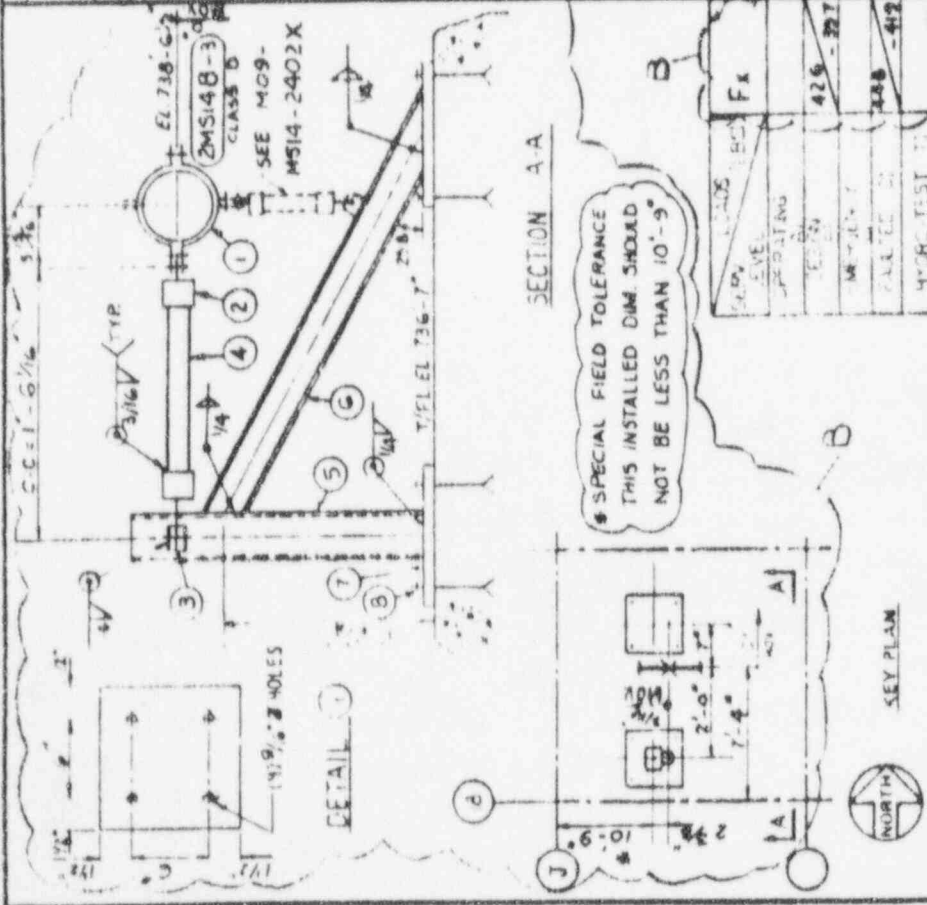
SEPV	LOADS	REV	DWG. NO.	REV	DWG. NO.	REV
LEVEL	1387		5-895		5-896	
OPERATING	1387		5-895		5-896	
EMERGENCY	1387		5-895		5-896	
FAULTED	1387		5-895		5-896	
WORK TEST	1387		5-895		5-896	

REFERENCE DRAWINGS	DWG. NO.	REV	DWG. NO.	REV	DWG. NO.	REV
245-3-NP 3/2-A (A D R)	5-895		5-896			
REV DATE	REV	DWG. NO.	REV	DWG. NO.	REV	DWG. NO.
4 21 81	3	5-896		5-896		5-896
3 7 92	2	5-896		5-896		5-896
DRAWING RELEASE RECORD						
PREPARED			REVIEWED			
C. Cheng			C. Cheng			
3/24/92			3/24/92			
Commercial Sign			Commercial Sign			
FROZEN			FROZEN			
REVISION TO THIS DRAWING REQUIRES PROJECT MANAGER APPROVAL						
PURPOSE FOR RECORD & FILE						
REV. B PER SP-R-1373						
FOR 'D' SPEC J-2530						
CED 5-892						

ITEM	FIG. NO. OR PART NO.	DESCRIPTION	QUANTITY	UNIT	WEIGHT
1	8H-1407	3" PIPE CLAMP	30.4		
2	180912-D	ADAPTER ASSY PER PSA-1/2	1.66		
3	180912-D	REAR BRACKET PER PSA-1/2	.42		
4	1	3/4" SCH. 40S. EXT. PIPE 1'-2" LG.	2.85		
5	1	TS 4' x 4' x 1/4" 2'-0" LG.	24.42		
6	1	W4 x 13 x 3'-2" LG. (FIELD CUT TO SUIT)	41.17		
7	2	1/2" x 9" x 9" C 9 P (SEE DET. 1)	22.35		
8	B	1/2" x 5/2" MILIT. KWIK BOLT MIN. EMB. = 8"	1.28		
9	1	BUNDLE & TAG FC-49			



TOTAL WEIGHT
97.72
SP-R-1369 (REV. B)



REV	DATE	BY	CHK'D	APP'D	DESCRIPTION
A	4-27-81				PREPARED
B	3-2-82				REVIEWED

DRAWING RELEASE RECORD
 M-300
 OUTPUT: 3-27-81
 APPROVED: [Signature]
 APPROVAL: [Signature]

FROZEN
 REVISION TO THIS DRAWING
 REQUIRES PROJECT MANAGER APPROVAL

PURPOSE: FOR RECORD & FILE
 REV. B PER SP-R-1369
 FOR O. SPEC. J-2530



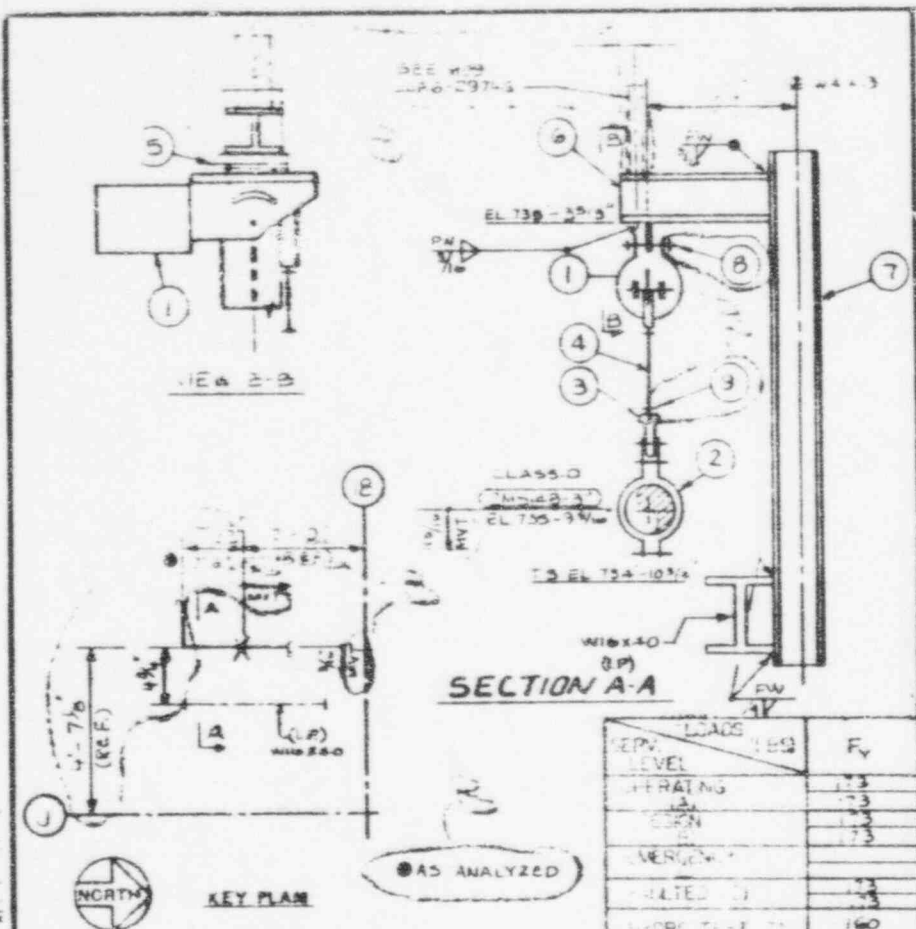
LA SALLE COUNTY STATION UNIT - 2 COMMONWEALTH EDISON COMPANY CHICAGO ILLINOIS	
NO SCALE	DRAWING NO. REV
PROJECT NO. 457 (S)	MOB. B
	MS14-282XX
	SHEET 1 OF 1

SARGENT & LUNDY
CHICAGO
668A

CEDED 5-1-77

04-21-B

245-31A



SEPV. LEVEL	LOADS (LBS)	F _v
OPERATING	173	173
EMERGENCY	173	173
FAULTED	173	173
HYDRO TEST	160	160

BILL OF MATERIAL			QUANTITY	WEIGHT
ITEM NO.	QTY	DESCRIPTION		
1	1	81H SIZE #8 TYPE C CONSTANT SUPPORT HT = 85" TT = 4" FOR SINGLE ROD SUSPENSION	23.5	
2	1	295 3" Ø DOUBLE BOLT PIPE CLAMP	2.04	
3	1	290 1/2" WELDLESS EYE NUT	0.63	
4	1	140 1/2" Ø ROD, 3-9 LG W/TFL	0.5	
5	1	54 1/2" DOUBLE HOLE LUG HT = 1/2"		
6	1	W4x13, 1-0" LG	3.0	
7	1	W4x13, 5-4 LG	10.0	
8	2	291 3/8" PIN W/COOTERS	36	
9	2	1/2" Ø HEX NUT	0.8	
		BUNDLE & TAG FC-42		
			12.5	TOTAL WEIGHT



WELD NO.		WELD PROCEDURE		EXAMINATION PROCEDURE	

REFERENCE DRAWINGS	DWG NO.	REV.	DWG NO.	REV.	DWG NO.	REV.	DWG NO.	REV.
	S-895	F	IE-2-3145	C	M-388	C	M-1589-2	L

DRAWING RELEASE RECORD				
REV.	DATE RECD	PREPARED	REVIEWED	APPROVED
A	4-21-81	Wong, Robert	Wong, Robert	Wong, Robert
B	12-16-82	Wong, Robert	Wong, Robert	Wong, Robert

FROZEN
REVISION TO THIS DRAWING REQUIRES PROJECT MANAGER APPROVAL

PURPOSE REVISED PER SPEC 3-2530 (REV B)

END REVIEW

PIPE CLASS

LA SALLE COUNTY STATION
UNIT-2
COMMONWEALTH EDISON COMPANY
CHICAGO ILLINOIS

AUXILIARY BLDG MISC. PIPING SYS.

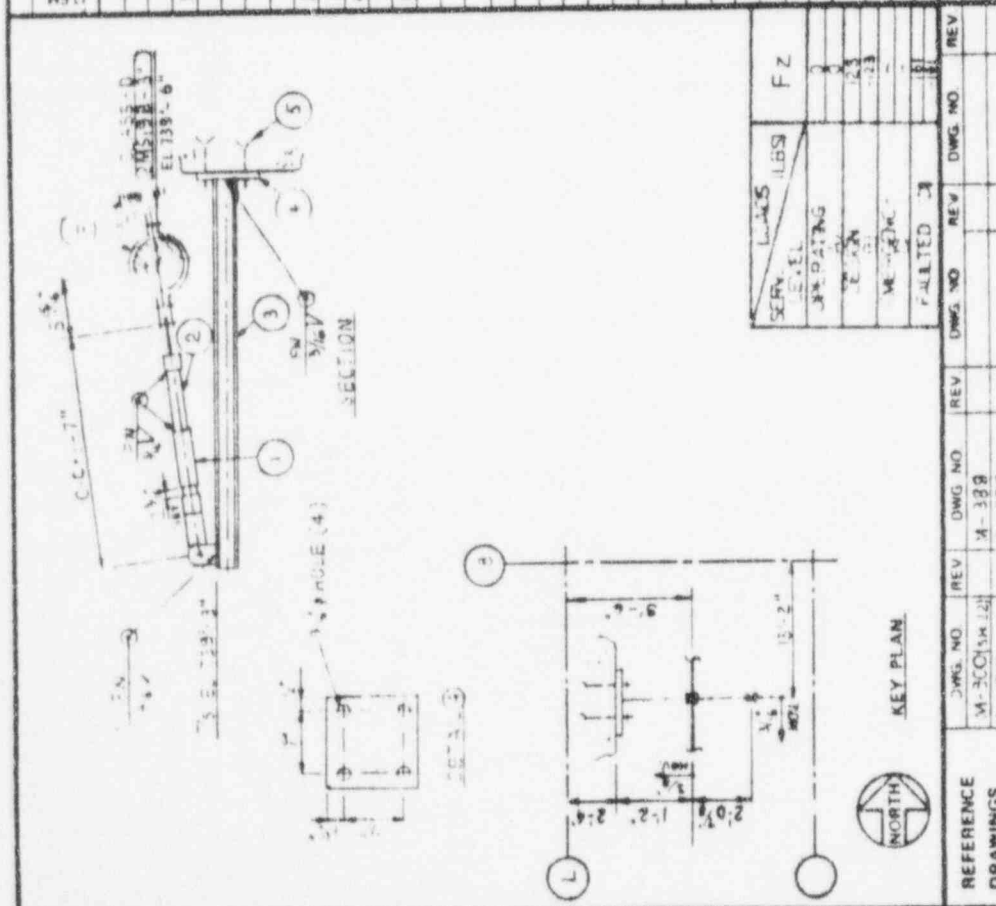
NO SCALE PROJECT NO. 100-41

SARGENT & LUNDY
CHICAGO ILLINOIS 013E

DRAWING NO. MS14-2861C
REV. B

SHEET OF

ITEM	FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT WEIGHT (LBS)
1		MECHANICAL SHOCK ARRESTOR MODEL PSA 1/4" WITH REAR BRACKET ASSY PN-801558-01, TRAN. TUBE KIT FN-801573-05	5.0
2		3/4" EXT. PIPE SCH 40S, 6'-5 1/2" L	2.0
3		M4 x 1/2" 3' - 3" LG	44.0
4		1/2" x 10" CS 2, 0' - 10" LG (SEE DET 4)	15.0
5		1/2" x 7" MULTI KW K-BOLT	2.0
6		3" PIPE CLAMP PER BH 407	3.0
TOTAL WEIGHT			71.0



LA SALLE COUNTY STATION UNIT-2 COMMONWEALTH EDISON COMPANY CHICAGO, ILLINOIS	
NUCLEAR SAFETY RELATED	
NO SCALE PROJECT NO. 427 00	DRAWING NO. MS13-2800 S SHEET 1 OF 1
SARGENT & LUNDY CHICAGO, ILLINOIS 60694	

DESIGN OPERATING HYDRO. TEST EMERGENCY FAULTED SEE LOAD TABLE	WELD NO. WELD PROCEDURE EXAMINATION PROCEDURE
EMO REVIEW	PPE CLASS D
DRAWING RELEASE RECORD REV. DATE REL'D 4-21-81 PREPARED BY: [Signature] REVIEWED BY: [Signature] APPROVED BY: [Signature]	OUTPUT: 3-14-81 APPROVED BY: [Signature]
PURPOSE FOR E & F SPECS (1-253017-2948)	
CED 5-612	

REV. A DATED 04-21-81
AS RECEIVED FROM QUADREX

SUBSYS 2MS-31B
PER 81-SAR-2-139

REF. DRAWINGS	DWG NO	REV	DWG NO	REV	DWG NO	REV	DWG NO	REV	DWG NO	REV
M-900 SAZL	M	5-B95	M	5-B95	M	5-B95	M	5-B95	M	5-B95
M-3 DE	C	5-B97	C	5-B97	C	5-B97	C	5-B97	C	5-B97

2MS-31 NP 392 (Y) DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	FILM
A	4-21-81	J. G. [Signature]	[Signature]	[Signature]	
B	5-4-82	S. [Signature]	[Signature]	[Signature]	

FROZEN
REVISION TO THIS MYLAR
REQUIRES PROJECT MANAGER
APPROVAL

PURPOSE: FOR RECORD & FILE
FOR D J-2530

BILL OF MATERIAL		DESCRIPTION		COMPONENT WEIGHT (LB)
ITEM	QTY	FIG. NO. OR PART NO	COMPONENT SUPPORT ASSEMBLY CONSISTING OF	
1	1	299	5" ϕ DOUBLE BOLT PIPE CLAMP	3.0
2	1	290	1/2" ϕ WELDLESS EYE NUT	0.63
3	3		1/2" ϕ HEX NUT	6.15
4	1	140	1/2" ϕ ROD, 2'-6" LG. W/ 6 TIE.	2.1
5	1		T5 3" X 3" X 1/4", 1'-3" LG. W/ 9/16" ϕ HOLE THRU AT CENTER	11.0
6	1		1/2" X 9" X 9" C.S. PLATE AS PER DETAIL A	11.46
7	4		1/2" X 7" HILTI KWIK BOLT (W/ 8D MIN EMB.)	1.40
8	1		T5 2" X 2" X 1/4" X 1'-9" LG. (CUT TO FIT)	9.50
			BUNDLE TAG FC-49	
TOTAL WEIGHT				39.19

LA SALLE COUNTY STATION
UNIT - 2
COMMERCIAL HEALTH ENDS COMPANY
CHICAGO, ILLINOIS

NUCLEAR SAFETY RELATED

NO SCALE
PROJECT NO. 4267-00
SUPPORT NO. M03
M519-2802R B
SARGENT & LURBY CHICAGO 671A
SHEET 1 OF 1

VICTORY & PENACERRADA
REGISTERED PROFESSIONAL ENGINEER
OF ILLINOIS

DESIGN 702 (669)
OPERATING LOADS (LBS.)
HYDRO. TEST EMERGENCY
EVALUATED 812

WELD NO. WELB PROCEDURE EXAMINATION PROCEDURE

LOADS (LBS.) OPERATING HYDRO. TEST EMERGENCY EVALUATED

DESIGN 702 (669)

EMD REVIEW

PE SEAL

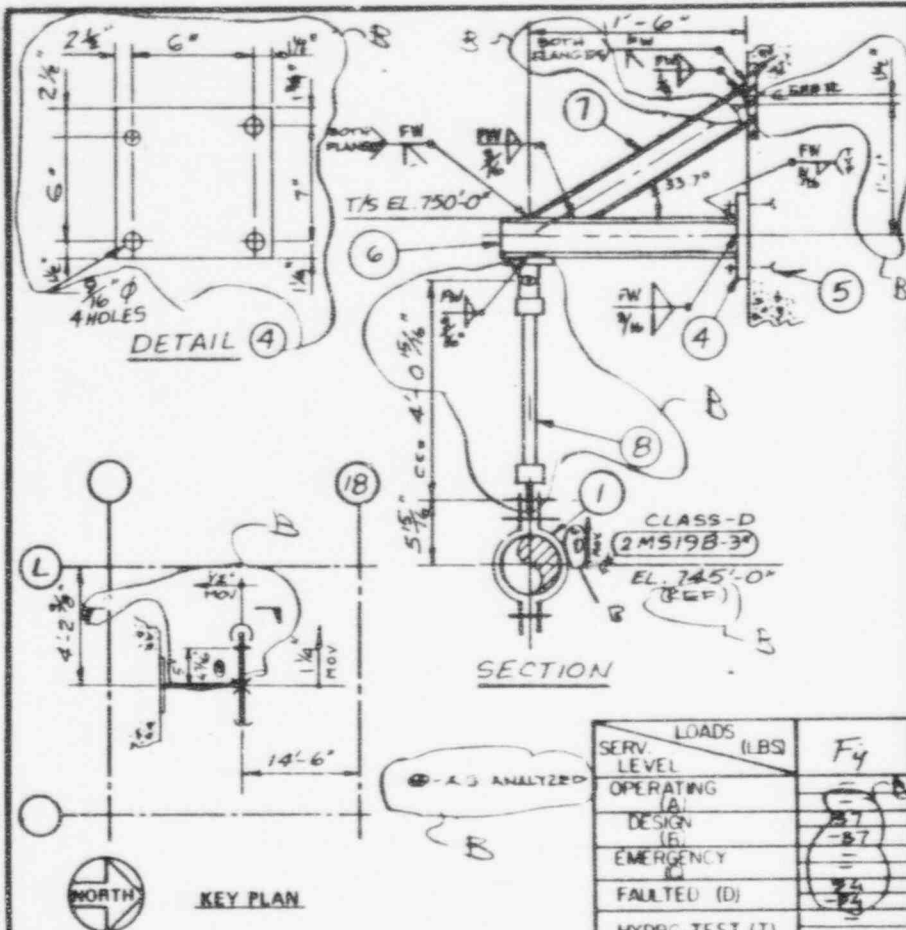
CLASS D

PE 5635



REV A DATED 04-21-81
AS RECEIVED FROM QUADREX

SUBSYS 2MS-318
PER B1-SAR-B-139



BILL OF MATERIAL		COMPONENT WEIGHT (LB)
ITEM	FIG. NO. OR PART NO.	DESCRIPTION
1		COMPONENT SUPPORT ASSEMBLY CONSISTING OF
1	BH-1407	3" Ø PIPE CLAMP
ITEMS 2 & 3 DELETED		
4	1	1/2" X 10" C.S.T.R., 0'-10" LG. (PER DETAIL 4)
5	4	1/2" X 5 1/2" NULTI KWIK-BOLT
6	1	M4 X 13, 1'-8 3/4" LG.
7	1	C3 F.A.L., 2'-0" LG.
8	1	SIZE 'A' SWAY STRUT ASSEMBLY W/OPTIONAL N-B'-5716'
1		BUNDLE & TAG FC-49
CHANGED SNUBBER TO STRUT PER EMD REVIEW-EMD FILE NO 036046 DATED 4/23/02		
WELD NO.		WELD PROCEDURE
EXAMINATION PROCEDURE		TOTAL WEIGHT



LOADS (LBS)	Fy
SERV LEVEL	
OPERATING (A)	27
DESIGN (B)	27
EMERGENCY (C)	27
FAULTED (D)	27
HYDRO-TEST (T)	27

REFERENCE DRAWINGS	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.
	M-900(SWZ)	K						
	M-388	C						

DRAWING RELEASE RECORD					OUTPUT: 3-27-81
REV.	DATE REL'D	PREPARED	REVIEWED	APPROVED	FILM
A	4-21-81	F. Mason / S. Bhatnagar	C. Chubb / C. Chubb	P. Penacerrada	
B	06-29-82	S. Bhatnagar	A. Penacerrada	M. J. Penacerrada	

FROZEN
REVISION TO THIS MYLAR REQUIRES PROJECT MANAGER APPROVAL

PURPOSE REVISED PER ECN # EUT-3210-LS (REV B)

CED 5838 IOP'D SPEC 1-2530

LOADS (LBS.)				
DESIGN	OPERATING	HYDRO TEST	EMERGENCY	FAULTED
		SEE LOAD TABLE		

LA SALLE COUNTY STATION
UNIT-2
COMMONWEALTH EDISON COMPANY
CHICAGO, ILLINOIS

NUCLEAR SAFETY RELATED

NO SCALE
PROJECT NO. 4267-00

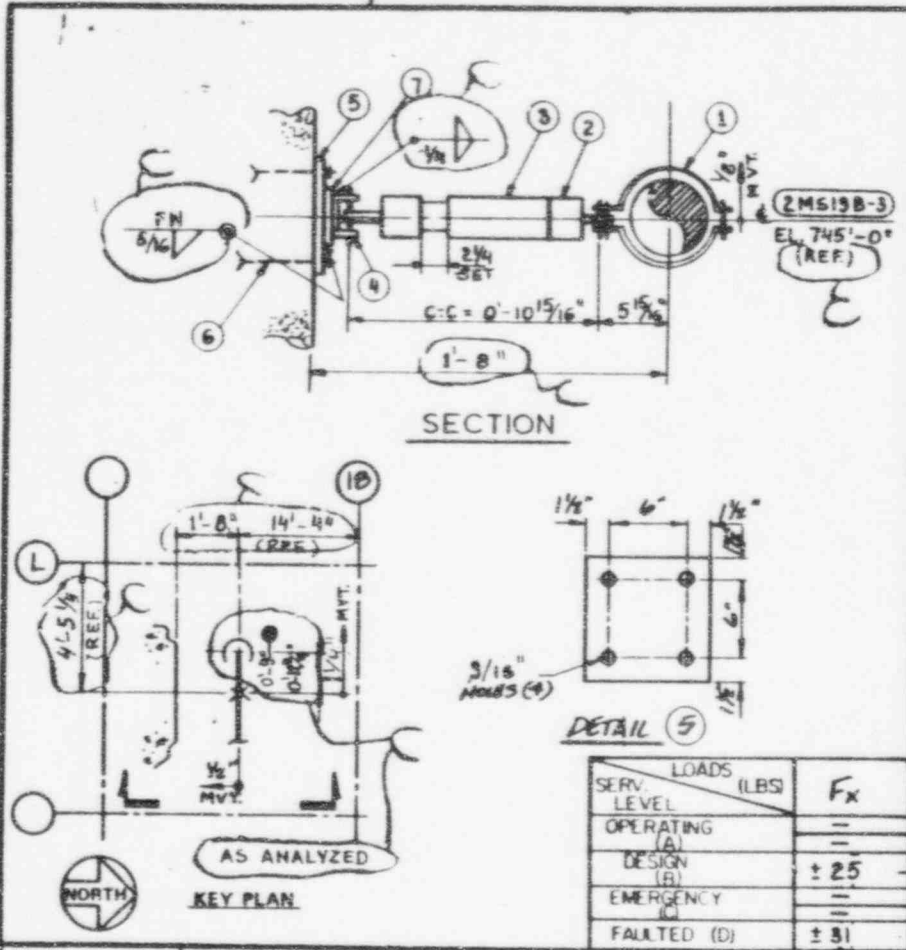
SARGENT & LUNDY
CHICAGO 672A

DRAWING NO. M09-MS19-2803X
SHEET 1 OF 1

MAY 15 1981 11:18 AM APPROVED

REV A DATED 04-21-81
AS RECEIVED FROM QUADREX

SUBSYS 243-318
PER 81-SAR-0-139



BILL OF MATERIAL			COMPONENT WEIGHT (LB)	
ITEM	QUAN.	FIG. NO. OR PART NO.	DESCRIPTION	
1			COMPONENT SUPPORT ASSEMBLY	
			CONSISTING OF	
1	1	BN 1407	3" Ø PIPE CLAMP	3.0
2	1	1801853-05	PSA-1/2 FORWARD BELT	1.0
3	1	1801104-07	PSA-1/2 MIDL. SNUBBER	4.0
4	1	1801558-05	PSA-1/2 REAR BELT	0.5
5	1		1/2" X 9" C.S. P. 0'-9" LG (SEE DETAIL-5)	12.0
6	4		1/2" X 7" LG HILTI KWIK-BOLT	1.76
7	1		1 1/4" X 4" X 4" C.S. PLATE	5.66
1			BUNDLE & TAG FC-49	
				27.92
				TOTAL WEIGHT



LOADS (LBS)	Fx
SERV. LEVEL	
OPERATING (A)	
DESIGN (B)	± 25
EMERGENCY (C)	
FAULTED (D)	± 31

WELD NO.		WELD PROCEDURE		EXAMINATION PROCEDURE	
DESIGN	OPERATING	HYDRO TEST	EMERGENCY	FAULTED	

REFERENCE DRAWINGS	DWG NO	REV	DWG NO	REV	DWG NO	REV	DWG NO	REV
	M-900	K						
	M-388	C						

DRAWING RELEASE RECORD				OUTPUT: 09-27-81	
REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	FILM
A	4-21-81	S.K. Saha	C. ...	V. ...	
B	5-4-82				
C	12-23-82	A.A.			

FROZEN
REVISION TO THIS MYLAR REQUIRES PROJECT MANAGER APPROVAL

PURPOSE REVISED PER ECN#FUT-5857-L6 FOR "D" SPEC J-2530 (REV. C)

CEC 6287

EMD REVIEW

VICTORY G. PENACERRA
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

PIPE CLASS 1D

P.E. SEAL

LA SALLE COUNTY STATION
UNIT-2
COMMONWEALTH EDISON COMPANY
CHICAGO, ILLINOIS

NUCLEAR SAFETY RELATED

NO SCALE
PROJECT NO. 4267-00

SARGENT & LUNDY
CHICAGO
673A

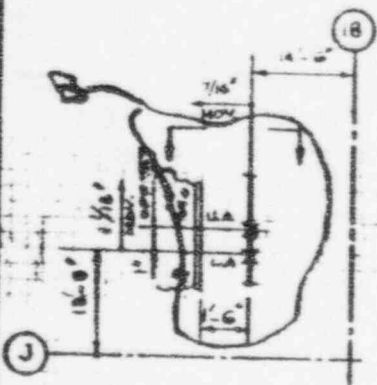
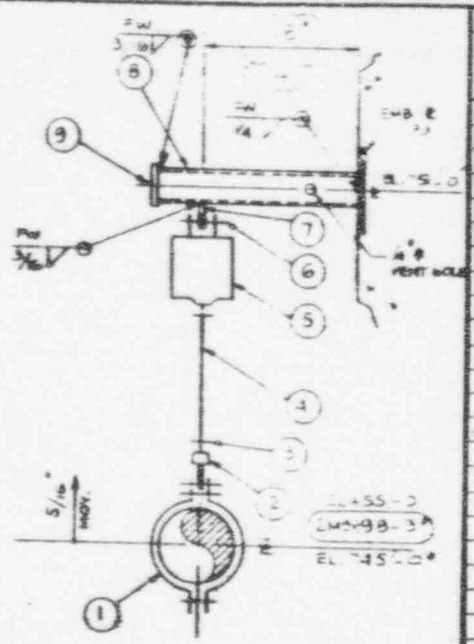
SUPPORT NO. MS19-28045
REV. C

SHEET 1 OF 1

DRAWING APPROVED

REV A DATED 04-21-81

248-812



SECTION

SERV. LEVEL	LOADS (LBS)	F _y
OPERATING	172	172
DESIGN	172	172
EMERGENCY	172	172
FAULTED	172	172
HYDRO-TEST (1)	163	163

BILL OF MATERIAL				ITEM	FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT WEIGHT (LBS)
UOM	QTY	UNIT	WEIGHT				
COMPONENT SUPPORT ASSEMBLY CONSISTING OF							
	1	235	3" P.P.E. CLAMP				3.0
	2	290	1/2" WELDLESS EYE NUT				0.5
	3	4	1/2" HEX NUT				0.5
	4	1	ROD ASSEMBLY CONSISTING OF:				3.5
			(1) 1/2" X 4'-0" N16 TBE				
			(2) 1/2" X 1'-5" N16 TFL				
		135	(1) 1/2" ROD COUPLING				
	5	1	B-268 SIZE 4, TYPE C HL 196# CL 209#				4.0
	6	1	291 1/2" CLEVIS PIN W/ COTTER				1.5
	7	55	1/2" WELDING SHORT				2.5
	8		3/4" X 4" 3/8" K16 LG				35.22
	9		1/2" X 5" 1/8" 0-5 LG				2.0
	1		BUNDLE & TAG FC-49				



54.72 TOTAL WEIGHT
 Nuclear Services Corporation

WELD NO.	WELD PROCEDURE	EXAMINATION PROCEDURE	LOADS (LBS.)				
			DESIGN	OPERATING	HYDRO TEST	EMERGENCY	FAULTED
				SEE LOAD TABLE			

REFERENCE DRAWINGS	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.
	M-900(SH22)	K	5-895					
	M-388	C	5-896					

REV.	DATE REL'D	PREPARED	REVIEWED	APPROVED	FILM
A	4-21-81	A. Kibista	P. Malloy	Penacero	
B	07-01-82	A. Kibista	A. Kibista	J. H. Kibista	X

FROZEN
 PERMISSION TO THIS SEAL
 REMAINS PROJECT MANAGER APPROVAL

EMO REVIEW

PIPE CLASS D

PE SEAL

LA SALLE COUNTY STATION
 UNIT-2
 COMMONWEALTH EDISON COMPANY
 CHICAGO, ILLINOIS

NUCLEAR SAFETY RELATED

NO SCALE PROJECT NO. 4267 00

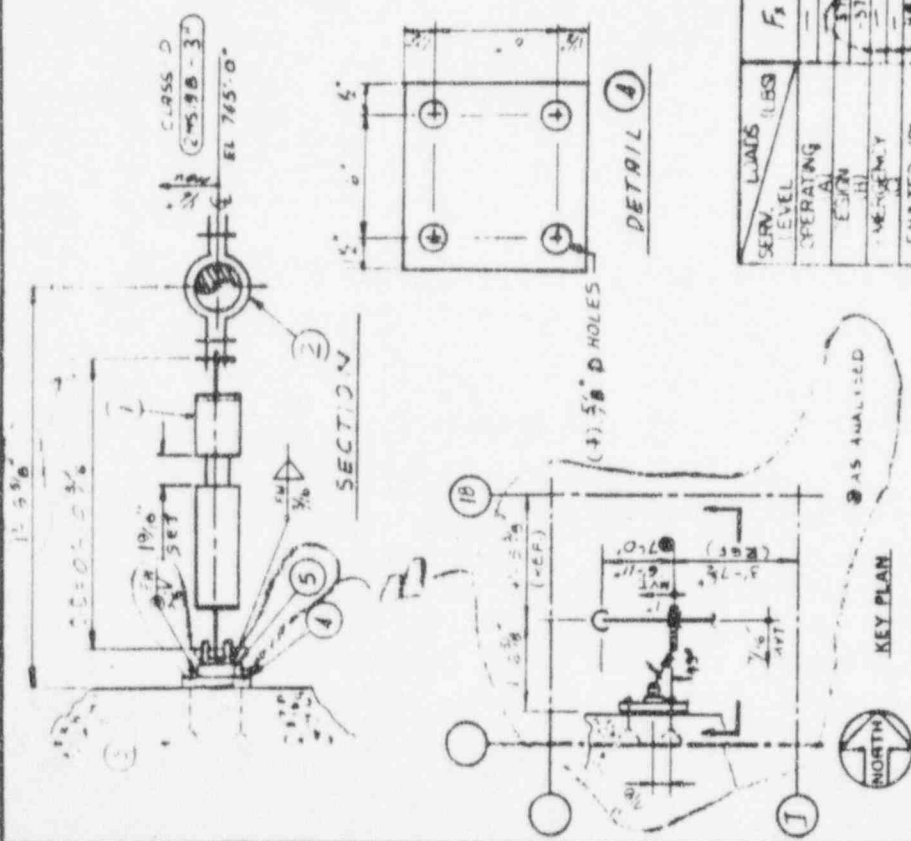
DRAWING NO. REV. MS19-2806V B

SHEET 1 OF 1

SARGENT & LUNDY
 CHICAGO 675A

PURPOSE: REVISED PER ECN# JF JT-3231-5

CEC 5843 D J-2530



REV	DATE	RELD	PREPARED	REVIEWED	APPROVED	FILM
A	4-2-81					
B	12-6-82					

REFERENCE DRAWINGS: M-900 SA 22 K S-895 F
 M-338 C S-897
 2MS3/NP 135 X DIR
 DRAWING RELEASE RECORD NO. 207016, OUTPUT 3-27-81

FROZEN
 REVISION TO THIS DRAWING
 REQUIRES PROJECT MANAGER
 APPROVAL

PURPOSE: REVISED PER 6PFR-8898 (REV B)
 FOR "D" SPEC. 3-2530
 CED 6266

ITEM	FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT WEIGHT (LB)
1	1	1 BOLT 2" DIA. 1/2 SNUBBER ASSY WITH 100520 REAR BRACKET 100530 FORWARD BRACKET	3.5
2	1	3/4 107 3" PIPE CLAMP	2.5
3	4	2" x 5/8" LG MULTI-RIM BOLT	0.5
4	1	1/2" x 9" (S R 0'9" LG) (PER DETAIL A)	3.0
5	1	3/4" x 3" x 3" G.S. PLATE	2.0
BUNDLE & TAG FC-49			12.0
TOTAL WEIGHT			23.4



LA SALLE COUNTY STATION
 UNIT-2
 COMMONWEALTH EDISON COMPANY
 CHICAGO, ILLINOIS

VICTORY B. PERACERRADA
 REGISTERED PROFESSIONAL ENGINEER
 OF ILLINOIS

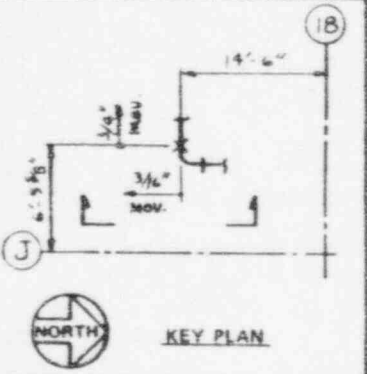
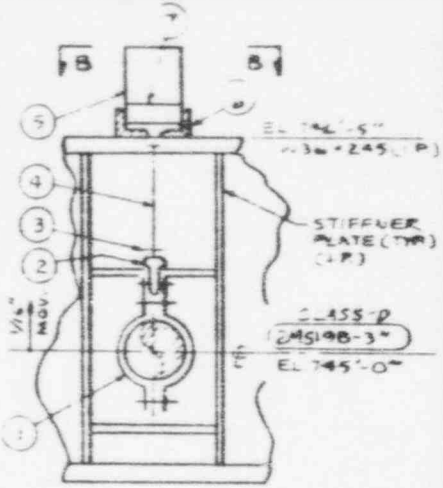
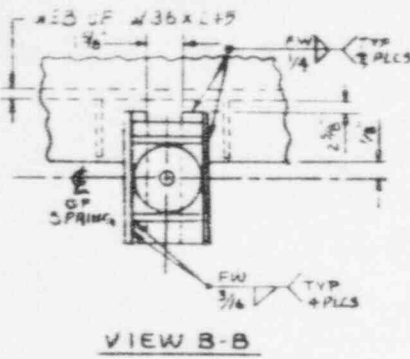
SARGENT & LURDY
 CHICAGO 676A

DRAWING NO. 4519-280TS
 SHEET 1 OF 1

NO SCALE
 PROJECT NO. 4519-00

DWG A 11/17/81 04-21-81

CHS-818



SOURCE	LOAD (LBS)	F _y
OPERATING (A)	68	68
DESIGN (B)	68	68
EMERGENCY (C)	-	-
FAULTED (D)	68	68
HYDRO TEST (T)	64	64

BILL OF MATERIAL				REVISION	DATE	BY	DESCRIPTION	WEIGHT (LBS)
ITEM	QUANTITY	FIG. NO. OR PART NO.	DESCRIPTION					
1			COMPONENT SUPPORT ASSEMBLY CONSISTING OF					
1	1	295	3" Ø DOUBLE BOLT PIPE CLAMP				3.0	
2	1	290	1/2" WELDLESS EYE NUT				1.0	
3	2		1/2" HEX NUT					
4	1	140	1/2" x 0-11 1/2" LG ROD TFL				0.5	
5	1	B 268	SIZE "0", TYPE "E" HL=72.5 CL=74				7.0	
6	2		< 1 1/2 x 1 1/2 x 1/4 0-0" LG				4.0	
7	2		< 1 1/2 x 1 1/2 x 1/4 0-4" LG				2.0	
1			BUNDLE & TAG FC-49					
							17.5	TOTAL WEIGHT

WELD NO.	WELD PROCEDURE	EXAMINATION PROCEDURE

REFERENCE DRAWINGS	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.
	M-900(SH 22)	K						
	M-388	C						

LOADS (LBS.)				
DESIGN	OPERATING	HYDRO TEST	EMERGENCY	FAULTED
		SEE LOAD TABLE		

REV.	DATE RECD.	PREPARED	REVIEWED	APPROVED	FILM
A	4-21-81	S. J. ...	C. ...	H. ...	

PURPOSE FOR E & F SPECS (I-2530 & I-2918)
CED G-612

END REVIEW
PIPE CLASS D



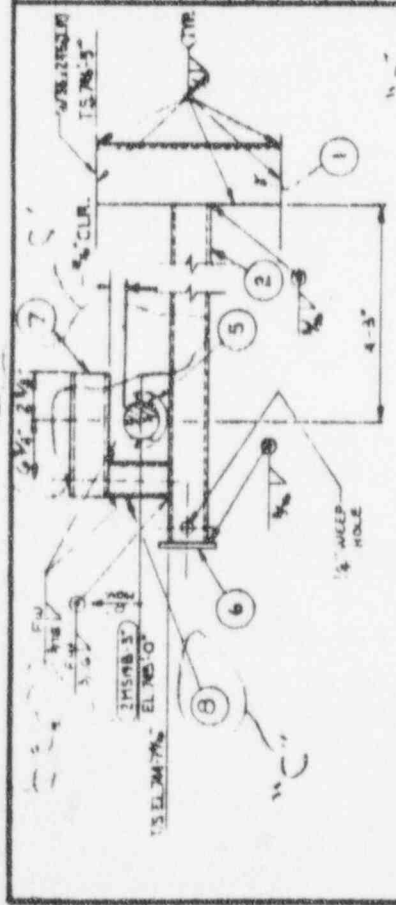
LA SALLE COUNTY STATION
UNIT-2
COMMONWEALTH EDISON COMPANY
CHICAGO, ILLINOIS

NUCLEAR SAFETY RELATED

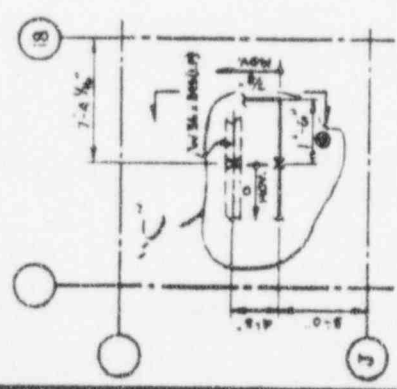
NO SCALE
PROJECT NO. 4267-00

DRAWING NO. M09-MS19-2808V A
SHEET 1 OF 1

SARGENT & LUNDY
CHICAGO
677A



SECTION



KEY PLAN

SEV. LOADS (LBS)	F
LEVEL	90
REPEATING	0
SECTION	1-3
EMERGENCY	-25
FAULTED (%)	0
HYDRO-TEST (T)	0

REFERENCE DRAWINGS	DMG. NO.	REV.	DMG. NO.	REV.	DMG. NO.	REV.	DMG. NO.	REV.
2 MS-BI MP 480 (7)	H-900	SIZE	M-380	C				
REV DATE RLD	PREPARED	REVIEWED	APPROVED	FILM	DRAWINGS RELEASE RECORD			
A 4-21-81	G. Lippert	J. P. ...	...	...	OUTPUT: 3-27-81			
B 5-4-82	...	...	...	...	...
C 7-28-82	...	...	...	...	...
FROZEN					PURPOSE: REV PER ECN # F17-3006-LS, REF C			
REVISION TO THIS MANUAL REQUIRES PROJECT MANAGER APPROVAL					FOR 'D' SPEC J-2530			

BILL OF MATERIAL		DESCRIPTION		COMPONENT WEIGHT	
FIG. NO. OR PART NO.	COMPONENT SUPPORT ASSEMBLY	CONSISTING OF	DELETED	DELETED	DELETED
1 2	L7.4 x 1/2" x 2'-9 1/4" LG.	TS 4 x 4 x 1/2" x 3'-2" LG.	DELETED	DELETED	DELETED
2 1	TS 4 x 4 x 1/2" x 3'-2" LG.	3" PROTECTION SADDLE	DELETED	DELETED	DELETED
3	DELETED	1/2" x 3" CS.B. 0'-5" LG.	DELETED	DELETED	DELETED
4	DELETED	TS 2" x 2" x 1/4" x 0'-11" LG.	DELETED	DELETED	DELETED
5 1	143	TS 2" x 2" x 1/4" x 0'-6 1/2" LG.	DELETED	DELETED	DELETED
6 1	143	TS 2" x 2" x 1/4" x 0'-6 1/2" LG.	DELETED	DELETED	DELETED
7 1	143	TS 2" x 2" x 1/4" x 0'-6 1/2" LG.	DELETED	DELETED	DELETED
8 1	143	TS 2" x 2" x 1/4" x 0'-6 1/2" LG.	DELETED	DELETED	DELETED
BUNDLE / TAG FC-49			TOTAL WEIGHT 228.4		
WELD NO.			EXAMINATION PROCEDURE		
DESIGN			LOADS (LBS)		
OPERATING			HYDRO TEST		
EMERGENCY			FAULTED		
SEE LOAD TABLE			SEE LOAD TABLE		



LA SALLE COUNTY STATION
 UNIT-2
 COMMONWEALTH EDISON COMPANY
 CHICAGO, ILLINOIS

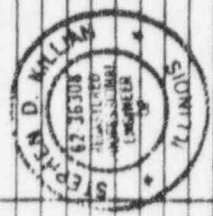
REVISED PER ECN # F17-0247, L9
 1,4857.00

SUPPORT NO. MS19-2510 X
 MOB. 679A

SHEET 1 OF 1

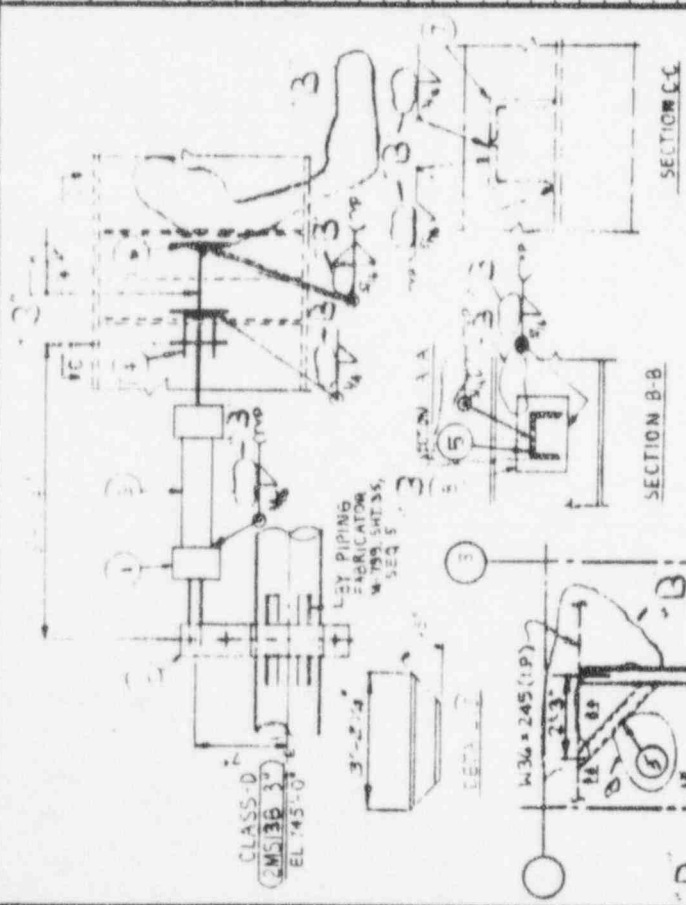


ITEM	FIG. NO. OR PART NO.	DESCRIPTION	QUANTITY	WEIGHT (LBS.)
1		COMPONENT SUB-ASSEMBLY		
1	8034-04	PSA-3 ADAPTER ASSY	1	6.5
2	5A-9B-2	3" PIPE CLAMP	2	20
3	1 1/2" EXT PIPE SCH. 40, 2'-10" LG		1	8.0
4	1805246	PSA-3 REAR BRACKET	1	3.5
5	53441	3-2 1/4 LG. PER DET. 5	1	130
6	41423	4-2 1/2 LG. PER DET. 5	1	54
7	23478	3-1 1/2 LG. PER DET. 5	1	76
8	23479	2-1 1/2 LG. PER DET. 5	1	70
9		BUNDLE & TAG	1	188.0
		FC-45		



TOTAL WEIGHT
188.0

REV 'B' PER EON-FUT-0737-LS (4247-09)
SUPERSEDES REV 'A' 0889-48



SEV. LEVEL	LOADS (LBS.)	FK
OPERATING	200	1
EMERGENCY	375	1
FAILED (D)	18	1
HYDRO-TEST (T)		

REFERENCE DRAWINGS	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.	DWG. NO.	REV.
JMS-31 NP 480	5-238	N	3-4-81					
DATE RCD	4-21-81		5-4-82					
PREPARED	John J. ...		...			
REVIEWED	C. ...							
APPROVED	D. ...							
FILM								

OUTPUT: 3-4-81

FROZEN
REVISION TO THIS DRAWING REQUIRES PROJECT MANAGER APPROVAL

PURPOSE FOR RECORD & FILE

LA SALLE COUNTY STATION
UNIT - 2
COMMONWEALTH EDISON COMPANY
CHICAGO ILLINOIS

NUCLEAR SAFETY RELATED

NO SCALE
PROJECT NO. 4267-00

SUPPLY NO. 1519-2811X
SHEET 1 OF 1

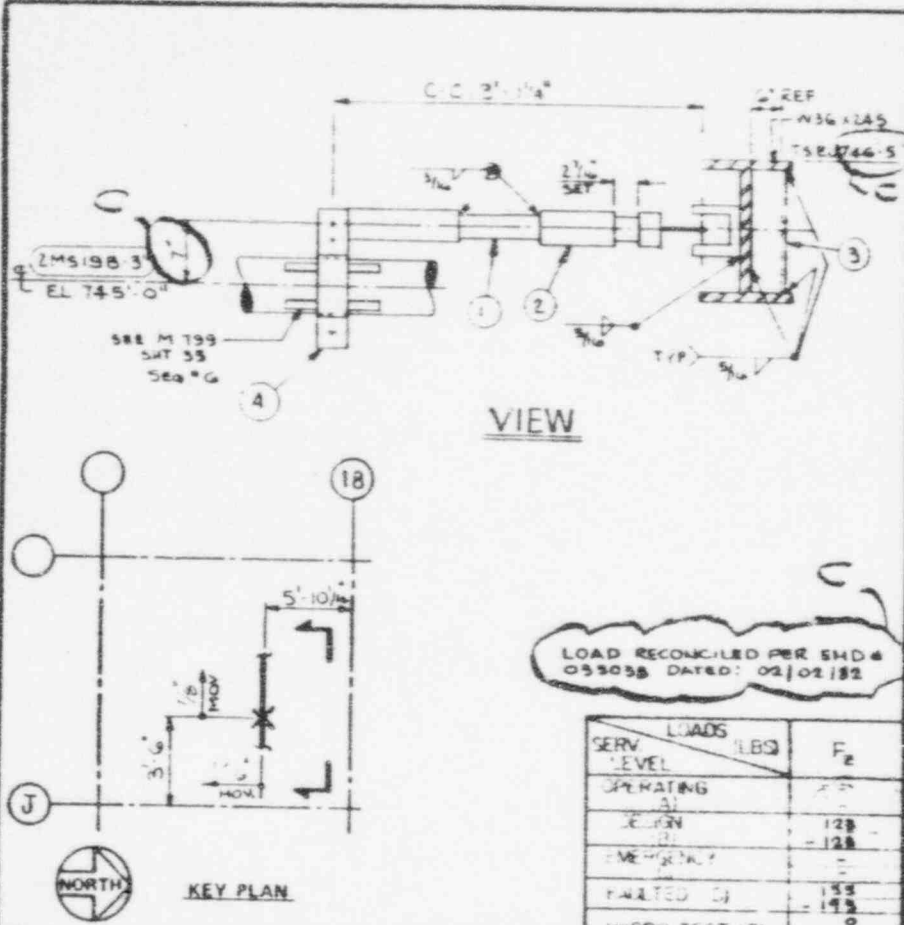
SARGENT & LURDY
CHICAGO 600A

VICTORY G. PENACERRADA
REGISTERED PROFESSIONAL ENGINEER
ILLINOIS

PE SEAL

PIPE CLASS C

REV A DATED 04-21-81



LOAD RECONCILED PER SHD 4
099038 DATED: 02/02/82

SERV LEVEL	LOADS (LBS)	F ₂
OPERATING (A)	128	-128
DESIGN (B)	128	-128
EMERGENCY (C)	155	-155
FAULTED (D)	155	-155
HYDRO-TEST (E)	0	0

BILL OF MATERIAL				COMPONENT WEIGHT	
ITEM	QUAN	FIG NO OR PART NO	DESCRIPTION	WEIGHT (LBS)	
			COMPONENT SUPPORT ASSEMBLY CONSISTS OF:	181	
1	1		2 1/2" EXT PIPE SCH XXS, 2'-5 1/2" LG	6.0	
2	1	180104	MECH SHOCK ARRESTOR PER PSA 1/4	5.0	
		180157	TRANSITION TUBE KIT	0.61	
		180158	REAR BRACKET	0.5	
		180159	FORWARD ADAPTER	9.23	
3	2		LG X 4 x 1/2, 2'-9 1/4" LG	90.0	
4	1	3A-9.9-2	3" PIPE CLAMP PER PSA (3)	29.10	
1			BUNDLE & TAG FC-49		
WELD NO.				WELD PROCEDURE	EXAMINATION PROCEDURE
LOADS (LBS.)				DESIGN	OPERATING
				HYDRO TEST	EMERGENCY
				FAULTED	
SEE LOAD TABLE				TOTAL WEIGHT	
				131.44	



REV'D PER ECH & FJT-06/2

REFERENCE DRAWINGS	DWG NO	REV	DWG NO	REV	DWG NO	REV	DWG NO	REV
	M-900	SRT 22	K	M-476		M-388	C	5-898
								N

DRAWING RELEASE RECORD					OUTPUT:	
REV	DATE RELD	PREPARED	REVIEWED	APPROVED	FILM	END REVIEW
A	4-21-81	A. Raby / J. Schell	J. Schell	J. Schell		SHD
B	5-17-82	A. Raby / J. Schell	J. Schell	J. Schell		
C	6-3-82	A. Raby / J. Schell	J. Schell	J. Schell		

FROZEN
REVISION TO THIS MYLAR
REQUIRES PROJECT MANAGER
APPROVAL

PURPOSE: REVISED PER ECNE PUT-0951-L5 (REV. C)

EMD REVIEW

PE SEAL

CLASS D

LA SALLE COUNTY STATION
UNIT-2
COMMONWEALTH EDISON COMPANY
CHICAGO ILLINOIS

NUCLEAR SAFETY RELATED

NO SCALE
PROJECT NO 4267 00

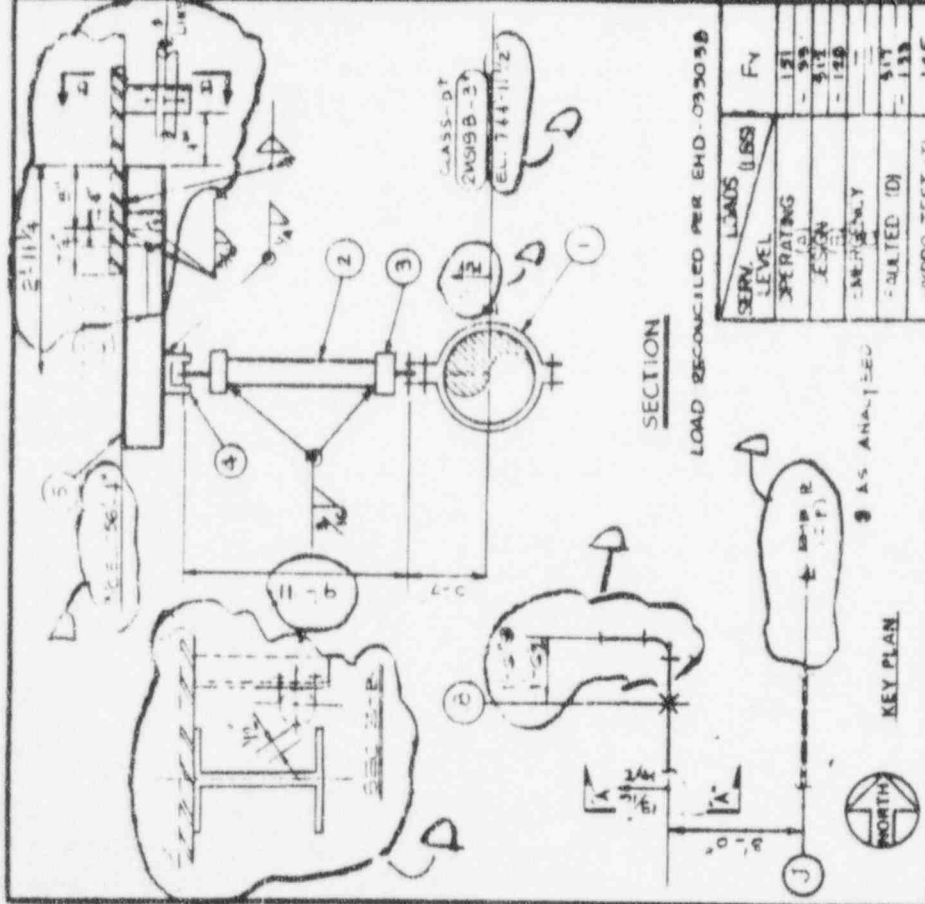
SUPPORT NO. MOB-MS19-28135

REV. C

SHEET 1 OF 1

SARGENT & LUBBY
CHICAGO
682A

SCALE: 1/8" = 1'-0"



REV	DATE	RELD	PREPARED	REVIEWED	APPROVED	FILM
A	4-21-81		M. Young / S. K. Suber			
B	5-3-82		James Neff			
C	6-9-82		D. S. Nagel			
D	07-01-82					

DRAWING RELEASE REQUIRES REC'D RATE - 2-2-82, EMD ACTS-03505B
 PURPOSE: REVISED PER EMD-03505B (REV D.)
APPROVAL
 APPROVED BY: [Signature]
 PROJECT MANAGER: [Signature]
REVISION TO THIS MYLAR REQUIRES PROJECT MANAGER APPROVAL
FROZEN

FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT WEIGHT (LBS)
1	COMPONENT SUPPORT ASSEMBLY	20.1
1	3" φ PIPE CLAMP	34.65
2	1 1/2" φ SCH 80 EXT. PIPE, 9'-6 1/2" LG	6.14
3	2 INCH DIA P3A-3 FORWARD ADAPTER ASSY	3.19
4	1 B0155805 P3A-3 REAR BRACKET	44.41
5	W8 X 13, 3'-5" LG	6.91
6	2' X 1/2" X 1/4" X 0.7 3/8" LG	
* SUPPLIED BY BULK OESDA		
BUNDLE & TAG FC-49		
WELD NO.		
WELD PROCEDURE		
EXAMINATION PROCEDURE		
DESIGN		
OPERATING LOAD TABLE		
HYDRO TEST		
EMERGENCY		
FAULTED		
LOADS (LBS)		
TOTAL WEIGHT		115.29



LA SALLE COUNTY STATION
 UNIT-2
 COMMONWEALTH EDISON COMPANY
 CHICAGO, ILLINOIS

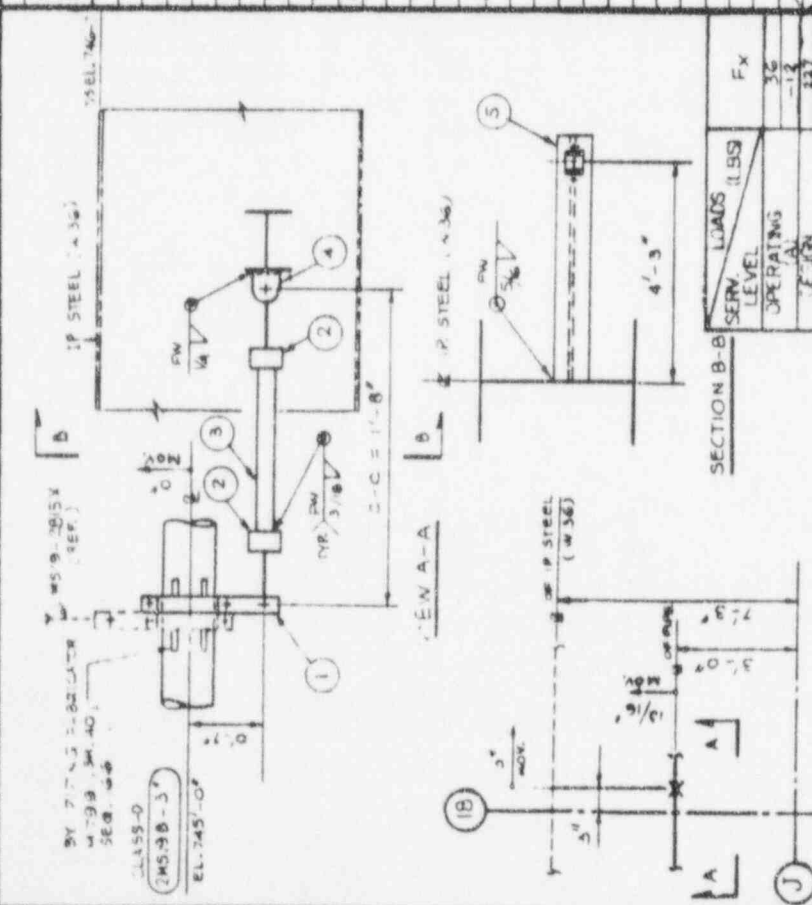
NUCLEAR SAFETY RELATED

NO SCALE PROJECT NO 4387-00
 SUPPORT NO. MS19-2815X
 REV. D
 SHEET 1 OF 1

SARGENT & LUNDY
 CHICAGO
 684A



ITEM NO.	FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT WEIGHT (LB)
BILL OF MATERIAL			
COMPONENT SUPPORT ASSEMBLY			
CONSISTING OF			
1	SA-913-2	3" Ø PIPE CLAMP	20
2	BO134-04	PSA-3 ADAPTER ASSY.	6.0
3		1/2" Ø SCH. 40 EXTENSION PIPE 1'-3" LG.	3.5
4	BO158-08	PSA-3 REAR BRACKET	3.0
5		W 4 X 13, 4'-6 7/8 LG.	59.0
TOTAL WEIGHT			91.5



DESIGN	OPERATING	HYDRO TEST	EMERGENCY	FAULTED
	SPE	LOAD	TABLE	
WELD PROCEDURE				
EXAMINATION PROCEDURE				
WELD NO.				
LOADS (LBS)				
OPERATING				
HYDRO TEST				
EMERGENCY				
FAULTED				
END REVIEW				



LA SALLE COUNTY STATION
UNIT - 2
COMMONWEALTH Edison COMPANY
CHICAGO, ILLINOIS

NUCLEAR SAFETY RELATED

NO SCALE	DRAWING NO.	REV.
PROJECT NO. 4267-30	MOB	
	MS 19-2816 X	B
	SHEET 1 OF 1	

SARGENT & Lundy
CHICAGO, ILLINOIS
685A

REV	DATE	RELD	PREPARED	REVIEWED	APPROVED	FILM
A	4-21-81		M. Young, E. H. Smith			
B	6-3-82		C. S. Nason			

DRINKING RELEASE RECORD END ACCN # 035038

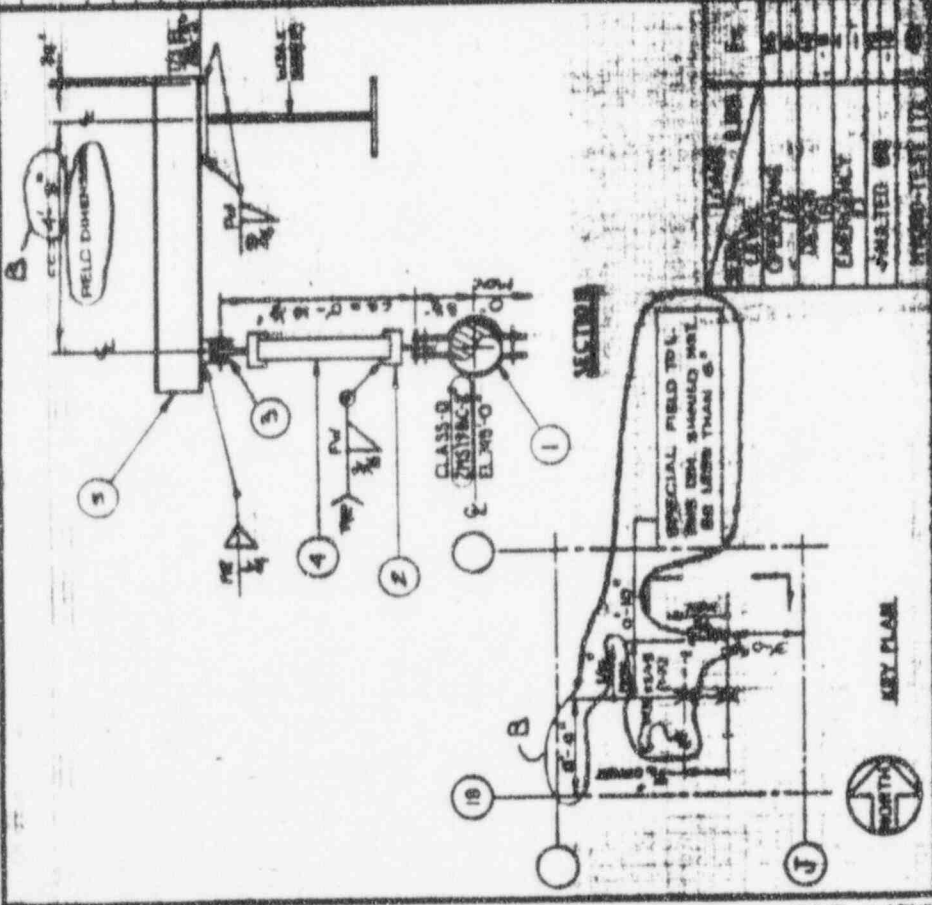
PURPOSE: REVISED PER ECN # FUT-0931 (REV)

FOR "D" SPEC. F-2550

CEB 5733

BILL OF MATERIAL

FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT SUPPORT ASSEMBLY	WEIGHT (LBS)
1	2" PIPE CLAMP	2" PIPE CLAMP	3.0
2	BEAM / FORWARD ADAPTOR PER PSA-16	BEAM / FORWARD ADAPTOR PER PSA-16	1.5
3	BEAM / BEARER PER PSA-16	BEAM / BEARER PER PSA-16	0.8
4	WELDED JOINT	WELDED JOINT	1.0
5	WELDED JOINT	WELDED JOINT	0.0



REV.	DATE	BY	CHKD.	REV.	DATE	BY	CHKD.
1	04-21-81	J. J. [Signature]	[Signature]				
2	05-11-81	[Signature]	[Signature]				

DESIGN: OPERATING HYDRO. TEST PROCEDURE FOR LONG TUBE
 WELD NO. WELDS PROCEDURES EXAMINATION PROCEDURE
 LOADS (LBS.) OPERATING HYDRO. TEST PROCEDURE FOR LONG TUBE
 DESIGN: OPERATING HYDRO. TEST PROCEDURE FOR LONG TUBE
 EMB. REVIEW: [Signature]

LA SHELLS QUALITY SYSTEM
 COMMERCIAL DESIGN CENTER
 CANTON, MASSACHUSETTS

NUCLEAR SAFETY RELATED

PROJECT NO. 4884
 DRAWING NO. 4884-100
 SHEET NO. 1 OF 1

PERMITS & LICENSES
 4884

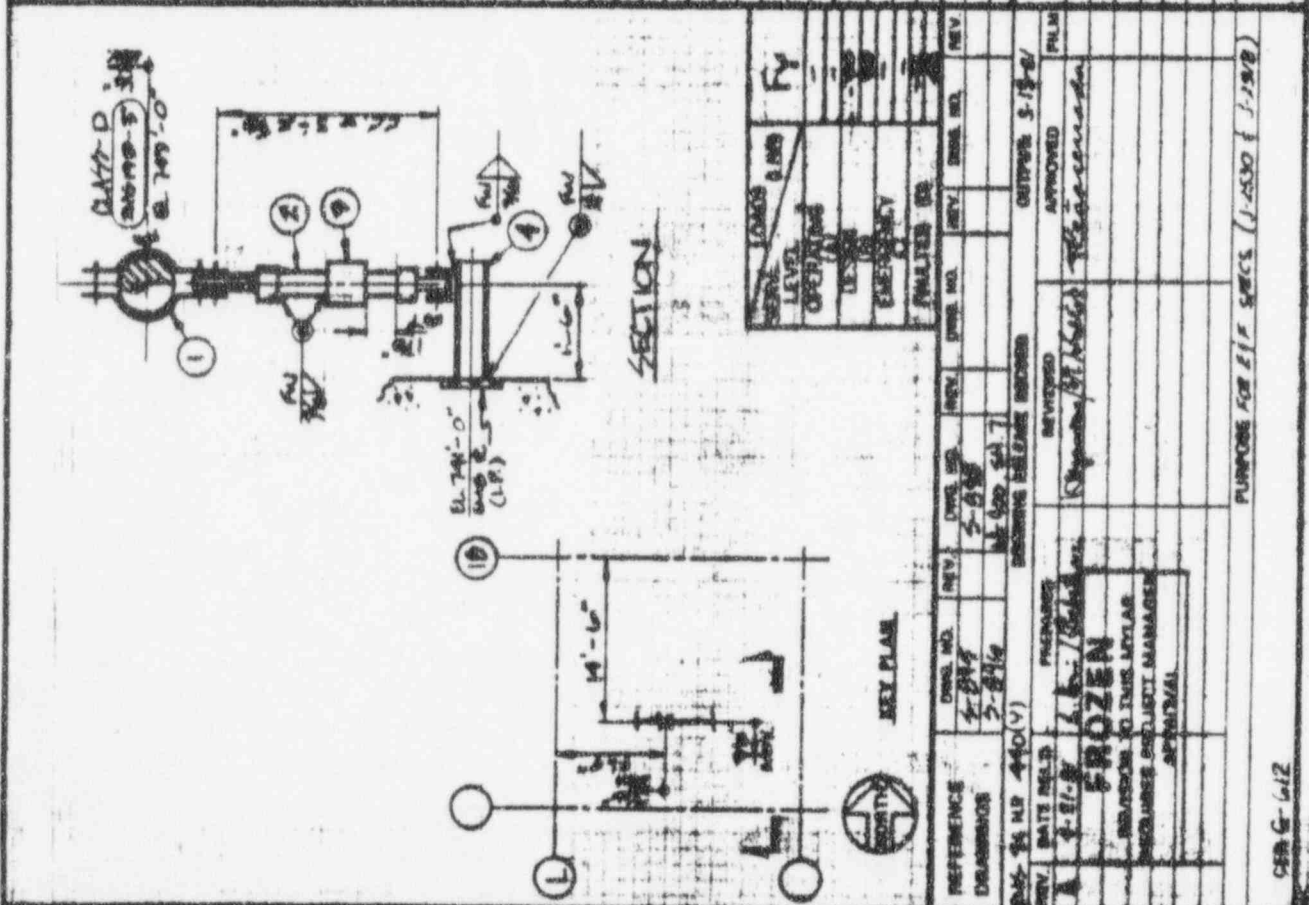
PERMITS & LICENSES
 4884

REV. A DATED 04-21-81
 AS RECEIVED FROM QUADRA

SUBSYS 2MS-518
 PFR 81-CAD-0-139



ITEM	QTY	FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT WEIGHT (L.B.)	TOTAL WEIGHT
1	1	1	COMPONENT SUPPORT ASSEMBLY CONSISTING OF		
1	1	1	3" Ø PIPE CLAMP	3.0	
2	1	1	3/4" Ø SCH. 40S GAL. PIPE 1'-11 1/2" LG.	5.0	
3	1	1	SECTION 2A 1/2" MESH SUCK WHEEL BOTTOMS 2A 1/2" TRANSITION TUBE KIT	4.0	
4	1	1	SECTION 2B 1/2" RING BUCKET	1.5	
5	1	1	WALTS A 1'-0" LG.	0.5	
6	1	1	BUNDLE (TAG FC-49)	21.5	



REV. 6 DATED 04-21-61
 AS RECEIVED FROM QUADRIX

LA BALLE COUNTY SYSTEM
 UNIT - 2
 COMPONENT IN DESIGN COMPANY
 DESIGN, ELLIOTT

NUCLEAR SAFETY RELATED

SCALE: 1" = 1'-0"
 PROJECT NO: 408109
 APPROVAL: 90
 DATE: 1-6-61
 DRAWN BY: A

SARGENT & Lundy

LA BALLE COUNTY SYSTEM UNIT - 2

COMPONENT IN DESIGN COMPANY DESIGN, ELLIOTT

NUCLEAR SAFETY RELATED

SCALE: 1" = 1'-0"
 PROJECT NO: 408109
 APPROVAL: 90
 DATE: 1-6-61
 DRAWN BY: A

SARGENT & Lundy

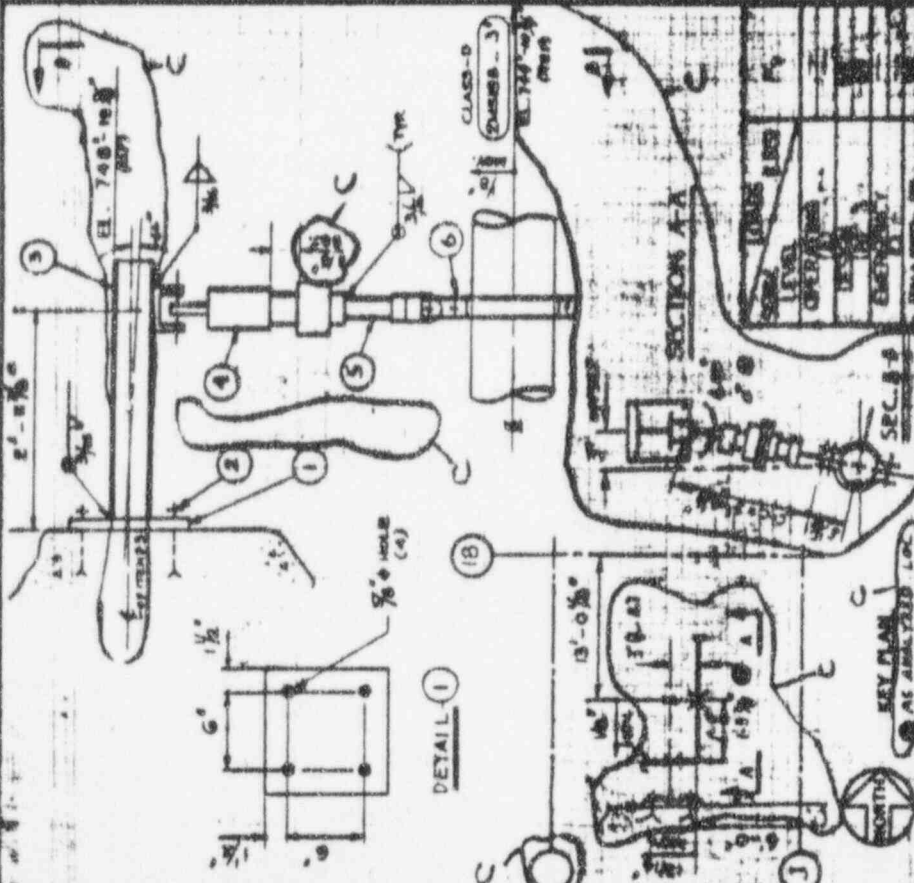
DESIGN	OPERATING	LOADS (L.B.)	EMERGENCY	FAULTED
SEE LOAD TABLE	SEE LOAD TABLE			
DESIGN	OPERATING	LOADS (L.B.)	EMERGENCY	FAULTED
SEE LOAD TABLE	SEE LOAD TABLE			
DESIGN	OPERATING	LOADS (L.B.)	EMERGENCY	FAULTED
SEE LOAD TABLE	SEE LOAD TABLE			

REV. DATE REL'D
 1-6-61
 1-6-61
 1-6-61
 1-6-61

DESIGNED BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

PURPOSE FOR E.I.F. SPECS (1-450 & 1-128)

CSB G-612



ITEM	QTY	FIG. NO. OR PART NO.	DESCRIPTION	COMPONENT WEIGHT (LBS.)
1	1		COMPONENT SUPPORT ASSEMBLY CONSISTING OF 1/2" x 9" CSB, 0'-9" LG. (PER DETAIL - 1)	1146
2	4		1/2" x 5 7/8" HILTI KWIK-BOLTY	128
3	1		W 4 x 13, 3'-2" LG.	41.16
4	1		PSA - 1/4 SNUBBER ASSY. WITH 1/2" x 9" CSB	9.6
5	1		PSA - 1/4 REAR BRACKET	0.42
6	1		PSA - 1/4 TRANSITION TUBE KIT	1.44
7	1		3/4" x 50H 40 EXT. PIPE, 1'-9"	138
8	1		3" x 3" PIPE CLAMP	3.04



REVISIONS

REV.	DATE	BY	DESCRIPTION
A	4-21-81	J.P.	REVISED PER BOM PUT-0249-15C
B	5-4-82	J.P.	
C	7-30-82	J.P.	

APPROVALS

DESIGNED: J.P. (Signature)
 CHECKED: J.P. (Signature)
 APPROVED: J.P. (Signature)

GENERAL NOTES:

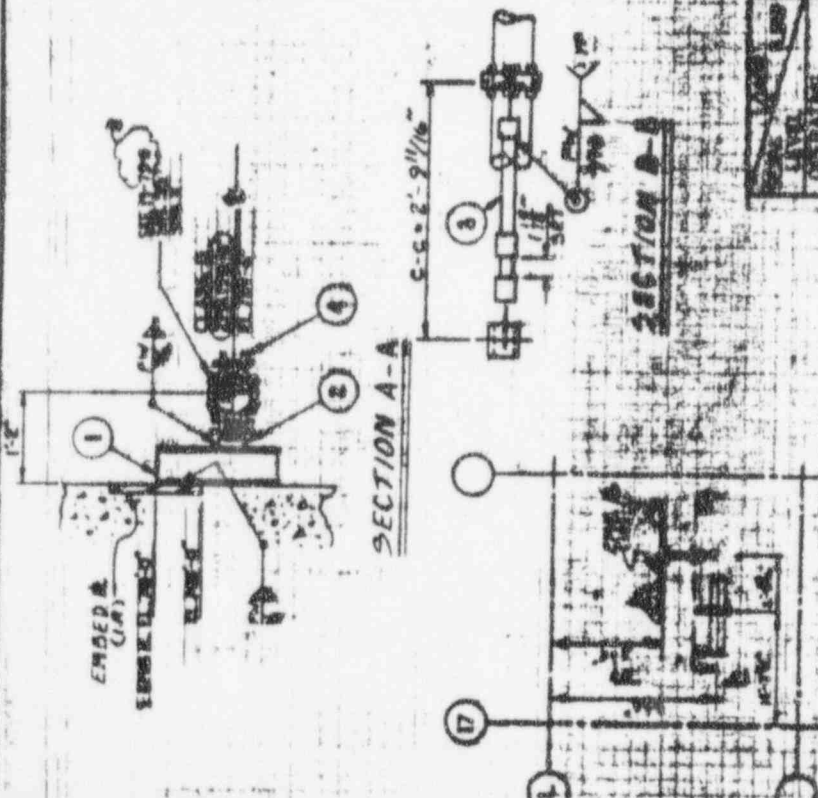
- 1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
- 2. MATERIALS SHALL BE AS SPECIFIED IN THE BOM.
- 3. SURFACES TO BE FINISHED AS SHOWN.
- 4. ALL WELDS SHALL BE TO THE REQUIREMENTS OF THE WELDING PROCEDURE SPECIFICATION (WPS) REFERENCED IN THE BOM.
- 5. THE ASSEMBLY SHALL BE CAPABLE OF WITHSTANDING THE DESIGN LOADS.

PROJECT INFORMATION:

PROJECT NO: MS19-2828 S
 SHEET NO: 1 OF 1
 DRAWING TITLE: NUCLEAR SAFETY RELATED

REV. A DATED 04-21-81
 RECEIVED FROM QUADREX

SUBSYS 248-818



BILL OF MATERIAL		FIG. NO. OR PART NO.	DESCRIPTION	WEIGHT (L.B.)	TOTAL WEIGHT
1	COMPONENT SUPPORT ASSEMBLY				
1	CONSISTING OF				
1	WELDED 1" - 3" L.G.			12.0	
2	FLA-10 PRESSURE ARGENTON			5.0	
3	TRANSFORMER TUBE KIT			2.8	
4	WELDED BRACKET			0.8	
5	SEE 2 FOR EXT. VIEW 1" L.B.			2.8	
5	BY D.S. PIPE CLAMP			3.0	



LA SALES BRANCH
GENERAL ELECTRIC
COMMERCIAL ENGINE DIVISION
CHICAGO, ILLINOIS

APPROVED BY: M. J. C. STONE

PROJECT NO. 12-209-01
DATE: 12-29-01

SARGENT & LORNEY

REV. B DATED 12-29-01
AS RECEIVED FROM CUSTOMER

CEP-M-120, Rev. B, 5/76, I-2530

