

**Florida
Power
CORPORATION**

INTEROFFICE CORRESPONDENCE

Nuclear Engineering
OFFICE

C2I
MAC

231-512
PHONE

SUBJECT: Crystal River Unit No. 3
Quality Document Transmittal - Analysis/Calculations
File: CALC

TO: Records Management - NR2A

The following analysis/calculation package is submitted as the QA Record copy:

DOCNO (FPC DOCUMENT IDENTIFICATION NUMBER)	REV	SYSTEM(S)	TOTAL PAGES TRANSMITTED
M-75-0013	0	MS	289 299 ⁶⁶ 9/23/94

TITLE

PIPING ANALYSIS CR-6 REV. 0: MAIN STEAM FROM
PEN. # 201 TO TURBINE STOP VALVE

KEYS (IDENTIFY KEYWORDS FOR LATER RETRIEVAL)

PIPING ANALYSIS, CR-6, MAIN STEAM, STOP VALVE

DIXREF (REFERENCES OR FILES - LIST PRIMARY FILE FIRST)

DWG: 305-753

VEND (VENDOR NAME)	VENDOR DOCUMENT NUMBER (DIXREF)	SUPERSEDED DOCUMENTS (DIXREF)
G/CI	CR-6 REV. 0	N/A

TAG

MSH-1, 79, 223	MSH-226, 9, 118	MSH-215, 219
MSH-2, 3, 4, 5	MSH-10, 120, 11, 12	MSH-14, 123, 15
MSH-50, 6, 7, 8	MSH-227, 13, 122	MSH-224, 225

PART NO.

COMMENTS (USAGE RESTRICTIONS, PROPRIETARY, ETC.)

9608140083 960807
PDR ADOCK 05000302
P PDR

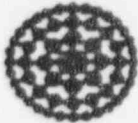
NOTE:

Use Tag number only for valid tag numbers (i.e., RCV-8, SWV-34, DCH-99), otherwise; use Part number field (i.e., CSC14599, AC1459). If more space is required, write "See Attachment" and list on separate sheet.

DESIGN ENGINEER	DATE	VERIFICATION ENGINEER	DATE	SUPERVISOR NUCLEAR ENG	DATE
Genevieve Cui	8/18/94	N/A		B. GUPTA	9/23/94

cc: MAR Office (If MAR Related) ☐ Yes ☒ No
MAR/Project File
Mgr., Nucl. Config. Mgt.
File (CALC) - FPES - "Original" w/attach
Mgr., Site Nucl. Eng. Serv. w/attach

Supervisor, Nuclear Document Control w/Plant Doc. Rev.
Eval. and Analysis / Calc. Summary
Plant Document Review Required ☐ Yes ☒ No
A/E ☐ Yes ☒ No
(If Yes, Transmittal attach)



Florida
Power
Corporation

PLANT DOCUMENT REVIEW EVALUATION

Page 1 of 1

DOCUMENT TYPE / NUMBER TO BE EVALUATED

PIPING ANALYSIS M-75-0013 REV. 0

PART I

INSTRUCTIONS: Calculations, Document Change Notices, and Plant Equipment Equivalency Replacements have the potential to affect plant documents. The Originator of any of these documents is required to determine which, if any, plant organizations should review the subject document for impact. The Originator should use the best judgment to make this determination based on the nature of the changes. If in doubt as to whether or not a plant organization should review a particular document, it is suggested that the subject organization be contacted.

The Originator is to check the appropriate boxes below and attach to the subject package as follows:

Calculations - Insert behind Analysis/Calculation Transmittal
DCNs - Insert behind DCN page 1
PEEREs - Insert behind PEERE page 2
CDDs - Insert behind CDD page 1

The above referenced document must be distributed as follows:

- | | |
|---|---|
| <input checked="" type="checkbox"/> No Review Required | <input type="checkbox"/> Supervisor, Operations Engineering & Support |
| <input type="checkbox"/> Senior Radiation Protection Engineer | <input type="checkbox"/> Manager, Nuclear Maintenance |
| <input type="checkbox"/> Manager, Site Nuclear Services | <input type="checkbox"/> Manager, Nuclear Plant Technical Support |
| | <input type="checkbox"/> Other(s): |

ORIGINATOR / DATE

Genevieve Cane' 8/18/94

SUPERVISOR / DATE

C. Blum High FOR B. GUTHERMAN 9/23/94

Upon completion of Part I, attach to the subject document, check "Plant Document Review Required" block, as applicable, and give to Nuclear Engineering Clerk for distribution.

CDDs - Distribute with Attachments

Calces - Distribute with Transmittal Memo, Summary - PEERE - Distribute with Attachments - DCNs - Distribute with Attachments and Drawings

PART II

INSTRUCTIONS: Upon receipt of the subject document, the assigned Reviewer enters the "Reviewing Department" name below, reviews the subject document for impact on plant procedures, and completes the evaluation below.

REVIEWING DEPARTMENT

PLANT REVIEW IMPACT EVALUATION: The above referenced document has been reviewed and evaluated as follows:

- ☐ No Action Required
- ☐ Action Required: The below listed document(s) is affected and requires revision and/or other actions as indicated (i.e., generate a new procedure, void a procedure, etc.)

DOCUMENTS / ACTIONS

REVIEWER / DATE

SUPERVISOR / DATE

Upon completion, forward evaluation form only to Nuclear Document Control (NDC2A)

* If the Supervisor or designee acts as the Originator or Reviewer, the applicable "Originator/Reviewer" block should be NA'd.

ANALYSIS/CALCULATION

DOC ID M-75-0013 ATT #

REV 0 SHEET 1 OF 22

CR-6

Main Steam from Pen. #201 to Turbine

Stop Valve

7/23/69
Rev. 1
12/10/70

DESIGN REVIEW CERTIFICATION

I, Santo Ferrarello, certify that I have independently reviewed
Responsible Engineer

the design for CR-6 Main Steam from Pen. #201 to Turbine Stop Valve
Structure, System, Component

of the Crystal River Unit #3, that is being designed for Florida
Nuclear Plant

Power Corporation, in accordance with the GAI DESIGN

REVIEW PROCEDURE; moreover, this design review has been conducted in such

manner that the information documented herewith does to the best of my

knowledge meet the design intent and has covered the following areas:

- ☒ Design Criteria
- ☒ Applicable Codes and Standards
- ☒ Calculation Approach
- ☒ Mathematics of Calculations or Computer Solution
- ☒ PSAR Commitments
- ☐ Other (See Attachment)

ANALYSIS/CALCULATION

DOC ID M-75-0013 ATT #

REV 0 SHEET 2 OF 22

S. F. Ferrarello

Name

Piping Engineer

Title

Piping Engineering (0430)
Department

January 7, 1975

Date

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	FLORIDA POWER CORPORATION	FILING CODE
	PROJECT	CRYSTAL RIVER UNIT #3	#203-071 PAGE 2 OF 2
SYSTEM	Main Service		ORIGINATOR J. S. Smith
CALCULATION FOR	PIPELINE ANALYSIS REVIEW SUMMARY		DATE 1/9/75
			REVISOR J. Ferrelli
			DATE 1/9/75

1. Drawing number PI-225-753

2. Type analysis needed - Thermal Yes Seismic Yes Deadload Yes

3. Analysis Identification Code 5-12-1

A. Check Isometric Drawings

ANALYSIS/CALCULATION

DOC ID # M-8-0013 ATT #

REV 0 SHEET 4 OF 22

1. Check hangers, restraints, anchors, sheet numbers, directions and allowables to see if indicated on drawing properly.

	PT. A	PT. B	DES. PRESS.	DES. TEMP.	OPER. PRESS.	OPER. TEMP.	LINE SPEC.	MAT'L SPEC.	COLD MOD. E X 10 ⁶	HOT MOD. E X 10 ⁶	COFF. EXP.
LINE 1	128	1050	600	925	590	600-1	A106 Gr. B	27.9	25.7	4.5	
LINE 2											
LINE 3											
LINE 4											

3. PIPE DATA

LINE NO.	1	1	1	1			
Nom. Dia.	24"	10"	6"	24"			
O.D.	24.0	10.75	6.625	24			
Sched.	60	60	40	80			
Wall th.	.968	.530	.1250	1.218			
Pipe lb/ft	238	54.7	18.97	297			
Cont. lb/ft	5.3	2.0	1.0	5			
INS. lb/ft	32.4	14.81	9.63	35			
Total wt. lb/ft	275.7	71.51	29.00	335			

4. Sign drawing

5. Send drawing to analyst for computer input

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT FLORIDA POWER CORPORATION	FILING CODE	
	PROJECT CRYSTAL RIVER UNIT	NO. <u>100</u>	PAGE <u>3 OF 3</u>
SYSTEM		ORIGINATOR <u>John T.</u>	
CALCULATION FOR OR CHECK OF DEADLOAD AND SEISMIC ANALYSIS		DATE <u>11/9/95</u>	
<p>A. DEADLOAD</p> <p>1. Check support orientation.</p> <p>2. Check analysis modelling assumptions.</p> <p>3. List errors in geometric and physical data</p> <p><i>Pipe Schedule should have increased from 3.00" to 1.218" for app. moment</i></p> <p><i>7' pipe at question A-2</i></p> <p>B. SEISMIC</p> <p>1. Check support orientations</p> <p>2. Check analysis modelling assumptions</p> <p>3. List errors in geometric and physical data</p> <p><i>Same as at A-2 above</i></p> <p>4. Check modelling of mass points <i>OK</i></p> <p>5. Check QLD card input <i>See 11.5 - 11.9</i></p> <p>5a. List the number of modes used</p> <p>Natural frequency of the highest mode used is</p> <p>5b. Are the acceleration multipliers</p> <p>1.0 in X direction</p> <p>0.667 in Y direction</p> <p>1.0 in Z direction</p> <p>5c. Is the earthquake severity .05 G's</p> <p>5d. List the Floor Response Curve Name</p> <p>Is this choice of curve correct?</p>		<p>ANALYSIS/CALCULATION</p> <p>DOC ID <u>M-8-0013</u> ATT <u>1</u></p> <p>REV <u>0</u> SHEET <u>15</u> OF <u>22</u></p> <p><i>908/10/99</i></p> <p><i>Conservative</i></p> <p><i>21.1.11</i></p>	

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.		CLIENT FLORIDA POWER CORPORATION		FILING CODE	
		PROJECT CRYSTAL RIVER UNIT 7		NO. 120-175 PAGE 2 OF 5	
SYSTEM <i>NEW STATION</i>				ORIGINATOR <i>J. F. Jones</i>	
CALCULATION FOR CR - 6 CHECK OF THERMAL AND PRESSURE STRESS				REVIEWER <i>J. Ferrello</i>	
C. SEISMIC ANCHOR MOVEMENT STRESS				DATE 1/7/75	
1. If analysis is performed, check anchor displacements on input. 2. If analysis is not performed, list reason. <i>CR-3 was analyzed and the loads were not significant. CR-6 is very similar to CR-3</i>					
D. LONGITUDINAL PRESSURE STRESS					
PIPE SIZE	SCH.	LINE PRESSURE	X	FLOW AREA METAL AREA	= LONGITUDINAL PRESSURE STRESS
24"	60	925	X	$\frac{382}{70}$	= 5048 PSI
10"	60	925	X	$\frac{74.7}{17.1}$	= 4292 PSI
6"	40	925	X	$\frac{28.9}{5.52}$	= 4791 PSI
E. THERMAL <i>Pressure at A.L.E. 4/4/74</i>					
1. Check support orientations <i>OK</i>					
2. Check analysis modelling assumptions <i>OK</i>					
3. List errors in geometric and physical data <i>Same as A-2 Page 2</i>					
4. If thermal is not performed, list reason.					

ANALYSIS/CALCULATION
 DOC ID # *M-75-0013* ATT # _____
 REV *0* SHEET *6* OF *22*

Consistent error

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT FLORIDA POWER CORPORATION	FILING CODE	
	PROJECT CRY TAL RIVER UNIT #3	FIGURE 172	PAGE 5 of 5
SYSTEM MAN S-LIM		ORIGINATOR A. L. Schmitt	
CALCULATION FOR CR - 6 STRAIN SUMMARY		DATE 4/25/75	
		REVIEWER J. Fernandez	
		DATE 1/7/75	
<p>ANALYSIS IDENTIFICATION: CR-6</p> <p>REFERENCE NOMENCLATURE: PI-305-753</p> <p><u>PRIMARY STRESS SUMMARY (DEADLOAD + PRESSURE + SEISMIC)</u></p> <p>Max. Long'l. Pressure Stress —</p> <p>Max. Deadload Stress at Pt. <u>75</u></p> <p>Max. Seismic Stresses</p> <p>(X-Y Design Quake) <u>3921</u> PSI at Pt. <u>116</u></p> <p>(Y-Z Design Quake) <u>2521</u> PSI at Pt. <u>116</u></p> <p>Seismic = 2 (Max. Seismic)</p> <p>= 2 (<u>3921</u> PSI)</p> <p>$S_H = 15,000$ PSI</p> <p>$1.2 S_H = 1.2 \times 15,000$ PSI = <u>18,000</u> PSI</p> <p>$1.2 S_H > S_{max}$</p> <p><u>18,000</u> PSI > <u>17,756</u> PSI</p> <p><u>SECONDARY STRESS SUMMARY (THERMAL + SEISMIC ANCHOR MOVEMENT)</u></p> <p>$SA = f[(1.25 S_c + .25 S_h)]$</p> <p>= $1[(1.25)(15,000 \text{ PSI}) + (.25)(15,000 \text{ PSI})]$</p> <p>= $1[22,500 \text{ PSI}]$</p> <p>= <u>22,500</u> PSI Allowable Stress</p> <p>Max. Thermal Stress @ Pt. <u>97</u></p> <p>Max. Seismic Anchor Movement Stress (where required)</p> <p>Allowable Stress > Max. Analysis Stress</p> <p><u>22,500</u> PSI > <u>13,179</u> PSI</p> <p>*Seismic Anchor Movement Stress is negligible (less than 10%) in comparison to the Allowable Stress.</p>		<p>RESULTS</p> <p>+ <u>5075</u> PSI</p> <p>+ <u>2271</u> PSI</p> <p>= <u>3021</u> PSI</p> <p><u>11,240</u> PSI</p> <p>+ <u>6,516</u></p> <p>$S_{HA} = 17,756$</p> <p>= <u>13,179</u> PSI</p> <p>= <u>*</u> PSI</p> <p>$S_{max} = 13,179$ PSI</p>	

ANALYSIS/CALCULATION

DOC ID # M-75-0013 ATT #

REV 0 SHEET 7 OF 22

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	FLORIDA POWER CORPORATION	
	PROJECT	CRYSTAL RIVER UNIT #3	
SYSTEM		NO.	PAGE
		50	50
CALCULATION FOR		ORIGINATOR	
CR - 1 - EVALUATION OF STRESSES AND LOADS		1 - Edmundo	
		DATE 1/2/95	
		REVIEWER	
		S. J. J. J.	
		DATE 1/2/95	
<p>A. EVALUATION OF STRESSES</p> <p>CASE 1) STRESS IS GREATER THAN ALLOWABLE</p> <p>a. If input errors cause high stress, return to analyst for reanalysis.</p> <p>b. If high stress exists with no input errors, return to support designer.</p> <p>CASE 2) STRESS IS LESS THAN ALLOWABLE</p> <p>a. If there are no input errors proceed to Support Load Summary.</p> <p>b. If input errors exist, engineer is to evaluate their effect and to decide whether they are significant enough to warrant a reanalysis.</p>			
<p>B. EVALUATION OF LOADS</p> <p>1. List all supports on load sheets. ✓</p> <p>2. Record loadings on load sheets. ✓</p> <p>3. Send load sheets to designers for Independent Design Review of the the supports. ✓</p>			

ANALYSIS/CALCULATION

DOC ID # M-75-0013 ATT #

REV 0 SHEET 8 OF 22

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT FPC	FILING CODE	
	PROJECT CR3	W.D.	PAGE 1 of 3
SYSTEM CR-6 VARIOUS STEAM		ORIGINATOR W.C. Johnson	
CALCULATION FOR TABULATION OF HIGHEST STRESS POINTS		DATE 1/7/75	
		REVIEWER J. Johnson	
		DATE 1/7/75	
<p>TO MEET THE A.E.C. PIPE RUPTURE CRITERIA (OUTSIDE CONTAINMENT) THE POINTS IN THIS ANALYSIS WITH THE HIGHEST STRESS HAVE BEEN TABULATED (SEE PAGE 3 OF 3). AN EXPLANATION OF EACH OF THE COLUMNS IS THE FOLLOWING:</p> <ol style="list-style-type: none"> 1. LISTING BY RANK OF HIGHEST STRESS POINT TO LOWEST IN ACCORDANCE WITH COLUMN 12 2. ANALYSIS POINT NUMBER 3. THERMAL EXPANSION STRESS FOR POINT SHOWN IN COLUMN 2 4. THERMAL STRESS DIVIDED BY 18000 PSI THEN MULTIPLIED BY 100 5. DEADLOAD STRESS FOR POINT SHOWN IN COLUMN 2 6. LONGITUDINAL PRESSURE STRESS FOR POINT SHOWN IN COLUMN 2 7. SEISMIC STRESS FOR POINT SHOWN IN COLUMN 2 8. SUM OF THERMAL, DEADLOAD, PRESSURE AND SEISMIC STRESS FOR POINT SHOWN IN COLUMN 2 		<p>RESULTS</p>	
		<p>ANALYSIS/CALCULATION</p> <p>DOC ID: M-75-003 ATT.</p> <p>REV 0 SHEET 9 OF 22</p>	

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	FPC		FILING CODE	
	PROJECT	CR-3		W.O.	PAGE 2 of 3
SYSTEM	CR-6 MAIN STEAM				ORIGINATOR W.C. Johnson
CALCULATION FOR	TABULATION OF HIGHEST STRESS POINTS				DATE 1/7/75
<p>9 SUM OF STRESSES IN COLUMN 8 DIVIDED BY 30000 PSI THEN MULTIPLIED BY 100</p> <p>10 SAFETY VALVE DISCHARGE LOADING STRESS FOR POINT SHOWN IN COLUMN 2</p> <p>11 SUM OF THERMAL, DEADLOAD, PRESSURE SEISMIC AND SAFETY VALVE STRESS FOR POINT SHOWN IN COLUMN 2</p> <p>12 SUM OF STRESSES IN COLUMN 11 DIVIDED BY 30000 PSI THEN MULTIPLIED BY 100</p>					REVIEWER J. Ferrell
					DATE 1/7/75
RESULTS					

ANALYSIS/CALCULATION

DOC ID: M-75-003 ATT #

REV 0 SHEET 10 OF 22

FILING
CODE

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.		CLIENT FPC		FILING CODE	
		PROJECT CR 2		NO. PAGE 30.3	
SYSTEM CR-6 MAIN STEAM				ORIGINATOR W.C. Johnson	
CALCULATION FOR TABULATION OF HIGHEST STRESS POINTS				DATE 1/7/75	
ANALYSIS CALCULATION				REVIEWER J. Fennell	
DOC ID: M-X-0013 ATT. *				DATE 1/7/75	
REV: 0 SHEET 11 OF 22				RESULTS	
				CREDIT	
				SINCE NO SCHEDULE	
				IS ACTUALLY LESS	
				INCREASED PIPE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				TERMINAL POINTS	
				# TERMINAL	
				STRESS Q	
				WAS TAKEN	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	
				THROUGH	
				FOR THE	
				PEN # 201	
				STRESS Q	
				WAS TAKEN	
				THE	
				PENETRATION	
				THE	

LOCATIONS OF HIGHEST STRESS POINTS FOR 24" MAIN STEAM LINE FROM PENETRATION
#201 TO TURBINE STOP VALVE.

References P-304-011 Analysis # CR 6
P-304-012
P-304-025

<u>Number</u>	<u>Location</u>	<u>Stress (PSI)</u>
1.	Connection to Valve MSV-44F 2' 6" West of MSH-219.	25,491
2.	Connection to Valve MSV-39F 1' 3" East of MSH-219.	24,300
3.	Connection to Valve MSV-47F 7' 6" East of MSH-15.	23,941
4.	At MSH-219.	21,203
5.	Connection to Valve MSV-35F 3' 9" East of MSH-219.	20,949
*6.	3' 4" West of MSH-1.	19,224
*7.	9' East of MSH-1.	18,784
**8.	13' North of MSH-9.	17,019
*9.	Connection to Turbine Stop Valve Assembly.	12,698
*10.	9' below connection to Turbine Stop Valve.	12,500
11.	F.W. 280 Connection to Penetration 201 at Reactor Building.	12,347
12.	At MSH-15.	12,316
13.	1' West of MSH-15.	11,980
14.	At MSH-123	11,354

ANALYSIS/CALCULATION

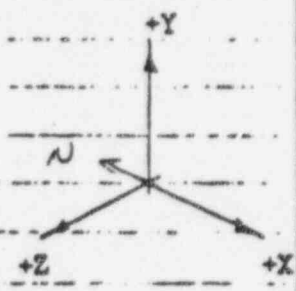
DOC ID -11-75 0013 ATT #

REV 0 SHEET 12 OF 22

* In Turbine Building.

** Turbine Side of M.S. Isolation Valve MSV 413.

Note: AEC Stress value for which breaks are to be postulated is 30,000 psi.

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.		CLIENT Florida Power Corporation PROJECT Crystal River Unit #3		Page <u>1</u> of <u>16</u> NO. 04-4203-C71			
SYSTEM <div style="text-align: center; font-size: 1.5em; margin-top: 10px;">MS</div>				ORIGINATOR J.E.			
CALCULATION FOR CR - 6B Pipe Supports				DATE 4/2/74 REVIEWER A. Fennelle			
Note: All loads act on pipe. Positive directions are shown here.				COMMENTS			
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> ANALYSIS/CALCULATION DOC ID: M-75-2013 ALL REV 0 SHEET 13 OF 22 </div>							
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSA-12	deadload	-776	-156	259	-4	4054	0
Sheet No.	seismic	23632	12250	36344	3672	2066	4494
	thermal	8806	204762	70108	7781	-734	1785
Type	calc. load (+)	25662	24656	106711	11449	6120	6279
ANCHOR	allow. load (+)						
Analysis	calc. load (-)	-24408	-12406	-31185	-3673		-4420
point AI	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-1	deadload					5124	
Sheet No.	seismic					58	
20101	thermal					0	
Type	calc. load (+)					5182	
SPRING	allow. load (+)						
Analysis	calc. load (-)						
point HIA	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-79	deadload					912	
Sheet No.	seismic					64	
20119	thermal					0	
Type	calc. load (+)					976	
SPRING	allow. load (+)						
Analysis	calc. load (-)						
point HIR	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	Florida Power Corporation	Page <u>2</u> of <u>14</u>
	PROJECT	Crystal River Unit #3	A.O. 04-4203-071

SYSTEM

MS

ORIGINATOR

DATE 4/12/74

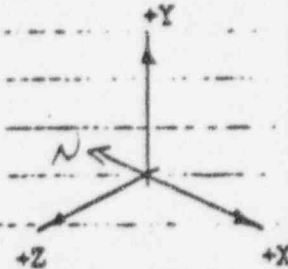
CALCULATION FOR

CR - 1.2 Pipe Supports

REVIEWER

DATE 1/9/75

Note: All loads act on pipe.
Positive directions are shown here.



ANALYSIS CALCULATION

Dwg ID: ~~MS-2003~~ ATT: _____REV: 0 SHEET 14 OF 22

Comments

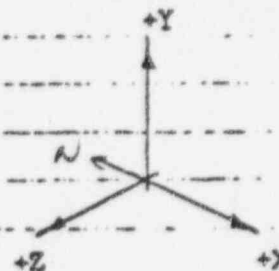
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-222	deadload						0
Sheet No.	seismic						7124
	thermal						0
Type	calc. load (+)						7124
HYDRAULIC	allow. load (+)						
Analysis	calc. load (-)						7124
point	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
1.1.1.2	deadload					5546	
Sheet No.	seismic					168	
32102	thermal					0	
Type	calc. load (+)					5514	
SPRING	allow. load (+)						
Analysis	calc. load (-)					—	
point	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-3	deadload					5068	
Sheet No.	seismic					464	
30103	thermal					0	
Type	calc. load (+)					5532	
SPRING	allow. load (+)						
Analysis	calc. load (-)					—	
point	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	Florida Power Corporation	Page <u>2</u> of <u>15</u>
	PROJECT	Crystal River Unit #3	NO. 04-4203-C71

SYSTEM	MS	ORIGINATOR	<i>A. C. Edwards</i>
		DATE	4/12/74

CALCULATION FOR	CR - 62	Pipe Supports	REVIEWER	<i>A. F. Fennell</i>
			DATE	1/9/75

Note: All loads act on pipe.
Positive directions are shown here.



ANALYSIS/CALCULATION

DOCD 44-75-0013 ATT #

REV. 0 SHEET 15 OF 22

Comments

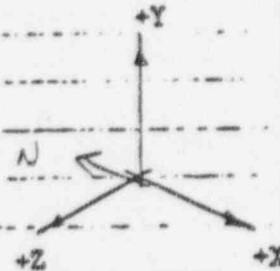
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-4	deadload					4629	
Sheet No.	seismic					444	
30104	thermal					0	
Type	calc. load (+)					5072	
SPRING	allow. load (+)						
Analysis	calc. load (-)					—	
point LF	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-50	deadload					1433	
Sheet No.	seismic					184	
30150	thermal					0	
Type	calc. load (+)					1617	
SPRING	allow. load (+)						
Analysis	calc. load (-)					—	
point HG	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-5	deadload					5779	
Sheet No.	seismic					562	
30105	thermal					0	
Type	calc. load (+)					6241	
SPRING	allow. load (+)						
Analysis	calc. load (-)					—	
point HH	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	Florida Power Corporation	Page 4 of 10
	PROJECT	Crystal River Unit #3	N.O. 04-4203-C71

SYSTEM	MS	ORIGINATOR	A. L. Edwards
CALCULATION FOR		DATE	4/2/75

CR - GE Pipe Supports	REVIEWER	J. J. Feneville
	DATE	11/7/75

Note: All loads act on pipe.
Positive directions are shown here.



ANALYSIS/CALCULATION

DOC ID: M-75-0013 ATT: _____

REV: 0 SHEET 16 OF 22

Comments

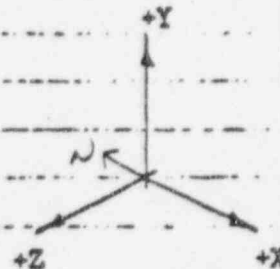
Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	Fz
MSH-6	deadload					5335	
Sheet No.	seismic					571.0	
30106	thermal					0	
Type	calc. load (+)					9099	
SPRING	allow. load (+)						
Analysis	calc. load (-)					—	
point HI	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	Fz
MSH-7	deadload					6590	
Sheet No.	seismic					150	
30005	thermal					0	
Type	calc. load (+)					6742	
SPRING	allow. load (+)						
Analysis	calc. load (-)					—	
point HJ	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	Fz
MSH-8	deadload					5116	
Sheet No.	seismic					43	
30108	thermal					2	
Type	calc. load (+)					5162	
SPRING	allow. load (+)						
Analysis	calc. load (-)					—	
point HK	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	Florida Power Corporation	Page <u>5</u> of <u>10</u>
	PROJECT	Crystal River Unit #3	N.O. 04-4203-C71

SYSTEM	M C	ORIGINATOR A. L. Edwards
--------	-----	-----------------------------

CALCULATION FOR CR - 63 Pipe Supports	DATE 4/2/94
	REVIEWER S. Farnelle
	DATE 1/7/95

Note: All loads act on pipe.
Positive directions are shown here.



ANALYSIS/CALCULATION

Doc ID: M-75-0013 ATT

REV 0 SHEET 17 OF 22
8/18/94

Comments

Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	Fz
MSH-226	deadload					0	
Sheet No.	seismic					3394	
	thermal					0	
Type	calc. load (+)					3394	
HYDRAULIC	allow. load (+)						
Analysis	calc. load (-)					3394	
point HZ	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	Fz
MSH-9	deadload					5100	
Sheet No.	seismic					54	
30109	thermal					0	
Type	calc. load (+)					5154	
SPRING	allow. load (+)						
Analysis	calc. load (-)						
point HL	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	(Fz)
MSH-113	deadload					0	0
Sheet No.	seismic					1406	3935
30113	thermal					0	0
Type	calc. load (+)					1406	3935
HYDRAULIC	allow. load (+)						
Analysis	calc. load (-)					-1406	-3935
point (HM) PM	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.		CLIENT Florida Power Corporation PROJECT Crystal River Unit #3		Page <u>6</u> of <u>10</u> NO. 04-4203-C71			
SYSTEM <div style="text-align: center; font-size: 1.5em; margin-top: 10px;">MS</div>		ORIGINATOR ALG...		DATE 4/12/74			
CALCULATION FOR CR - 6B Pipe Supports		REVIEWER J. Pennington		DATE 1/7/75			
Note: All loads act on pipe. Positive directions are shown here.				Comments			
ANALYSIS/CALCULATION DOC ID: <u>M-75-0013</u> ATT: _____ REV. <u>0</u> SHEET <u>18</u> OF <u>22</u>							
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MCH-10	deadload					4534	
Sheet No.	seismic					0	
30110	thermal					0	
Type	calc. load (+)					4426	
SPRING	allow. load (+)						
Analysis	calc. load (-)						
point HN	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	(Fz)
MCH-120	deadload					0	0
Sheet No.	seismic					1400	3600
301120	thermal					0	0
Type	calc. load (+)					1400	3600
HYDRAULIC	allow. load (+)						
Analysis	calc. load (-)					-1400	-3600
point PD	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	Fz
MCH-11	deadload					4923	
Sheet No.	seismic					72	
30111	thermal					0	
Type	calc. load (+)					4995	
SPRING	allow. load (+)						
Analysis	calc. load (-)						
point HP	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.		CLIENT Florida Power Corporation PROJECT Crystal River Unit #3		Page <u>7</u> of <u>16</u> NO. 04-4203-C71	
SYSTEM <div style="text-align: center; font-size: 1.5em; margin-top: 10px;">MS</div>				ORIGINATOR <i>16. E. Schmitt</i>	
CALCULATION FOR <div style="display: flex; justify-content: space-around; margin-top: 5px;"> CR - 6B Pipe Supports </div>				DATE <u>4/2/74</u> REVIEWER <i>A. J. Jaramello</i> DATE <u>1/7/75</u>	
Note: All loads act on pipe. Positive directions are shown here.				Comments	

ANALYSIS/CALCULATION
 DOC ID: M-75-0013 ATT #
 REV 0 SHEET 19 OF 22

Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-12	deadload					3549	
Sheet No.	seismic					22	
20112	thermal					0	
Type	calc. load (+)					2571	
Seismic	allow. load (+)						
Analysis	calc. load (-)						
point HQ	allow. load (-)						

Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
1-1-227	deadload				0		
Sheet No.	seismic				10262		
	thermal				0		
Type	calc. load (+)				10262		
Hazardous	allow. load (+)						
Analysis	calc. load (-)				-10262		
point HP	allow. load (-)						

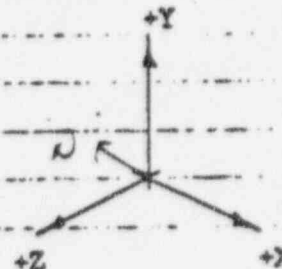
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
MSH-12	deadload					7208	
Sheet No.	seismic					6796	
	thermal					2323	
Type	calc. load (+)					16327	
Rigid	allow. load (+)						
Analysis	calc. load (-)						
point HS	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	Florida Power Corporation	Page <u>8</u> of <u>10</u>
	PROJECT	Crystal River Unit #3	NO. 04-4203-C71

SYSTEM	<u>115</u>	ORIGINATOR <u>A. J. [Signature]</u>
--------	------------	--

CALCULATION FOR	CR - <u>55</u>	Pipe Supports	REVIEWER <u>A. J. [Signature]</u>
			DATE <u>11/7/75</u>

Note: All loads act on pipe.
Positive directions are shown here.



ANALYSIS/CALCULATION

DOC ID M-8-0013 ATT 1

REV 0 SHEET 20 OF 22

Comments

Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
<u>MSH-122</u>	deadload					0	0
Sheet No.	seismic					3350	5316
	thermal					0	0
Type	calc. load (+)					3350	5316
<u>Hydro</u>	allow. load (+)						
Analysis	calc. load (-)					-2258	-5116
point <u>HT</u> PT	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
<u>MSH-315</u>	deadload					15855	
Sheet No.	seismic					5182	
	thermal					-1697	
Type	calc. load (+)					21027	
<u>Pig 10</u>	allow. load (+)						
Analysis	calc. load (-)						
point <u>HU</u>	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz
<u>MSH-14</u>	deadload					4270	
Sheet No.	seismic					1020	
	thermal					152	
Type	calc. load (+)					6322	
<u>Pig 10</u>	allow. load (+)						
Analysis	calc. load (-)						
point <u>HV</u>	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	Florida Power Corporation	Page <u>9</u> of <u>9</u>
	PROJECT	Crystal River Unit #3	N.O. 04-4203-071
SYSTEM <u>MS</u>			ORIGINATOR <u>[Signature]</u>
CALCULATION FOR CR - <u>GE</u> Pipe Supports			DATE <u>11/9/95</u>
Note: All loads act on pipe. Positive directions are shown here.			REVIEWER <u>A. F. [Signature]</u>
			DATE <u>11/9/95</u>
<div style="border: 1px solid black; padding: 5px; transform: rotate(-10deg); display: inline-block;"> ANALYSIS CALCULATION DOC ID <u>M-25-0013</u> ATT <u>1</u> REV <u>0</u> SHEET <u>21</u> OF <u>22</u> </div>			Comments

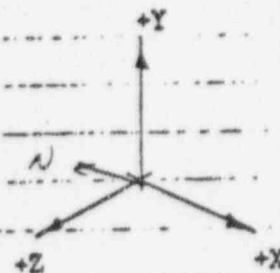
Mk. No.	analysis	Mx	My	Mz	(Fx)	(Fy)	Fz
<u>MSH-123</u>	deadload				0	0	
Sheet No.	seismic				850	370	
	thermal				0	0	
Type	calc. load (+)				850	370	
	allow. load (+)						
Analysis	calc. load (-)				-850	-370	
point <u>PD</u>	allow. load (-)						
Mk. No.	analysis	Mx	My	Mz	Fx	(Fy)	Fz
<u>MSH-15</u>	deadload					3590	
Sheet No.	seismic					1224	
<u>20115</u>	thermal					-59	
Type	calc. load (+)					4814	
<u>Rig 10</u>	allow. load (+)						
Analysis	calc. load (-)						
point <u>HX</u>	allow. load (-)						
Mk. No.	analysis	Mx	My	(Mz)	(Fx)	(Fy)	Fz
<u>MSH-219</u>	deadload			1426	12	9633	
Sheet No.	seismic			15229	4622	946	
	thermal			-33	-25511	16	
Type	calc. load (+)			17254	41612	10575	
<u>GUIDE</u>	allow. load (+)						
Analysis	calc. load (-)			-14135	-46399		
point <u>HY</u>	allow. load (-)						

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	CLIENT	Florida Power Corporation	Page <u>10</u> of <u>12</u>
	PROJECT	Crystal River Unit #3	NO. 04-4203-C71

SYSTEM	<u>MS</u>	ORIGINATOR <u>J. J. Schmitt</u>
DATE		<u>11/1/95</u>

CALCULATION FOR	CR - <u>6E</u> Pipe Supports	REVIEWER <u>J. J. Schmitt</u>
DATE		<u>11/1/95</u>

Note: All loads act on pipe.
Positive directions are shown here.



ANALYSIS/CALCULATION
 M-X-0013 ATT #
 REV 0 SHEET 22 OF 22

Comments

Mk. No.	analysis	Mx	My	Mz	Fx	Fy	Fz	
<u>MSH-20</u>	deadload	-9149	-47	1537	-9	2771	0	<u>PL-20</u>
Sheet No.	seismic	3494	4256	2152	1124	676	7482	
	thermal	12	17922	-2	2920	-2	-1735	
Type	calc. load (+)		124132	3687	29125	3447	7482	
<u>ANCHOR</u>	allow. load (+)							
Analysis	calc. load (-)	-12642	-4905	-615	-1113		-9267	
point <u>A2</u>	allow. load (-)							
Mk. No.	analysis	Mx	My	Mz	<u>(Fx)</u>	Fy	Fz	
<u>MSH-224</u>	deadload				0			
Sheet No.	seismic				6238			
	thermal				0			
Type	calc. load (+)				6238			
<u>HYDRAULIC</u>	allow. load (+)							
Analysis	calc. load (-)				-6238			
point <u>IH</u>	allow. load (-)							
Mk. No.	analysis	Mx	My	Mz	Fx	Fy	<u>(Fz)</u>	
<u>MSH-225</u>	deadload						0	
Sheet No.	seismic						5442	
	thermal						0	
Type	calc. load (+)						5442	
<u>HYDRAULIC</u>	allow. load (+)							
Analysis	calc. load (-)						-5442	
point <u>JH</u>	allow. load (-)							

IN L.I.D. CONSTRUCTION
 1000 P.S.I. & 1000' P.S.I.
 1000 P.S.I. & 1000' P.S.I.
 1000 P.S.I. & 1000' P.S.I.

PIPELINE CODE
 1000 P.S.I.

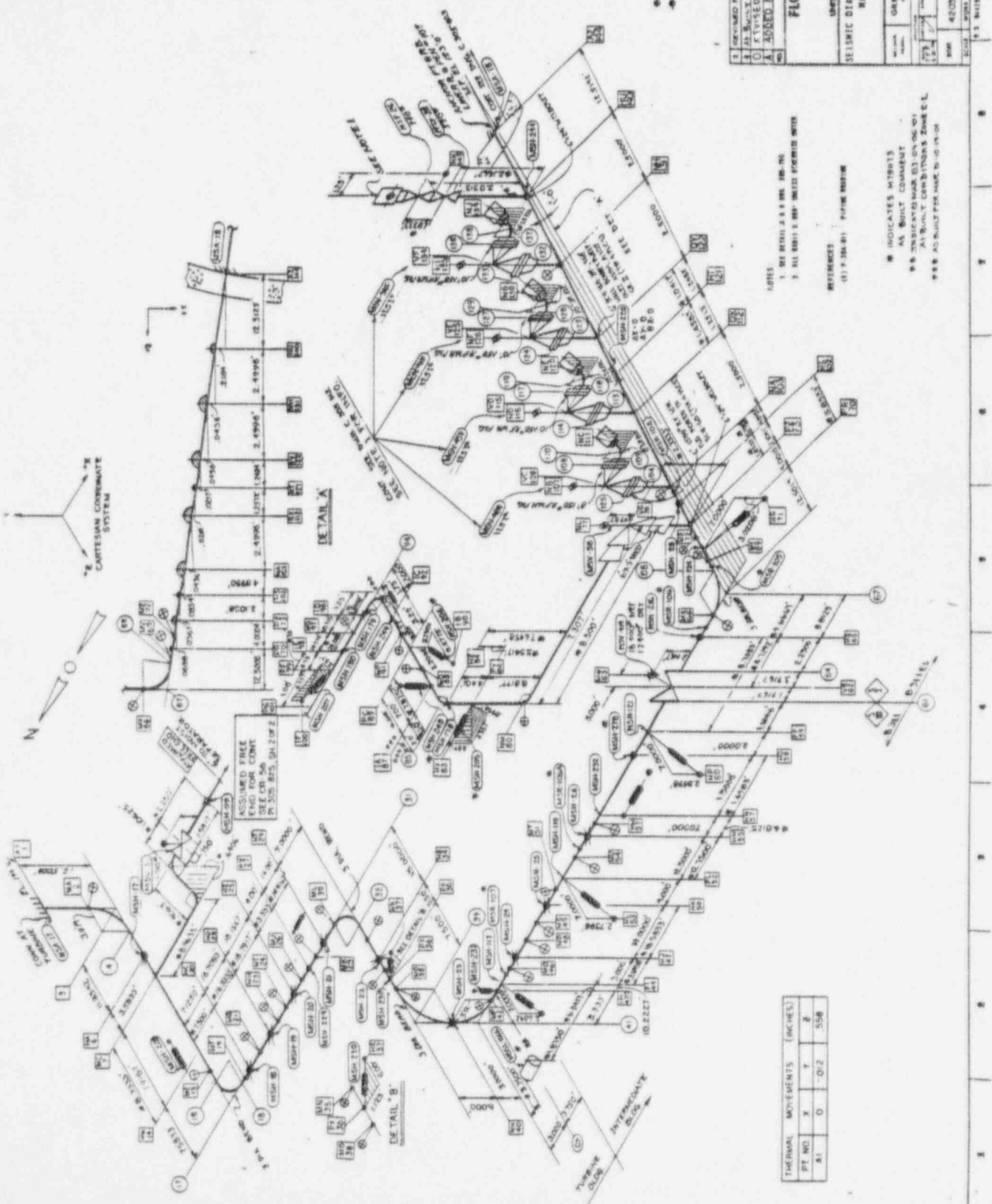
PIPE	SIZE	WALL THICKNESS	SPACING	WALL THICKNESS	SPACING
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000

PIPE	SIZE	WALL THICKNESS	SPACING	WALL THICKNESS	SPACING
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000

PIPE	SIZE	WALL THICKNESS	SPACING	WALL THICKNESS	SPACING
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000

SYMBOLS
 1000 P.S.I. & 1000' P.S.I.
 1000 P.S.I. & 1000' P.S.I.
 1000 P.S.I. & 1000' P.S.I.

FLORIDA POWER CORPORATION
 CRYSTAL RIVER PLANT
 SEISMIC DESIGN
 1000 P.S.I. & 1000' P.S.I.
 1000 P.S.I. & 1000' P.S.I.
 1000 P.S.I. & 1000' P.S.I.



THE FINAL		MOVEMENTS		(INCHES)
PT NO	X	Y	Z	
A1	0	-0.2	5.58	

INDICATES WEIGHTS
 AS BUILT WEIGHT
 1000 P.S.I. & 1000' P.S.I.
 1000 P.S.I. & 1000' P.S.I.

