U.S. NUCLEAR REGULATORY COMMISSION		RESPONSE NUMBER		
NRC FORM 464 Part I (6-1998) U.S. NUCLEAR REGULATORY COMMISSION RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) / PRIVACY	99-364	4		
RESPONSE TO FREEDOM OF				
INFORMATION ACT (FOIA) / PRIVACY	RESPONSE FINAL	PARTIAL		
ACT (PA) REQUEST				
REQUESTER	DATE			
Jennifer Palmer	FEB 07 2000			
PART I INFORMATION RELEASE)			
No additional agency records subject to the request have been located.				
Requested records are available through another public distribution program.	See Comments section.			
APPENDICESAgency records subject to the request that are identified in the public inspection and copying at the NRC Public Document Ro	listed appendices are alread	y available for		
Agency records subject to the request that are identified in the public inspection and copying at the NRC Public Document Ro	listed appendices are being	made available for		
Enclosed is information on how you may obtain access to and the charges for Document Room, 2120 L Street, NW, Washington, DC.	copying records located at th	e NRC Public		
$\mathbf{X} \stackrel{APPENDICES}{\mathbf{H}} Agency records subject to the request are enclosed.$	- Agency records subject to the request are enclosed			
Records subject to the request that contain information originated by or of interest to another Federal agency have been referred to that agency (see comments section) for a disclosure determination and direct response to you.				
We are continuing to process your request.				
See Comments.				
PART I.A FEES				
AMOUNT * You will be billed by NRC for the amount listed.	None. Minimum fee thresho	ia not met.		
 \$ 2570.93 * See comments for details You will receive a refund for the amount listed. Fees waived. 				
PART I.B INFORMATION NOT LOCATED OR WITHHELD	FROM DISCLOSURE			
No agency records subject to the request have been located.				
Certain information in the requested records is being withheld from disclosure the reasons stated in Part II.	pursuant to the exemptions d	escribed in and for		
 This determination may be appealed within 30 days by writing to the FOIA/PA Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Clearly state on the envelope and in the letter that it is a "FOIA/PA Appeal." 				
PART I.C COMMENTS (Use attached Comments continuation page if required)				
The fees for processing your request are:				
57 hrs. professional search @ \$36.93 per hr. = \$2,105.01				
25 hrs. professional review @ \$36.93 per hr. = \$923.25 1.5 hrs. clerical search @ \$18.00 per hr. = \$27.00				
Duplication of 164 pages @ $\$0.20$ per page = $\$32.80$				
Total = \$3088.06				
(LESS ADVANCE PAYMENT OF \$5,658.99 = \$2,570.93)				
SIGNATURE - FREEDOM OF INFORMATION ACT AND PRIVACY ACT OFFICER				
CarolAnn Reed Juna . ugh				

FOIA No. 99-364b

APPENDIXG RECORDS ALREADY AVAILABLE IN THE PDR

<u>NO.</u>	DATE	ACCESSI NUMBER	ON DESCRIPTION/(PAGE COUNT)
1.	See attache	ed	

FOIA-99-364

APPENDIX H RECORDS BEING RELEASED IN THEIR ENTIRETY

NO. DATE DESCRIPTION/(PAGE COUNT)

- 1.3/30/79In the Matter of Maine Yankee, Licensee's Answer to the Order to Show
Cause (4 pages)
- 2. 4/1/79 Interim Report for Maine Yankee Atomic Power Station, A Reanalysis of Safety-Related Piping Systems Using Shock3 Computer Code (66 pages)
- 3. 4/2/79 To NRC from W Johnson, Maine Yankee, Subject: Maine Yankee Answer to USNRC Order to Show Cause (1 page)
- 4. 4/13/79 Letter to NRC from R Groce, Maine Yankee, Subject: Maine Yankee Seismic Piping Analysis (9 pages)
- 5. 5/2/79 Letter to NRC from W Johnson, Maine Yankee, Subject: Maine Yankee Piping System Seismic Review (31 pages)
- 6. 4/1/99 E-Mail from D Kern to D Collins, Subject: Draft Meeting Minutes for Small Bore Piping Support Meeting (1 page)

7. 2/1/99 E-Mail from D Kern to D Collins, Subject: Meeting with Duquesne Light re: Small Bore Piping Hanger Issues (1 page)

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0 select the selection selection ===== TCON69 ===== Accession Number - 8002150484 ====== Start ==== End === Availability: **PDR** Format: * Microfilm Address: 01973-356 01973-357 Size: 2pp. _____ Document Type: Incoming Correspondence Issued: 800109 Desc/: Responds to IE Bulletin 79-02.No seismic piping restraints supported Title: by anchor bolts in concrete block walls. Insp/ testing program for : anchor bolts considered all expansion type anchor bolts w/o regard for : support structure. Authors: MOODY,D.E. Maine Yankee Atomic Power Co. Recipients: GRIER, B.H. Region I, RI (IE, 720101-810228) _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-02 800109 Package: 8002150484 # File Locations: PDR ADOCK 05000309 Q

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDUCS/HD>> ==== TCON69 ======== Accession Number - 8508130156 ====== Start ==== End === Availability: **PDR** Format: * Microfilm Address: 32165-051 32165-084 Size: 31pp. Document Type: Incoming Correspondence Issued: 800103 Desc/: Submits info re other facilities affected by 790313 order to show Title: cause concerning use of pipe supports on 2 1/2 to 6 inch piping : designed for loads derived from Shock 2 computer : calculations.Supporting documentation encl. Authors: KENNEDY.W.J. Stone & Webster Engineering Corp. Recipients: DENTON, H. Office of Nuclear Reactor Regulation, Director _____ Dockets: 05000000 50-000 Generic Docket 05000280 50-280 Surry Power Station, Unit 1, Virginia Electric & Powe Internal Tracking # IEB-79-02 HERRMAN85-301 850703 Package: 8508130019 A File Locations: PDR FOIA GILBERT85-301 850703 PDR FOIA *

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDOCS/HD>> ==== TCON69 ========== Accession Number - 7912130056 ======= Start ==== End ==== Availability: **PDR** Format: * Microfilm Address: 01546-319 01546-319 Size: 1p. Document Type: Outgoing correspondence Issued: **791121** Desc/: Requests response to IE Bulletin 79-02 containing justification & Title: description of sampling program used. Authors: BRUNNER, E.J. Reactor Operations Nuclear Support Branch, RI (IE, 7) Recipients: GROCE, R.H. Maine Yankee Atomic Power Co. Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-02

File Locations: PDR ADOCK 05000309 Q 791121 Package: 7912130056 #

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDOCS/AD>> ==== TCON69 ======== Accession Number - 7912130086 ====== Start ==== End === Microfilm Address: 01543-112 01543-114 Availability: PDR Format: * Size: **3pp.** _____ _ _ _ _ _ _ _ _ _ _ _ _ _ Document Type: Incoming Correspondence Issued: **791114** Desc/: Provides second supplementary response to IE Bulletin 79-02, "Pipe Title: Support Base Plate Design using Concrete Expansion Anchor Bolts." : Random sample of 75 anchor bolts tested w/o failures. Maine Yankee Atomic Power Co. Authors: GROCE, R.H. Region I, RI (IE, 720101-810228) Recipients: GRIER, B.H. Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-02

Use HOME/TAB To View Additional Information, ENTER To View Text, ESCape To Exit. Count: *0 <Replace>

File Locations: PDR ADOCK 05000309 Q

791114 Package: 7912130086 #

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDOCS/AD>> Availability: PDR Format: * Microfilm Address: 01253-272 01253-272 Size: 1p. Document Type: Incoming Correspondence Issued: **791011** Desc/: Supplements response to IE Bulletin 79-02, Revision 1, "Pipe Support Title: Base Plate Designs Using Concrete Expansion Anchor Bolts." Lists sys : w/drilled-in anchor bolt supports. Maine Yankee Atomic Power Co. Authors: GROCE.R.H. Region I. RI (IE, 720101-810228) Recipients: GRIER, B.H. _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Other Related Number WMY 79-109

File Locations: PDR ADOCK 05000309 Q 791011 Package: 7911050127 #

ADQ42 V6.3.23.0 Nuclear Regulatory Commission <<NUDOCS/AD>> ==== TCON69 ======= Accession Number - 7908080710 ====== Start ==== End === Microfilm Address: 00535-341 00535-344 Availability: **PDR** Format: * Size: 4pp. · · Issued: **790705** Document Type: Incoming Correspondence Desc/: Responds to IE Bulletin 79-02.Program initiated to develop generic Title: base plate flexibility computer analysis & insp of sample population : of drilled-in anchor bolts. Authors: GROCE, R.H. Maine Yankee Atomic Power Co. Recipients: GRIER, B.H. Region I, RI (IE, 720101-810228) . _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Other Related Number WMY 79-68

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790705 Package: 7908080710 #

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File Locations: PDR ADOCK 05000309 Q

ADQ42 V6.3.23.0 Nuclear Regulatory Commission <<NUDUCS/HD>> ==== TCON69 ======== Accession Number - 8007280458 ====== Start ==== End === Microfilm Address: 06015-291 06015-294 Availability: PDR Format: * Size: 4pp. Issued: 800625 Document Type: Incoming Correspondence Desc/: Responds to IE Bulletin 79-14, "Seismic Analysis for As-Built Title: Safety-Related Piping Sys." Twenty-two piping sys reanalyzed due to : pipe &/or support function or location differences identified in field : effort. Authors: MOODY, D.E. Maine Yankee Atomic Power Co. Region I, RI (IE, 720101-810228) Recipients: GRIER,B.H. _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-14 Other Related Number WMY 80-99 800625 Package: 8007280458 # File Locations: PDR ADOCK 05000309 Q Use HOME/TAB To View Additional Information, ENTER To View Text, ESCape To Exit.

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<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ====== Accession Number - 8004100406 ===== Start ==== End === Microfilm Address: 04551-346 04551-346 Availability: PDR Format: * Size: 1p. -----Issued: 800307 Document Type: Incoming Correspondence Desc/: Responds to IE Bulletin 79-14. Submits mod to Paragraph 4 of 800304 ltr Title: to NRC, per 800306 telcon. All seismic support nonconformance will be : restricted prior to restart. Authors: MOODY, D.E. Maine Yankee Atomic Power Co. Region I, RI (IE, 720101-810228) Recipients: GRIER,B.H. _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-14

Use HOME/TAB To View Additional Information, ENTER To View Text, ESCape To Exit. Count: *0 <Replace>

File Locations: PDR ADOCK 05000309 Q

800307 Package: 8004100406 #

ADQ42 V6.3.23.0 Nuclear Regulatory Commission <<NUDOCS/AD>> Microfilm Address: 04552-100 04552-101 Availability: PDR Format: * Size: 2pp. _____ Document Type: Incoming Correspondence Issued: 800304 Desc/: Responds to IE Bulletin 79-14.Field verification of valve Title: weights, existing pipe geometry, seismic support locations, functions & : all details completed. Review of field work vs design shows differences : at rate of approx 30%. Authors: MOODY,D.E. Maine Yankee Atomic Power Co. Recipients: GRIER, B.H. Region I, RI (IE, 720101-810228) Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-14

File Locations: PDR ADOCK 05000309 Q

800304 Package: 8004100422 #

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDOCS/AD>> ==== TCON69 ========= Accession Number - 8001240159 ====== Start ==== End === Microfilm Address: 01794-351 01794-352 Availability: PDR Format: * Size: 2pp. Document Type: Incoming Correspondence Issued: **791130** Desc/: Submits mods to clarify discrepancies in NRC 791119 ltr re response to Title: IE Bulletin 79-14, "Seismic Analysis for As- Built Safety-Related : Piping Sys." Final rept of insp program will be forwarded within 90 : davs after Jan 1980 restart. Authors: MOODY, D.E. Maine Yankee Atomic Power Co. Recipients: GRIER, B.H. Region I, RI (IE, 720101-810228) _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-14

File Locations: PDR ADOCK 05000309 Q 791130 Package: 8001240159 #

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0 ==== TCON69 ======= Accession Number - 7912310472 ===== Start ==== End === Microfilm Address: 01654-194 01654-195 Availability: **PDR** Format: * Size: 2pp. ______ _____ Document Type: Incoming Correspondence Issued: **791123** Desc/: Modifies response to NRC 801119 ltr re IE Bulletin 79-14, "Seismic Title: Analysis for As-Built Safety-Related Piping Sys." Verification : completed on 80 supports for piping 2.5 inches in diameter & larger. Authors: GROCE, R.H. Maine Yankee Atomic Power Co. Recipients: GRIER, B.H. Region I, RI (IE, 720101-810228) _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-14

File Locations: PDR ADOCK 05000309 Q 791123 Package: 7912310472 #

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDOCS/AD>> Microfilm Address: 01611-115 01611-118 Availability: **PDR** Format: * Size: 1p. ______ ______ Document Type: Internal or external memorandum Issued: **791109** Desc/: Requests const insp of lift in tailings retention dam, authorized by Title: Amend 5 to license. Insp is necessary within next two wks, in light of : Lessons Learned Task Force recommendations from Church Rock dam : failure. Uranium Recovery Licensing Branch (NMSS, Pre 870413) Authors: SCARANO.R.A. Recipients: HIGGINBOTHAM, L. Division of Fuel Facility & Materials Safety Insp _____ Dockets: 04001162 40-1162 Western Nuclear, Inc., Lakewood, CO,

File Locations: PDR ADOCK 04001162 C

791109 Package: 7912180073 #

NUCLEAR REGULATORY LOMMISSION ADQ42 V6.3.23.0 <<NUUUUUS/HU>> ==== TCON69 ======== Accession Number - 7912040019 ====== Start ==== End === Microfilm Address: 01470-282 01470-283 Availability: PDR Format: * Size: 2pp. · · Document Type: Incoming Correspondence Issued: **791107** Desc/: Second supplementary response to IE Bulletin 79-14. Commits to Title: extensive seismic analysis of pipes & supports. Checks completed on : supports 2.50 inches in diameter & larger. Authors: GROCE,R.H. Maine Yankee Atomic Power Co. Region I, RI (IE, 720101-810228) Recipients: GRIER, B.H. _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-14

File Locations: PDR ADOCK 05000309 Q 791107 Package: 7912040019 #

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDOCS/AD>> ==== TCON69 ======== Accession Number - 7911020276 ====== Start ==== End === Microfilm Address: 01249-062 01249-063 Availability: **PDR** Format: * Size: 2pp. Issued: **790925** Document Type: Incoming Correspondence Desc/: Supplemental response to IE Bulletin 79-14. Field check of all Seismic Title: Category I piping containment will be completed in first wk of Oct : 1979.Field check of accessible piping will be completed 791231. Authors: GROCE, R.H. Maine Yankee Atomic Power Co. Recipients: GRIER, B.H. Region I, RI (IE, 720101-810228) _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Other Related Number WMY 79-103

File Locations: PDR ADOCK 05000309 Q 790925 Package: 7911020276 #

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDUCS/HD>> Microfilm Address: 15219-291 15219-291 Availability: PDR Format: * Size: 1p. Document Type: Incoming Correspondence Issued: 790718 Desc/: Responds to IE Bulletin 79-14. Proper support location & design of Title: piping sys is evidenced by lack of any piping or support distress when : constantly loaded. Authors: GROCE, R.H. Yankee Atomic Electric Co. Region I, RI (IE, 720101-810228) Recipients: GRIER, B.H. _____ Dockets: 05000029 50-29 Yankee-Rowe Nuclear Power Station, Yankee Atomic Elect Internal Tracking # IEB-79-14 Other Related Number WYR 79-84 790718 Package: 7908270511 # File Locations: PDR ADOCK 05000029 Q Use HOME/TAB To View Additional Information, ENTER To View Text, ESCape To Exit.

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Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDOCS/HD>> ==== TCON69 ========== Accession Number - 7904130201 ====== Start ==== End === Availability: **PDR** Format: * Microfilm Address: 02490-085 02490-152 Size: 5pp. ______**____**_____ Document Type: Incoming Correspondence Issued: **790412** Desc/: Forwards "Non-Dynamic Seismic Analysis of Piping & Supports." Title: Supplements & clarifies info provided in 790402 & 790403 ltrs & : responds to NRC 790410 ltr. Authors: VANDENBURGH, D.E Maine Yankee Atomic Power Co. Office of Nuclear Reactor Regulation, Director Recipients: * _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Other Related Number WMY 79-31

File Locations: PDR ADOCK 05000309 P 790412 Package: 7904130201 *

Nuclear Regulatory Commission <<NUDOCS/AD>> ADQ42 V6.3.23.0 Microfilm Address: 02490-090 02490-152 Availability: PDR Format: * Size: 61pp. Document Type: General External Technical Reports Issued: **790412** Desc/: "Non-Dynamic Seismic Analysis of Piping & Supports." Title: : Maine Yankee Atomic Power Co. Authors: * Recipients: Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic

File Locations: PDR ADOCK 05000309 P

790412 Package: 7904130201 A

NUCLEAR REGULATORY COMMISSION HDQ42 V6.3.23.0 <<NUUUC2/HU>> ==== TCON69 ========== Accession Number - 7904240432 ====== Start ==== End === Microfilm Address: 02695-117 02695-173 Availability: PDR Format: * Size: **1p.** _____ -----Document Type: Incoming Correspondence Issued: **790419** Desc/: Forwards S&W rept describing comparison of PSTRESS/SHOCK 1 & Title: NUPIPE-SW.Reanalysis of nonsafety-related piping has been completed & : no mod required. Mods to Hangers H-51 & H-53 are not complete. Authors: JOHNSON, W.P. Maine Yankee Atomic Power Co. Operating Reactors Branch 4 (Pre 790625) Recipients: REID, R.W. _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Other Related Number WMY 79-34 ADOCK 05000309 P 790419 Package: 7904240432 *

File Locations: PDR ADOCK 05000309 P 790419 Package: 7904240432 * PDR TOPRP EMVSTW 790419 Use HOME/TAB To View Additional Information ENTER To View Text. ESCape To Exit

ADQ42 V6.3.23.0 Nuclear Regulatory Commission <<NUDOCS/AD>> ==== TCON69 ========= Accession Number - 7904240434 ====== Start ==== End === Microfilm Address: 02695-118 02695-173 Availability: PDR Format: * Size: 52pp. Issued: **790419** Document Type: Topical Report Desc/: "Verification of SHOCK 1 Program." Title: : : Maine Yankee Atomic Power Co. Authors: * Recipients: Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic

File Locations:PDRADOCK 05000309 P790419Package:7904240432 APDRTOPRP EMVSTWB790419Use HOME/TAB To View Additional Information, ENTER To View Text, ESCape To Exit.Count: *0<Replace>

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDOCS/AD>> ==== TCON69 ========= Accession Number - 8402160454 ====== Start ==== End === Microfilm Address: 22268-309 22268-312 Availability: PDR Format: * Size: 4pp. Document Type: Inspection report, NRC-generated Issued: 840126 Desc/: IE Insp Rept 50-309/83-19 on 831101-04.No violation noted. Major areas Title: inspected:licensee actions in response to IE Bulletins 79-02 & 79-14 & : verification of actions undertaken & work performed on mods affected : by bulletins. Region 1 (RI, Post 820201) Authors: VARELA,A.A. Region 1 (RI, Post 820201) DURR, J.P. Recipients: Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Inspection Report # 50-309/83-19 IEB-79-02 Internal Tracking # 840201 Package: 8402160452 A ADOCK 05000309 Q File Locations: PDR

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDUCS/HD>> ==== TCON69 ========= Accession Number - 8308240494 ====== Start ==== End === Microfilm Address: 20143-092 20143-094 Availability: PDR Format: * .Si≣e: 3pp. ·_____ Document Type: Licensee Event Report (See also AO, RO) Issued: 830809 Desc/: LER 83-026/01T-1:on 830726, while conducting baseplate flexibility Title: evaluation per IE Bulletin 79-02, two containment spray supports & pipe : supports found in need of corrective maint.Deficiencies will be : corrected.W/830809 ltr. Maine Yankee Atomic Power Co. Authors: EAMES,C.H. Maine Yankee Atomic Power Co. GARRITY, J.H. Region 1 (RI, Post 820201) Recipients: MURLEY, T.E. _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Internal Tracking # IEB-79-02 830726 **Event** Date Licensee Event Rpt # 83-026 830809 Package: 8308240494 # File Locations: PDR ADOCK 05000309 S

Nuclear Regulatory Commission ADQ42 V6.3.23.0 <<NUDUC2/HD>> ==== TCON69 ======== Accession Number - 7904030136 ====== Start ==== End === Availability: PDR Format: * Microfilm Address: 02464-352 02464-357 Size: 6pp. Document Type: Orders Issued: 790313 Desc/: Order to show cause why licensee should not reanalyze facility piping Title: sys for seismic loads, modify sys accordingly & why operation should : not be suspended pending mod. Response required within 20 days. Authors: DENTON, H.R. Office of Nuclear Reactor Regulation, Director **Recipients:** _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic

File Locations: PDR ADOCK 05000309 G 790313 Package: 7904030136 #

<<NUUUC5/HU>> NUCLEAR REGULATORY COMMISSION ADQ42 V6.3.23.0 Microfilm Address: 05373-237 05373-258 Availability: PDR Format: * Size: 22pp. _____ Document Type: Incoming Correspondence Issued: 790403 Desc/: Provides re-analysis of seismically designed piping rept for Title: approval.Also responds to items described in NRC 790402 ltr. Authors: JOHNSON, J.P. Maine Yankee Atomic Power Co. Division of Operating Reactors Recipients: STELLO,V. _____ Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic Other Related Number WMY 79-29

File Locations: PDR ADOCK 05000309 P 790403 Package: 7904060342 #

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

before the

DIRECTOR OF NUCLEAR REACTOR REGULATION

In the Matter of MAINE YANKEE ATOMIC POWER COMPANY (Maine Yankee Atomic Power Station)

Docket No. 50-309 Op. Lic. No. DPR-36

LICENSEE'S ANSWER TO THE ORDER TO SHOW CAUSE

Pursuant to 10 CFR § 2.202 Maine Yankee Atomic Power Company (Maine Yankee or Licensee) the holder of Operating License DPR-36 for Maine Yankee Atomic Power Station (MYAPS) makes answer to the Order to Show Cause (Order) issued by the Director of Nuclear Reactor Regulation (Director) under date of March 13, 1979 as follows:

As required by 10 CFR § 2.202(b) the Licensee with respect to the various paragraphs of the Order:

1-6. Admits the allegations set forth in the first six paragraphs.

7. With respect to the allegations set forth in the seventh paragraph, admits the allegations set forth in the first two sentences, but says that the remainder of said seventh paragraph sets forth conclusions rather than allegations of fact and that therefore the Licensee is not called upon to admit or deny the same.

8-12. Says that the eighth through twelfth paragraphs are not allegations of fact which the Licensee is called upon to admit or deny.

7904040107

And further answering the Licensee says:

13. The Order directed an immediate shutdown of MYAPS because of the Director's finding that certain piping systems related to safety were analyzed relative to earthquake loads by Stone & Webster using a computer code that was incorrect in its treatment of the loads, i.e. the loads were summed algebraically.

14. Since the issuance of the Order, the Licensee has reanalyzed the facility piping systems described in paragraph 13 for seismic loads using an appropriate method which does not sum loads algebraically.

15. The above described analyses indicate that no modifications to facility piping systems are necessary.

16. Thus, no basis exists for the continued suspension of the facility operation as contemplated by the Order.

WHEREFORE, Maine Yankee proposes:

A. That the Director modify or rescind so much of his Order of March 13, 1979, as requires the continued shutdown of MYAPS.*

B. That the Director grant to Maine Yankee such other and further relief as is meet and proper in the circumstances.

MAINE YANKEE ATOMIC POWER COMPANY

Wendell P. Johnson

Vice President

Counsel: Thomas G. Dignan, Jr. Ropes & Gray 225 Franklin Street Boston, MA 02110

617/423-6100

Dated: March 30, 1979

*The power of the Director to rescind or modify the Order insofar as it requires the <u>presently in force</u> cold shutdown of MYAPS (a summary order issued without prior opportunity for a hearing) is beyond question in light of the fact that no license amendment or facility notification is required. <u>Compare Portland General Electric Co.</u> (Trojan Nuclear Plant), CLI-78-14, CCH Nuclear Reg. Rep. Para. 30,311 (July 7, 1978) with <u>Consumers Power Company</u> (Midland Plant, Units 1 & 2), CLI-73-38, 6 AEC 1082 (1973).

COMMONWEALTH OF MASSACHUSETTS

Worcester, ss.

March 30, 1979

Then appeared before me the above-subscribed Wendell P. Johnson and made oath that he had read the foregoing answer, was familiar with the contents thereof, and that the statements set forth therein are true to the best of his knowledge.



Before me,

Notary Public My Commission Expires: 9/14/84

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MAINE YANKEE ATOMIC POWER STATION

INTERIM REPORT

FOR

MAINE YANKEE ATOMIC POWER STATION

A Reanalysis of Safety-Related Piping Systems Using SHOCK3 Computer Code

April 1, 1979

30-309 7904040102

Stone & Webster Engineering Corporation Boston, Massachusetts 7904040\\0

MAINE.YANKEE ATOMIC POWER STATION

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MAINE YANKEE ATOMIC POWER STATION

SUMMARY

In response to the Nuclear Regulatory Commission's Order to Show Cause, dated March 13, 1979, a reanalysis has been conducted of safety-related piping systems which were originally seismically analyzed in accordance with licensing commitments with the computer code referenced in the Show Cause Order (SHOCK2). This report summarizes the results of that reanalysis.

The seismic reanalysis was based on currently acceptable piping analysis programs. The reanalysis results indicate that the subject systems will be able to perform their intended safety functions under the maximum seismic conditions specified in the Final Safety Analysis Report, without modification.

PROBLEM STATEMENT

As described in the NRC Order to Show Cause, March 13, 1979 (Appendix A), there is concern on the part of the NRC that some piping systems in the Maine Yankee Atomic Power Plant were seismically analyzed with a computer code that may not yield sufficiently conservative results.

In order to resolve these concerns, the following actions were taken:

- Safety systems or portions thereof that were seismically analyzed using the computer code in question, SHOCK2, were identified.
- 2. These systems or portions thereof were analyzed using currently .acceptable computer codes.
- 3. Results were compared with code allowable stresses and original loads used for design purposes.

SYSTEMS AFFECTED

The following listed systems are those piping systems of which portions were analyzed using the SHOCK2 code:

High Pressure Safety Injection
Low Pressure Safety Injection
Residual Heat Removal (including connection to main loops)
Primary Component Cooling Water
Containment Spray

The following lines were identified as the specific safety-related portions that were originally analyzed with the SHOCK2 code:

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Line Number	System	Problem <u>No.</u>	Description	FSAR <u>Fig. No.</u>
10"-CH-1-152R2 10"-CH-2-152R2	High Pressure Safety Injection System (HPSI)	16A 16B	High pressure safe- ty injection from refueling water storage tank (RWST) to charging pumps suction (portion inside auxiliary building)	9.1-2
14"-RH-1-302 12"-RC-29-1502	Residual Heat Removal System (RHR)	803	Reactor coolant loop suction to RHR pumps (portion inside containment)	6.2-1B 4.3-1
4"-RH-2-302 4"-RH-35-302 3"-DRL-199-302* 3"-DRL-200-302*	Residual Heat Removal System (RHR)	70	Relief valves dis- charge from RHR suction off re- actor coolant loop to pressuri- zer quench tank	6.2-1B

* Non-safety related lines, but had to be included in order to analyze the two 4 inch RHR lines above.

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MAINE YANKEE ATOMIC POWER STATION

<u>Line Number</u>	<u>System</u>	Problem No.	Description	FSAR <u>Fig. No.</u>
18"-CS-11-152 18"-CS-12-152 18"-CS-13-152 16"-CS-14-152 16"-CS-40-152 14"-CS-15-152 14"-CS-16-152 14"-CS-17-152 16"-RH-3-302 16"-RH-4-302	Containment Spray System (CS) and Low Pressure Safet Injection System (LPSI)	(Part 1)	Containment spray system consisting of CS pumps suc- tion from either the RWST (portion inside safequards building) or the containment sump. Also includes suction lines to the low pressure safety injection (LPSI) pumps from the CS sys- tem suction lines.	6.2-1A
20"-PCC-17-151 16"-PCC-18-151 16"-PCC-19-151	Primary Component Cooling Water System (PCCW)	728	PCCW pumps suction in the turbine building	9.4-1

These line segments are identified on the individual flow diagrams included in Appendix B.

Some small diameter piping (6 inches and under) originally was analyzed by both static seismic methods in accordance with licensing requirements and using SHOCK2. Piping which received these duplicate analyses is tabulated below. Safety-related piping on this list is indicated by an asterisk.

Acceptability of the safety-related lines has been reconfirmed using static seismic techniques or other acceptable methods.

Since acceptability of these safety-related lines is not based on SHOCK2 analysis, these lines have not been included as part of the SHOCK3 reanalysis effort.

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System	<u>Líne No.</u>	Description
Residual Heat Removal	*4"-PL-22 *2"-PL-21	Supply and Return to RWST Heater
Steam Generator Feedwater	*1 1/2"-WCPR-5 *3"-WCPR-6	Supply and Return to DWST Heater
Containment Spray	2"-CT-3	Spray Chemical Tank Mixing Line
Primary Component Cooling	*3-PCC-34	Supply to Degasifier Vent Condensers and Effluent Cooler
	6''-PCC-47	Supply to Boron Recovery Evaporator Distillate Cooler
	*3''- PCC - 56	Supply to Waste Evaporator Distillate Condenser
	*1''- PCC-58	Supply to Waste Evaporator Distillate Cooler
	*1 1/2"- PCC-161	Supply to Quench Tank Cooler
	*1 1/2"-PCC-117	Return from Boron Recovery Evaporator Distillate Cooler
	*1"-PCC-387	Return from Charging Pumps Seal Leakage Cooler
Chemical and Volume Control	*3"-CH-61	Main Charging Line
	*3''- CH-56	RC Pumps Seal Injection Header
	2"-DRL-6	Boric Acid Mix Tank Drain
Primary Vents and Drains	3"-DRL-31	Hydrogenated Waste Header to Primary Drain Tank
	3"-VRL-7	Hydrogenated Vent Header
	6"-VRL-4	Volume Control Tank Safety Valve Escape
Waste Gas Disposal	3/4"-DRL-135	Seal Liquid Separator Drain Line

System	<u>Líne No.</u>	Description
	1 1/2"-DRL-132	Drain from Waste Gas Surge Tank
	2 1/2"-BRG-11	Degasifier Feed Effluent HX to Degasifier Feed Preheater
	1 1/2"-GR-8	Seal Liquid Separator to Decay Drums
	1 1/2"-GR-17	Waste Gas Compressor to Seal Liquid Separator
Boron Recovery	2"-BED-1	Boron Recovery Evaporator Distillate Condenser Drain to Distillate Accumulator
	311-BR-2	Boron Waste Storage Tank to Liquíd Waste Transfer Pumps
	2"-BR-10	Supply to Boron Waste Storage Tank Heater
	3''-BR-1	Waste Demineralizer Post Filler to BWST
Fuel Pool Cooling	6"-FP-6	Fuel Pool Cooling Pumps Discharge to Fuel Pool Cooler

Fire Protection

10"

LEGEND:

LICENSING REQUIREMENTS

The licensing requirements for the Maine Yankee Atomic Power Plant, Docket No. 50-309, were reviewed. The specific licensing document references were derived from the Maine Yankee Final Safety Analysis Report (FSAR) through Amendment 38, the Seismic Design Review (SDR) submitted with Amendment 35, and Safety Evaluation Report (SER).

REANALYSIS - DISCUSSION OF RESULTS

Reanalysis efforts centered on the safety-related portions of systems that were originally analyzed with the SHOCK2 code, as directed in the NRC Order to Show Cause (Appendix A). As discussed below, each of these reanalyzed systems has been shown to meet acceptance standards as referenced in the FSAR.

The seismic reanalysis of the above systems was conducted using the SHOCK3, NUPIPE, STRUDL, and PITRUST codes in conjunction with amplified response spectra which are described in the Seismic Design Review (SDR), March 1972. These spectra include the amplification of response spectra resonance peaks and peak spreading features of the piping analyses known as the "Robinson Fix", referenced in the responses to USAEC Questions 4.4, 4.5, and 4.8 regarding the FSAR submitted for Maine Yankee Atomic Power Plant.

The reanalysis effort was comprised of six computer problems, identified as follows:

Problem No.SystemFig.No.16A & 16BHigh Pressure Safety9.1-2Injection System

FSAR

Problem No.	System	<u>Fig.No.</u>
70	Residual Heat Removal System	6.2-1B
803	Residual Heat Removal System (including connection to main loops)	6.2-1B 4.3-1
728	Primary Component Cooling Water System	9.4-1
795	Containment Spray System/	6.2-1A
(Part 1)	Low Pressure Safety Injection System	

FSAR

The summary tables in Appendix C compare the newly calculated stresses with code allowable stresses (derived from ANSI B31.1 Piping Code, 1967) and recalculated equipment nozzle and piping support loads with the originally calculated loads.

Table C-1 is a summary of combined line stresses for the six computer problems and lists the maximum upset (Operational Basis Earthquake) and faulted (Design

Basis Earthquake) pipe stresses calculated by the SHOCK3 code. Inspection of this table shows that all SHOCK3 pipe stresses are below code allowable stresses. Static loads have not been compared on this table because the thermal analyses of the systems have remained unchanged except as follows. For Problem 728, two rubber expansion joints have been more accurately modeled (as segments of very thin tubing, allowing for maximum flexibility); this has resulted in increased but acceptable pump suction nozzle thermal loads as discussed below. For Problem 795 (Part 1), the operating temperature has been revised from 450 F to 220 F because the former value applies to normal cooldown by the RHR system and not to LPSI and CS systems operation. This has

Table C-2 gives the SHOCK3/NUPIPE calculated piping end reactions, i.e., the loads exerted on equipment by the piping, and compares these with equipment loadings previously calculated using the SHOCK2 code. Since the recalculated equipment loadings for four of the six problems were found to be lower than the originally calculated values, they represent acceptable piping end reactions. The remaining two problems are discussed below.

For Problem 728, calculated moments at the primary component cooling water pump suction nozzle were found to be greater than SHOCK2 values (see Table C-2, sheet 5). Loads on the suction and discharge nozzles were

translated to the pump centerline and the resultant was compared with and found to be within pump vendor allowables.

For Problem 795 (Part 1), the nozzle loads at the low pressure safety injection pump suctions and containment spray pump suctions were, in some cases, found to be greater than those calculated previously with the SHOCK2 code (e.g., see Table C-2, sheets 8, 9, 11). The new loads are, however, still below the maximum loads specified by the pump vendor. Hence, the SHOCK3 results were deemed acceptable.

Displacements of branch connections 6 inches and smaller, attached to the reanalyzed piping runs, were reviewed and found to be acceptable.

Table C-3 presents forces and moments for piping supports, again comparing SHOCK2 with SHOCK3 loads. In the cases where SHOCK3 hanger loads have increased over SHOCK2 values, hanger manufacturers' catalogs have been researched or individual calculations (e.g., with the STRUDL code) have been performed to verify that existing hangers are not overstressed.

Particular attention was paid to the following anchors (six-way restraints) for which SHOCK3 loads exceeded SHOCK2 results. These restraints involve trunnions welded to one or more pads which are in turn welded to the pipe itself.

Problem	<u>Restraint</u>
16A	H-4
16B	н-з, н-7
795 (Part 1)	H-49, H-51, H-53

In addition to reviewing the anchors for member stresses, anchor bolt loads, base plate and weldment stresses, computerized calculations were made with the PITRUST code to determine local piping stresses at the trunnion interface. Results of these investigations showed that all the above anchors are acceptable.

APPENDIX A

NRC LETTER - ORDER TO SHOW CAUSE MARCH 13, 1979

UNITED STATES OF AMERICA \ NUCLEAR REGULATORY COMMISSION \

In the Matter of

MAINE YANKEE ATOMIC POWER COMPANY (Maine Yankee Atomic Power Station) Docket No. 50-309

115.5160

MAR1 4 1979

ORDER TO SHOW CAUSE

I.

The Maine Yankee Atomic Power Company (the licensee) is the holder of Facility Operating License No. DPR-36 which authorizes operation of the Maine Yankee Atomic Power Station, (the facility) at power levels up to 2630 megawatts thermal (rated power). The facility, which is located at the Licensee's site in Lincoln County, Maine, is a pressurized water reactor used for the commercial generation of electricity.

II.

In the course of evaluation of certain piping design deficiencies in connection with the Beaver Valley Power Station, Docket 50-334, significant discrepancies were observed between the original piping analysis computer code used to analyze earthquake loads by Stone and Webster, the architect-engineer for that facility, and a currently acceptable computer code developed for this purpose.

In the course of a meeting on March 8, 1979 to discuss these matters, the Beaver Valley Licensee informed the NRC staff that the difference in predicted piping stresses between the two computer codes is attributable to the fact that the piping analysis code used for a number of piping systems in that facility uses an algebraic summation of the loads predicted separately by the computer code for both the horizontal component and for the vertical component of seismic events. This incorrect treatment of such loads was not recognized at that time. Such loads should not be algebraically added (with predicted loads in the negative direction offsetting predicted loads in the positive direction) unless far more complex timehistory analyses are performed. Rather, to properly account for the effects of earthquakes, as required by General Design Criterion 2 for systems important to safety, such loads should be combined absolutely or, as is the case in the newer codes, using techniques such as the square root of the sum of the squares. This conforms to current industry practice.

The inappropriate analytical treatment of load combinations discussed above becomes significant for piping runs in which the horizontal seismic component can have both horizontal and vertical components on piping systems, and the vertical seismic component also has both horizontal and vertical components. It is in these runs that the predicted earthquake loads may differ significantly.

Although the greatest differences in predicted loads would tend to be limited to localized stresses in pipe supports and restraints or in weld attachments to pipes, there could be a substantial number of areas of high stress in piping, as well as a number of areas in which there is potential for damage to adjacent restraints or supports, which could

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have significant adverse effects on the ability of the piping system to withstand seismic events.

The NRC staff communicated with Stone and Webster, who was also the architect-engineer for the Maine Yankee facility, to ascertain whether the conditions identified for Beaver Valley were also applicable to Maine Yankee. We were informed that since the same revision of the same computer code had been used for both Beaver Valley and Maine Yankee, a similar problem may be anticipated. The NRC informed the Licensee of these facts by phone on Friday, March 9 and on Sunday, March 11, 1979.

In order to ascertain the specific systems at Beaver Valley that could be potentially affected by this error, members of the NRC staff on March 10, 11 and 12 went to the offices of Stone and Webster, the architectengineer of both Beaver Valley and Maine Yankee to review detailed designs and computations for some of the piping systems of principal potential concern. Concurrently, on March 9, 1979 the Beaver Valley Licensee suspended power operation of that facility. Based on this more detailed review, the NRC staff has concluded that until full reanalysis of all potentially affected piping systems important to safety has been completed with a piping analysis computer code which does not contain the algebraic summation error, the potential for serious adverse effects at the Maine-Yankee facility exists in the event of an earthquake and could be sufficiently widespread that the basic defense in depth provided by redundant safety systems may be compromised.

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In view of the safety significance of this matter as discussed above, the Director of the Office of Nuclear Reactor Regulation has concluded that the public health and safety requires that an orderly suspension of operation of the facility should be effected immediately and that, in order to provide adequate protection of public health and safety the facility operation should be suspended: (1) until such time as the piping systems for all affected safety systems have been reanalyzed for earthquake events to demonstrate conformance with General Design Criterion 2 using a piping analysis computer code which does not contain the error discussed above, and (2) if such reanalysis indicates that there are components which deviate from applicable ASME Code requirements, until such deviations are rectified.

III.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Rules and Regulations in 10 CFR Parts 2 and 50, IT IS HEREBY ORDERED THAT the Licensee show cause, in the manner hereinafter provided,

(1) Why the Licensee should not reanalyze the facility piping systems for seismic loads on all potentially affected safety systems using an appropriate piping analysis computer code which does not combine loads algebraically

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- (2) Why the Licensee should not make any modifications to the facility piping systems indicated by such reanalysis to be necessary; and
- (3) Why facility operation should not be suspended pending such reanalysis and completion of any required modifications.

In view of the importance to safety of this matter, as described herein, the Director of the Office of Nuclear Reactor Regulation has determined that the public health and safety or interest require that this action be effective immediately, pending further Order of the Commission. Accordingly, within 48 hours of the receipt of this Order, the facility shall be placed in cold shutdown condition, and shall remain in such mode until further Order of the Commission.

The Licensee may, within twenty days of the date of this Order, file a written answer to this Order under oath or affirmation. Within the same time, the Licensee or any interested person may request a hearing. If a hearing is requested, the Commission will issue an Order designating the time and place for hearing. Upon failure of the Licensee to file an answer within the time specified, the Director, Office of Nuclear Reactor Regulation will, without further notice, issue an order suspending further activities under Operating License DPR-36.

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In the event a hearing is requested, the issues to be considered at such hearing shall be:

Whether operation under Facility License No. DPR-36 should be suspended until (1) the piping systems for all affected safety systems are reanalyzed for earthquake events using an appropriate piping analysis computer code which does not combine seismic loads algebraically, and until (2) any modifications required to restore the system to conformance with applicable ASME Code requirements are completed.

FOR THE NUCLEAR REGULATORY COMMISSION

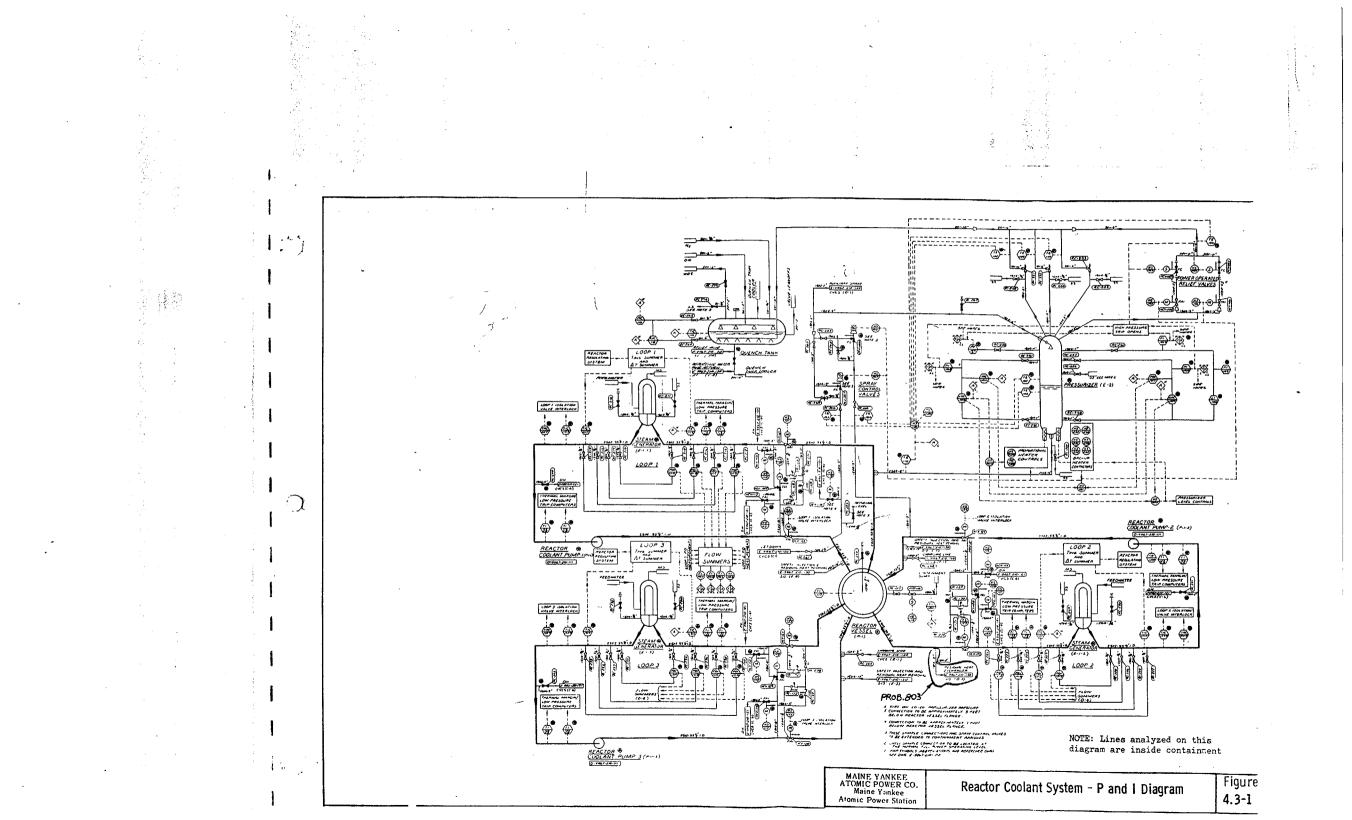
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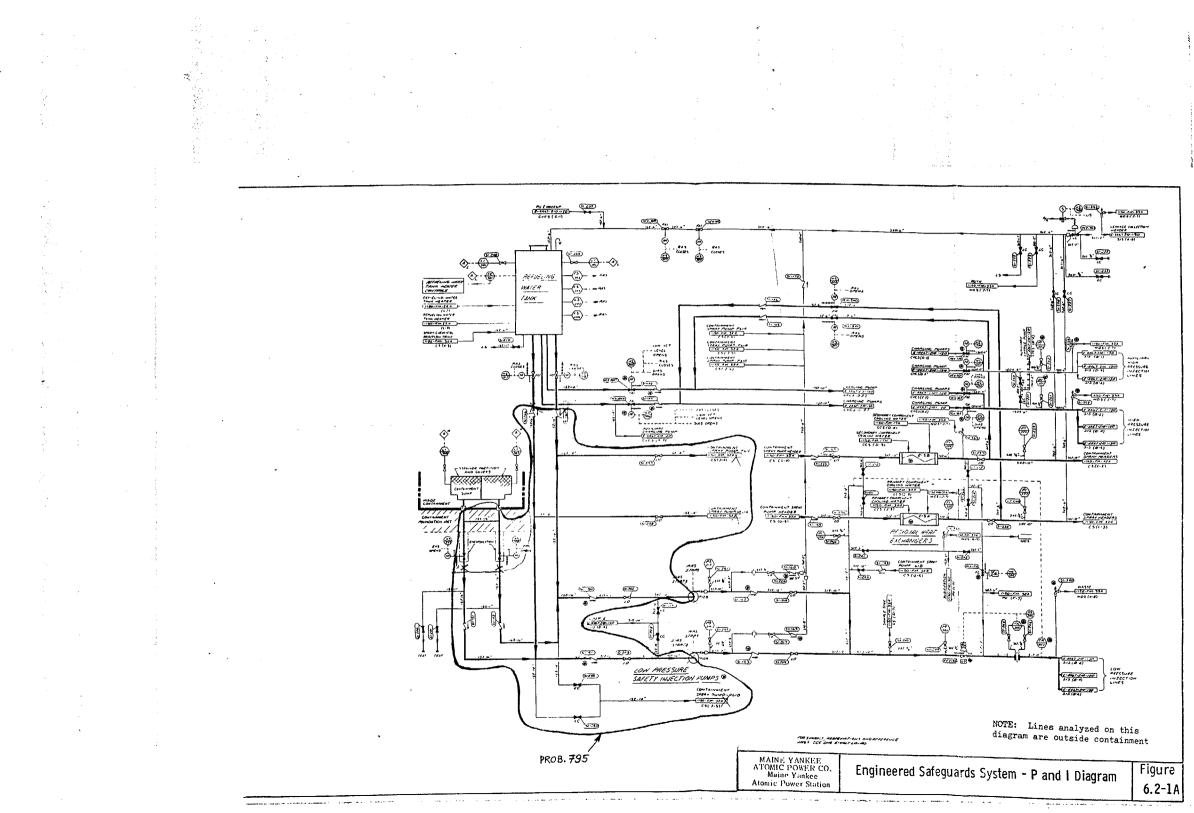
Harold R. Denton, Director Office of Nuclear Reactor Regulation

Dated at Bethesa, Maryland this 13th day of March, 1979.

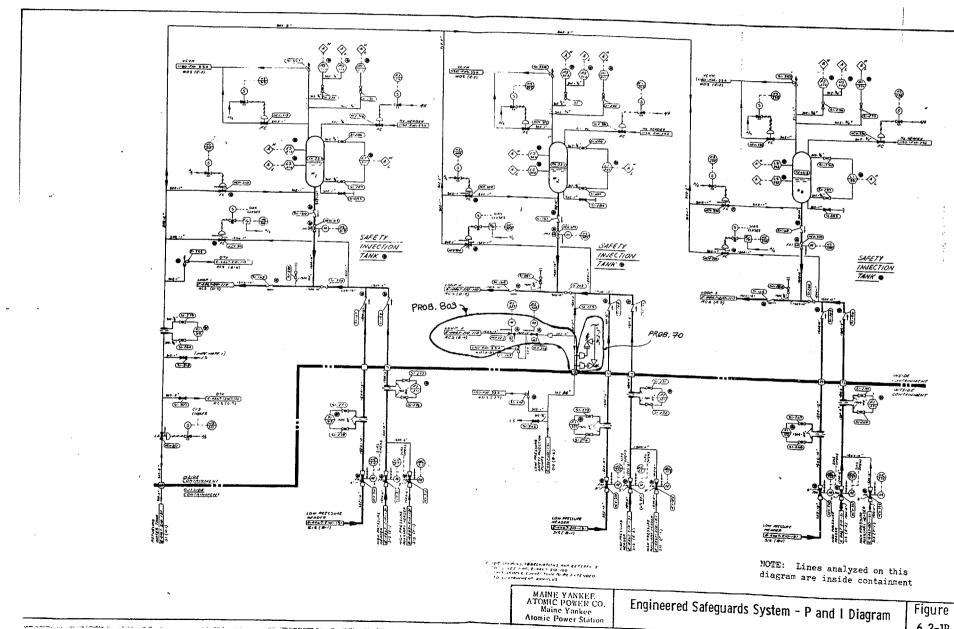
APPENDIX B

FLOW DIAGRAMS - IDENTIFICATION OF SYSTEMS AFFECTED





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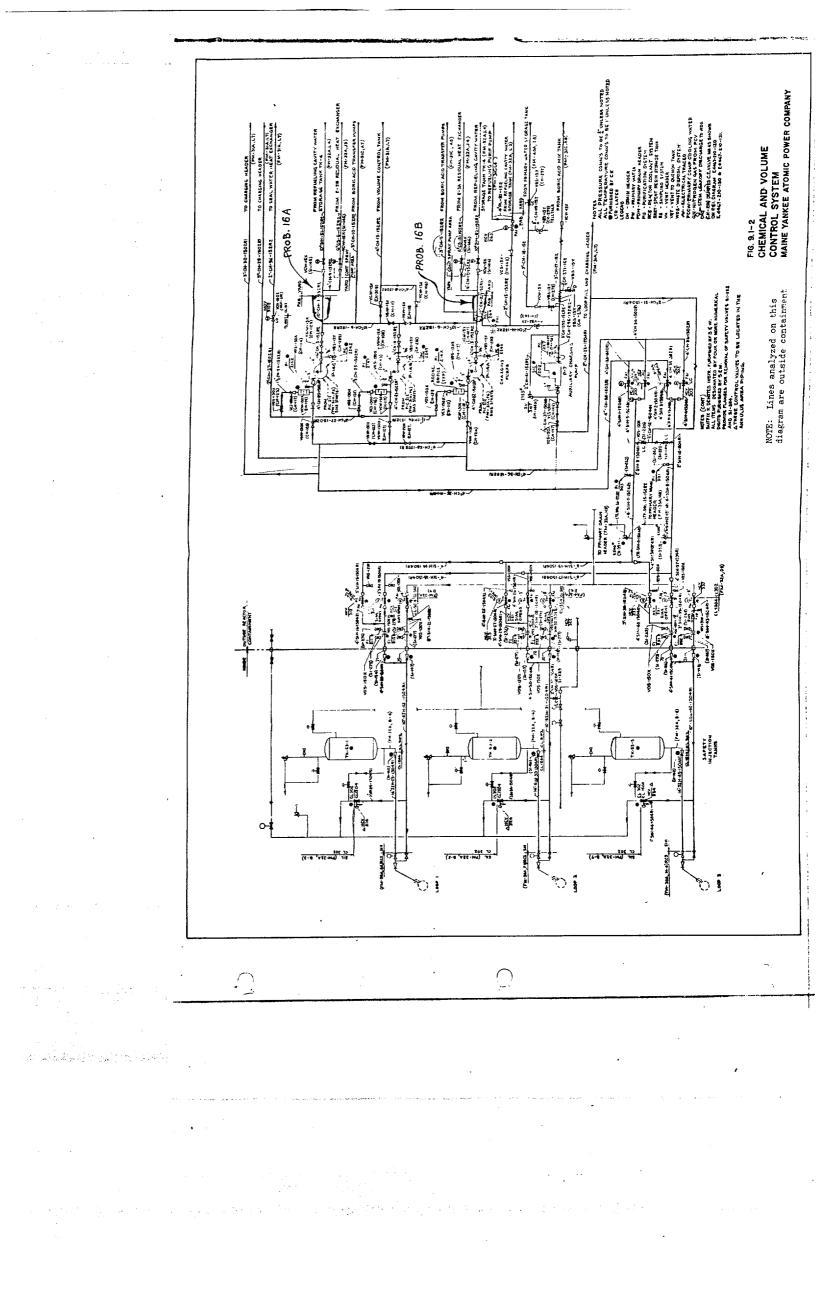


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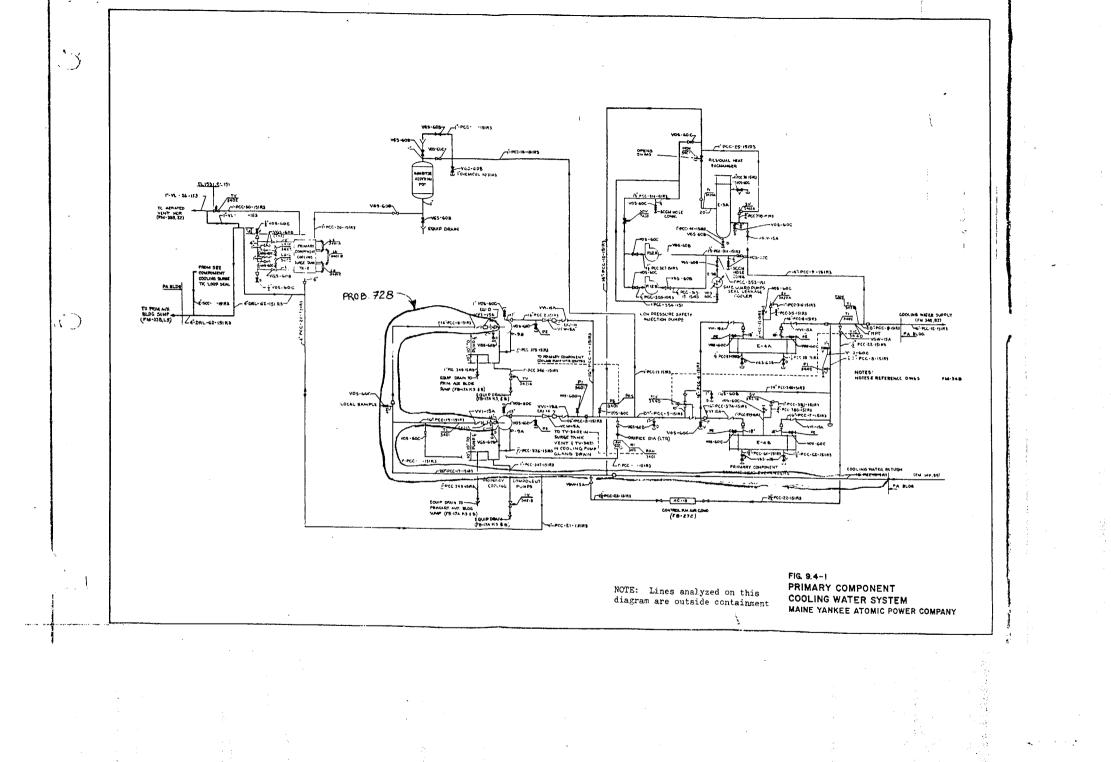
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. Engineered Safeguards System - P and I Diagram

Figure 6.2-1B



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APPENDIX C

REANALYSIS RESULTS - COMPARISON TABLES

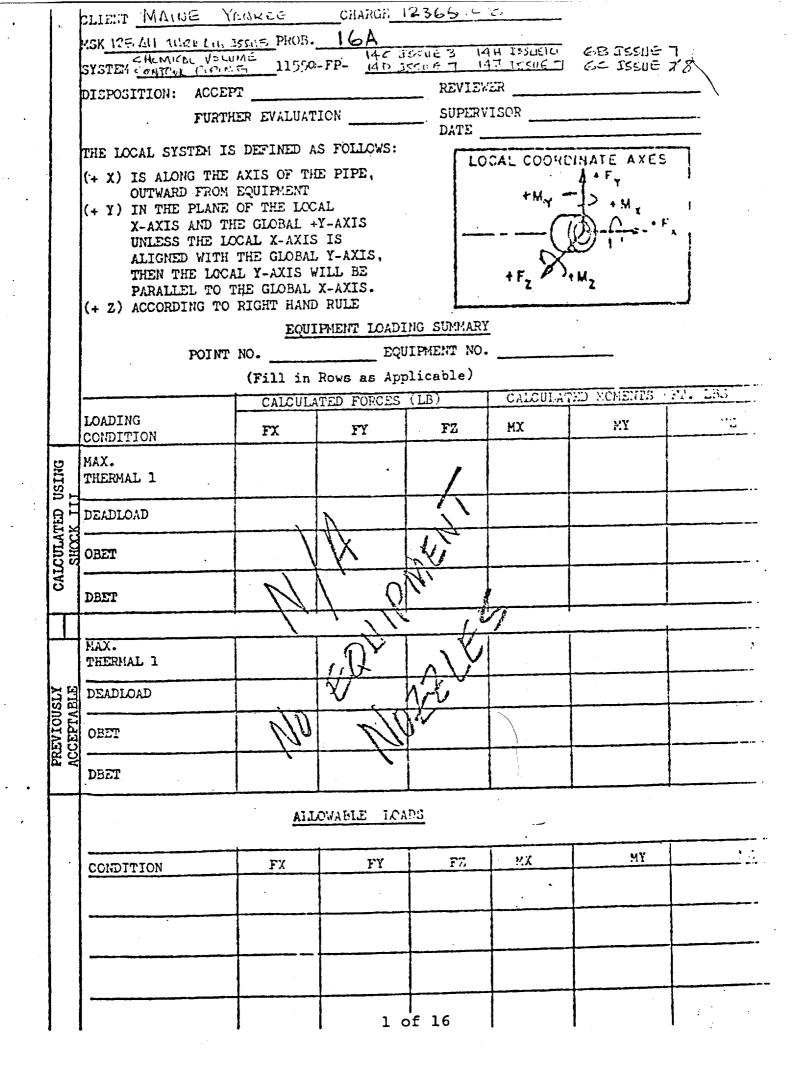
TABLE C-1

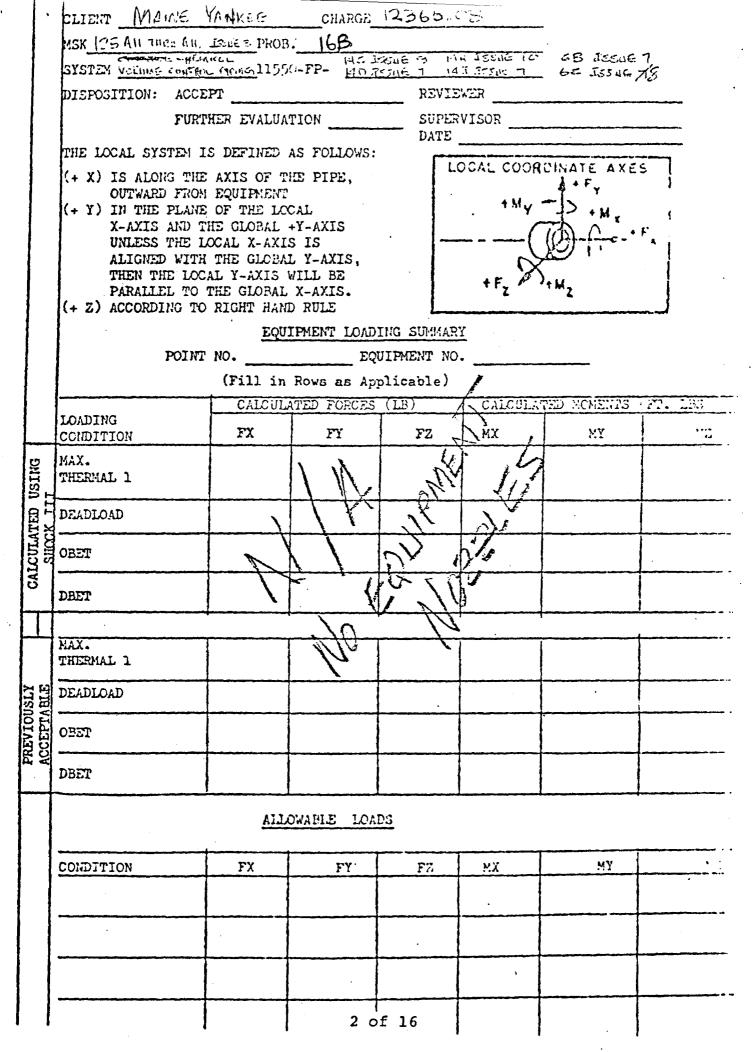
Problem No.	<u>Primary Stresses</u> *	Allowable Stress	SHOCK3 Maximum Calculated
(System)		(psi)	Stress at Point No. (psi)
16A	UPSET	21,972	4,681 a 39
(HPSI)	FAULTED	32,958	4,901 a 24
16B	UPSET	21,972	2,494 a 235
(HPSI)	FAULTED	32,958	2,719 a 235
803	UPSET a 650 F	19,200	5,365 a 30
(RHR/RC)	UPSET a 450 F	17,700	6,388 a 1
	FAULTED & 650 F	28,800	6,109 a 30
	FAULTED & 450 F	26,550	7,297 a 1
728	UPSET	14,400	3,757 a 204
(PCC)	FAULTED	21,600	3,608 a 216
795(Part 1) UPSET	19,620	9,593 a 46
(CS)	FAULTED	29,430	17,732 a 46
70	UPSET	17,700	8,031 a 21
(RHR)	FAULTED	26,560	13,030 a 11

SUMMARY OF COMBINED LINE STRESSES

*Primary Stresses:	Upset	$S_{LP} + S_{DL} + S_{OBE} \le 1.2 S_{h}$
	Fault	ed S _{LP} + S _{DL} + S _{DBE} ≤ 1.8 S _h
Definitions:	Sh	= Allowable Stress at Operating Temperature
	SLP	= Longitudinal Pressure Stress
	SDL	= Dead Load Stress
	SOBE	= Operational Basis Earthquake Stress
	SDBE	= Design Basis Earthquake Stress

1 of 1





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TED U	DEADLOAD												
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Ϋ́	DBET	854	250	606	296	6785	1802						
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	MAX. THERMAL 1												
USLY ABLE	DEADLOAD												
PREVIOUSLY ACCEPTABLE	OBET	2109	959	3938	1670	25837	4145						
e y	DBET	8792	4224	17490	7483	111136	17856						
		LIA	OWABLE LOP	ADS (FROM	4 MSK-1	<i>0783-</i> 2)							
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	5	DBET	10	145	166	880	123	132
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		THERMAL 1	284	-400	-310	0	0	0
	USLY AFLE	DEADLUAD						
	FREVIOUSLY ACCUPIALE	OBIT INCLUDE DEADLOAD	284	900	310	0	0	0
		DBATSETHERMAL	284	900	310	0	0	0
			ALIA	OWABLE IOA	<u>D3</u>			
		CONTRION	FX	FY	FZ	мх	MY	M.Z.
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4	ľ		JOE NE LOADS	(ALL LO	ADS WITH	IN ALL	WABLE)	
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				5 01	E 16			
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		117E1-5 117C4-5 1 117E1-5 117C5-5 117E2-5 117E5-5	ITET 2 TROB.	728		· · · ·		
		SYSTEM PCC	11550	-rp. 201	4 1550	JE 9		
		DISPOSITION: ACCEP	·: E' 1/114		REVIEW SUPERV	$\operatorname{ER} \underline{RC}$	Carella	
		FURTHER EVALUATI			SUPERV	1307 ONA 471.[7	pokarski	
1		THE LOCAL SYSTEM IS	(LH DEFINED A			-		••••••
		+ X) IS ALONG THE	AXIS OF TH		LO	CAL COORE	NATE AXES	
-		OUTWARD FROM	EQUIIMENT			+ M -	-> .w.	 ł
		(+ Y) IN THE PLANE X-AXIS AND THE	ie global +	Y-AXIS			The + F	
		UNLESS THE LA ALIGNED WITH	XAL X-AXIS THE GLOBAL	IS Y-AXIS.			911	
		THEN THE LOOM	L Y-AXIS W	TLL BE		+ F, ()	٠K,	
		PARALLEL TO T (+ Z) ACCORDING TO	TATIONT UANT	DITT	•		de desetantestature attentes annual	
					ING SUMMARY	FROM N	UPIPE RUNI JOB 36	NO, 1741001
		POINT	COMBINED :	SUCTION EN	JIPMENT NO.	<u>P-9</u>	B JOB 36	
			(Fill in	Rows as App	olicable)			
			CALCULA	TED FORCES	(L3)	CALCULAT	NED MOMENTS (
		LOADING CONDITION	FX	FY	FZ	HX	MY	MZ
	5MIC	LAX. THEFMAL 1	25	-93	1	/8	-31	587
		DEADLOAD	160	3	0	-4	9	156
	CALCULAT 3HOCK	OUTT	17	81	119	677	80	85
	CAI	DBET	16	176	/33	742	96	162
					· · · · · · · · · · · · · · · · · · ·			
		NAX. THERMAL 1	284	-400	-310	0	0	0
	ALS!	DEADLOAD						
	FEVIOUSLY	OFTT INCLUDE DEADLOAD	284	900	310	0	0	0
	in M	DEST & THERMAL	284	900	310	0	0	0
			ALL	ovaple I <i>O</i>	ADS			
		CONDITION	F.X	FY	FZ	МХ	мү	<u>M7.</u>
			655.		CT EAP	MANOF	ACTURERIS	ALLOWAP
			LOAD	S(ALL L	OADS W	THIN A	LOWABLE	D
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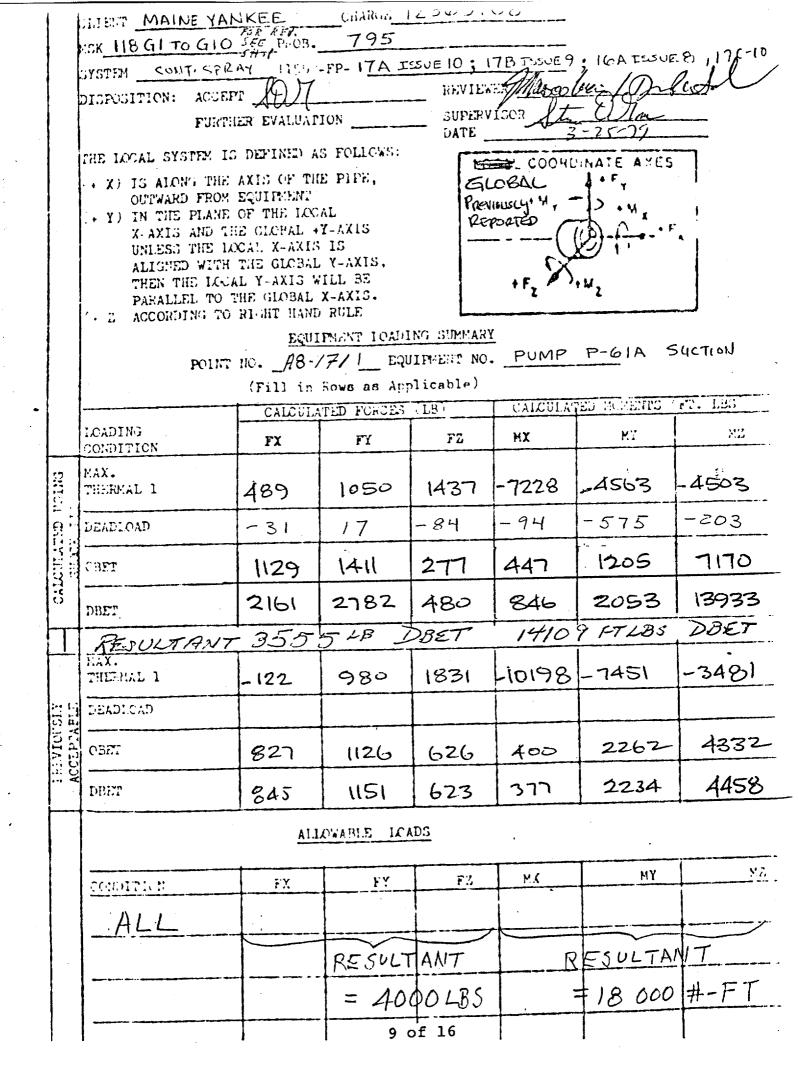
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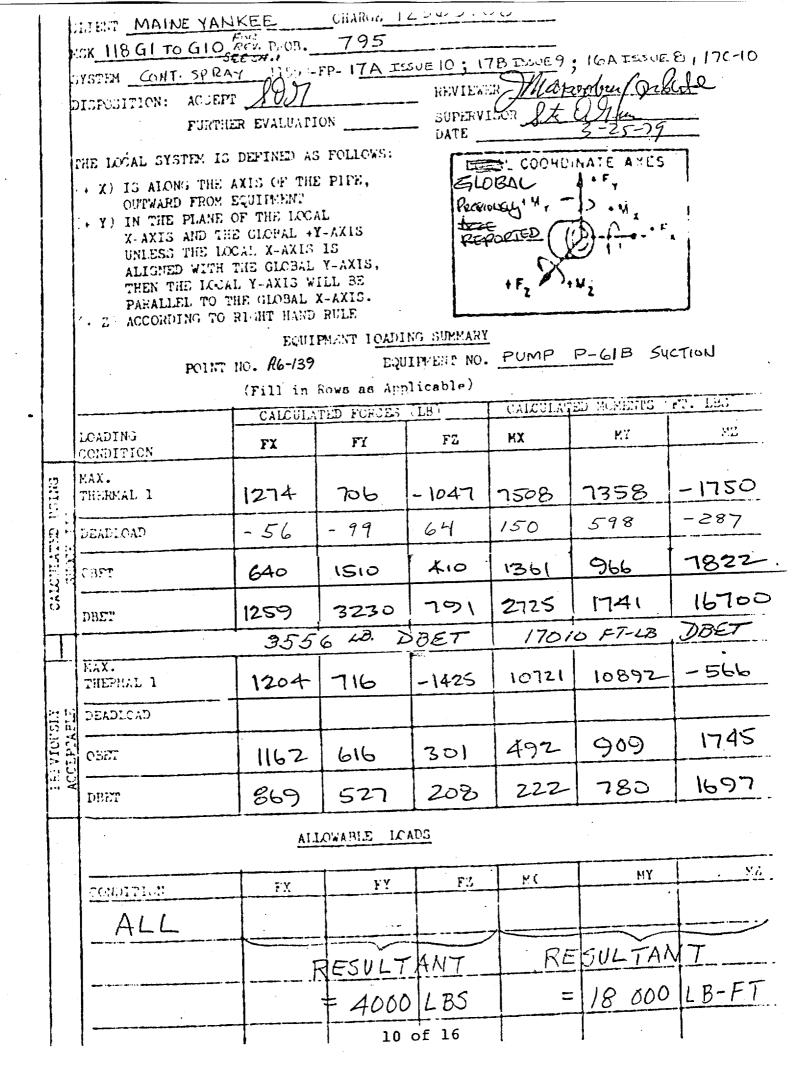
	1	PLIENT MAINE Y	ANKEE	CHARGE	16363.	<u>UU</u>	TABLE (C-2 (Cont)					
		MSK 11861 TOGI	QESS PROB. EH:			72.000	· V.A ISSUE	Q . 17C ISSUE .					
		SYSTEM <u>KHK</u>			SUE ID T	78 1550E	7; 16A 1550E Carl 4/1/7	5,172,000					
		DISPOSITION: ACCEP		<u>ch and 4.1.</u>	<u>99</u> REVIEW	ISOR ON	Victoraki						
		FURTHER EVALUATI	ON (EM	D)	DATE	4/1/29							
<i>.</i>		THE LOCAL SYSTEM IS			T Le	COOK	INATE AXES						
		(+ X) IS ALONG THE OUTWARD FROM	AXIS OF TH	E PIPE,	GI	obal	A+Fy)					
		(+ Y) IN THE PLANE	OF THE LOC	AL	Re	UNITE AT							
		X-AXIS AND THUNLESS THE LO	TE GLOBAL + XAL X-AXIS	Y-AXIS S IS	· /	(D-f+F	A					
		ALIGNED WITH THEN THE LOCA	THE GLOBAL	, Y-AXIS,									
		PARALLEL TO 7	THE GLOBAL	X-AXIS.	-	+ F 2 ()	r M Z						
:		(+ Z) ACCORDING TO			MC CIMMARY		n general ander Chennen af nes handen der Kille	Product.					
		DOTIM	NO 49-	PMENT LOADI	TPMENT NO.	PUMP 1	ZA (SUCT	ion)					
	1	POINT NO. <u>A9-153</u> EQUIPMENT NO. <u>PUMP 12A</u> (SUCTION) (Fill in Rows as Applicable)											
				TED FORCES		CALCULAT	ED MOMENTS (FF. LBS)					
		LOADING CONDITION	FX	FY	FZ	ХМ	мү	MZ					
	20	MAX.						2					
	USING	THERMAL 1	-1120	-11	-2271	-1758	-12425	2					
		DEADLOAD	-4	799	197	- 504	1391	-112					
	CALCULATED SHOOT 1	OBET	781	1600	4274	8473	14392	3066					
	CAI	DBET	1091	2719	5421*	15017	23203	3745					
•		KAX.		105		7704	-22532	12456					
		THERMAL 1	-1784	493	-2930	-7294		12450					
	ISLY ALE	DEADLOAD											
	PREVIOUSLY ACCEPTABLE	OBET	1035	4171	4404	2521	6056	13580					
	RA V.V	DBET	1173	4308	5203	3038	6600	14085					
			ALL	OWABLE LOA	DS								
				· · · · · · · · · · · · · · · · · · ·									
		CONDITION	FX	FY	FZ	MX	MY	MZ					
		ALL	4000	4000	4000	40000	40000	40000					
		N SLIGHTLY L	16,415 20 712	N THE CRI	GINAL . How	VEVER SING	E THE NEW	RESULTAINT					
		1.5 LUIVER	THAN TH	E PREVIOUS	LY CALCUL	ATED RESC	E THE NEW	VALUE IS					
		CUNSIDERED	ACCEPTABL	F.	f 16								
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1	partie _/illine										
	MSK 11861 TO GIO FOR PHOB. 795										
	SYSTEM RHR 11550-FP- 17A ISSUE 10; 17B ISSUE 9; 16A ISSUE 8										
	DISPOSITION: ACCEPT 4-1-79 REVIEWER										
	FURTHER EVALUATION V SUPERVISOR CHARLES (EMD) DATE 4/1/79										
	THE LOCAL SYSTEM										
	THEN THE LO PARALLEL TO	M EQUIPMENT E OF THE LOO THE GLOBAL LOCAL X-AXIS H THE GLOBAL CAL Y-AXIS V THE GLOBAL	CAL +Y-AXIS 5 IS L Y-AXIS, VILL BE X-AXIS.	G	HE COUNTED Y	CINATE AXES $A + F_y$ $- D + M_x$ $- D - M_x$ - T - T - T $+ M_z$	5 F_x				
	(+ Z) ACCORDING T			The CIDIMAD	nalisi kangkan kangkan Kangkan kangkan	الملاقدة مواديد قرم ويعت قلي ويديل من مرودي	an and				
1	DOTIN		IPMENT LOAD			IZB (SUCTI	(IAO)				
	POIN		Rows as Ap		· <u>romp</u>	12 <u>5 (</u> 500)					
		•	ATED FORCES		CALCULA	TED MOMENTS	(FT. LBS)				
	LOADING	FX	FY	FZ	мх	MY	MZ				
	CONDITION MAX.										
USING	THERMAL 1	-1090	189	2663	2985	15619	-26				
	DEADLOAD	- 29	807	-203	503	-1605	-113				
CALCULATED SRCCK T	OBET	3334	2187	4371	7596	11535	200				
CA	DBET	3973	3184	5592	14718	2/39/	249				
Τ				•			 				
	MAX. THERMAL 1	-1234	-520	5174	12942	32620	2146				
SLY BLE	DEADLOAD										
PREVIOUSLY ACCEPTABLE	OBET	3571	4737	4778	1638	7662	1249				
PH AC	DBET	4123	5048	5554	2004	8094	12:81				
		ALL	OWABLE LO	<u>NDS</u>		•					
	CONDITION	FX	FY	FZ	MX	мү					
	ALL	4000	4000	4000	40000	40000	4000				
		-	8 0	of 16							
			80	NT TO	-		1				

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	1	LILENT MAINE YA	NKEE	<u> </u>	12000			
		110 01 - 610	THUR REY.	795			11 1	\$ 1m
		SYSTEM CONT. SPRAY 1150-FP- 17A ISSUE 10; 17B ISSUE 9; 16A ISSUE 8, 17C-10						
		DISPUSITION: ACCEPT US Thesen REVIEWER MERCE Constant						
		FURTHER EVALUATION SUPERVISOR <u>SUPERVISOR</u> <u>Jane</u>						
		THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:						
		 (+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT (+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE GLOPAL +Y-AXIS UNLESS THE LOCAL X-AXIS IS ALIGNED WITH THE GLOBAL Y-AXIS, THEN THE LOCAL Y-AXIS WILL BE PARALLEL TO THE GLOBAL X-AXIS. (- Z) ACCORDING TO RIGHT HAND RULE EQUIPMENT LOADING SUMMARY POINT NO. R3-SOEQUIPMENT NO. PUMP P-61S SYCTION 						
•*								
	(Fill in Rows as Applicable)							
				CALCULATED FORCES		CALCULAT	ED HOMENTS (FT. LEG
		LOADING CONDITION	FX	FY	FZ	мх	MY	MZ
	DMICH CAL	MAX. THERMAL 1	1562				556 THA	
				3012	97	-39	421	-11549
		DEADLOAD	-215	101	17	-24	48	- 583
	CALCULA SILV	T367	537	1178	1138	908.	4263	5170
	C 21	DBET	910	2400	2339	1813		10536
		RESULTA	26	288 FT-	B DBET			
	LE VICCSIX ACCEPTARLE	HAX. THEEHAL 1	1466	4033	112	-15	560	-15803
		DEADLCAD						
		OBET	539	689	86	99	168	2335
-		DBET	564	704	147	165	372	2379
	ALLOWABLE LOADS							
		CCEDITIN I	FX	FY	FZ	MX-	MY	MZ
		ALL				ļ		
(R	FSULT	ANT	RE	SULTA	NT
			=	4000	Į .	=	18 000	LB-FT
		11 of 16						
		1	-	· ·				

LIEUT MAINE YANKEE CHARGE 12365.08 LADIE CTA (COL 15x 118 GI TO GIO PHOB. 795 1151 - FP- 17A ISSUE 10; 17B TISUE 9; 16A TESUE 8, 17 C-10 SYSTEM CONT. SPRAY hazer a REVIEWERZ DISPOSITION: ACCEPT (SUPERVISOR It UIM FURTHER EVALUATION -25-79 DATE THE LOCAL SYSTEM IS DEFINED AS FOLLOWS: COORDINATE AYES (+ X) IS ALONG THE AXIS OF THE PIPE, 1 + F., SLOBAL OUTWARD FROM EQUIPMENT Paguausi" (+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE CLOPAL +Y-AXIS PEROPTED UNLESS THE LOCAL X-AXIS IS ALIGNED WITH THE GLOBAL Y-AXIS. THEN THE LOCAL Y-AXIS WILL BE PARALLEL TO THE GLOBAL X-AXIS. ". Z' ACCORDING TO RIGHT HAND RULE EQUIPMENT LOADING SUMMARY POINT NO. AZ-48 EQUIPMENT NO. PENT (Fill in Rows as Applicable) CALCULATED MOMENTES (FY. LEG CALCULATED FORCES (LB) LOADING FX FY FZ МΧ MT 2.4 CONDITION MAX. THERMAL 1 711 149 -6470 -3697 -806 182 £1 DEADLOAD 450 -19 -1640 -252 -6016 44 5295 CBFT 20881 2568 5632 892 747 57750 1399 11064 9651 41122 1718 5063 DBET LAX. THEPHAL 1 -7402 1257 -3 -1473 360 -10571 DEADLCAD **c**, a OBET 825 678 963 7502 11496 314 DEET 324 738 695 992 10566 7390 ALLOWABLE LOADS Y.Z. MY FX CONDITION FΥ FZ. MX APPLICABLE NOT . 12 of 16

DITERT WHINE YANKED UNAMA IL-SK 118 GI TO GIO PHOB. 795 SYSTEM CONT. SPRAY 1150-FP- 17A ISUE 10; 17B ISUE 9; 16A ISUE 8, 176-10 Hane G REVIEWER DISPUSITION: ACCEPT Of Houses SUPERVISOR FURTHER EVALUATION DATE THE LOCAL SYSTEM IS DEFINED AS FOLLOWS: COONDINATE AMES + X) IS ALONG THE AXIS OF THE PIPE, GLOBAL OUTWARD FROM EQUIPMENT PREVIOLSEY + M, + Y) IN THE PLANE OF THE LOCAL REPORTED X-AXIS AND THE CLOPAL +Y-AXIS UNLESS THE LOCAL X-AXIS IS ALIGNED WITH THE GLOBAL Y-AXIS, +F, THEN THE ICCAL Y-AXIS WILL BE PARALLEL TO THE GLOBAL X-AXIS. ". Z' ACCORDING TO RIGHT HAND RULE EQUIPMENT LOADING SUMMARY POINT NO. AI-I EQUIPMENT NO, PENT. (Fill in Rows as Applicable) CALCULATED MOMENTS (FT. LEG CALCULATED FORCES (LB) LOADING. MZMT MX FZ FY FX CONDITION MAX. DRICH 1445 11369 495 THERMAL 1 -509 -858 136 - 5855 539 -480 -62 គ្ន DEADLOAD -157 -1680 CALCHEAT 3309 2200 724 : 583 CBET 442 327 6760 1527 3662 511 1024 857 DBE" LaX. 1967 11496 245 THERMAL 1--868 199 -527 DEADLOAD 1682 1658 OBET 4 384 449 310 2983 1797 10 DEET 431 343 504 ALLOWABLE LCADS MZ MY MX FZ · F۲ FΧ CONTRACT APPLICABLE NOT 13 of 16

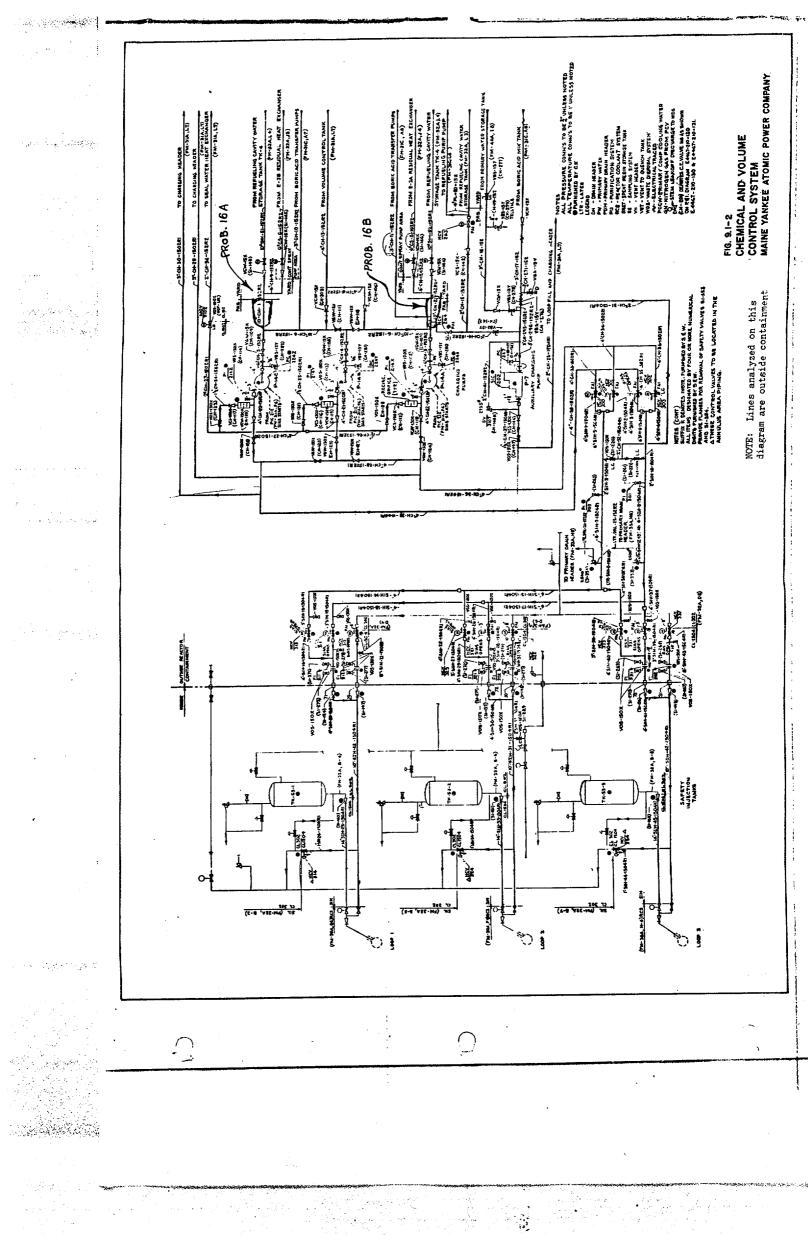
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	EH-1-302		LPHENT NO. (síðsið	X-AXIG. RULE IGAOI TOREI	ARGIA THORA RICHT THORA IUSA NO. AL- NO. AL- NO. AL- NO.	FOLUT POLUT PARALEL TO 1
Y		W+		ער ד-אצוג נו א-אצוג,	THE CLOBAL SCAL X-AXIS CPAL X-AXIS COLL X-AXIS	THEN THEN THE LOCA ALLONED WITH UNLESS THE LANE X-AXIS AND THE NATE ALOUA THE PLANE ALOUA THE ALOUA THE AL
	TANK AXES	A RAN	01 (01- Иглин Иглин Лата Тата	(n 4	ICN ICN ML TLY	HINDIAN SAFELLE L HOON HOITICOARIC HINDIANA MARTNUA HINDIANA MARTNUA HINDIANA MARTNUA HINDIANA MARTNA HINDIANA HINDIANA HINDIANA MARTNA HINDIA

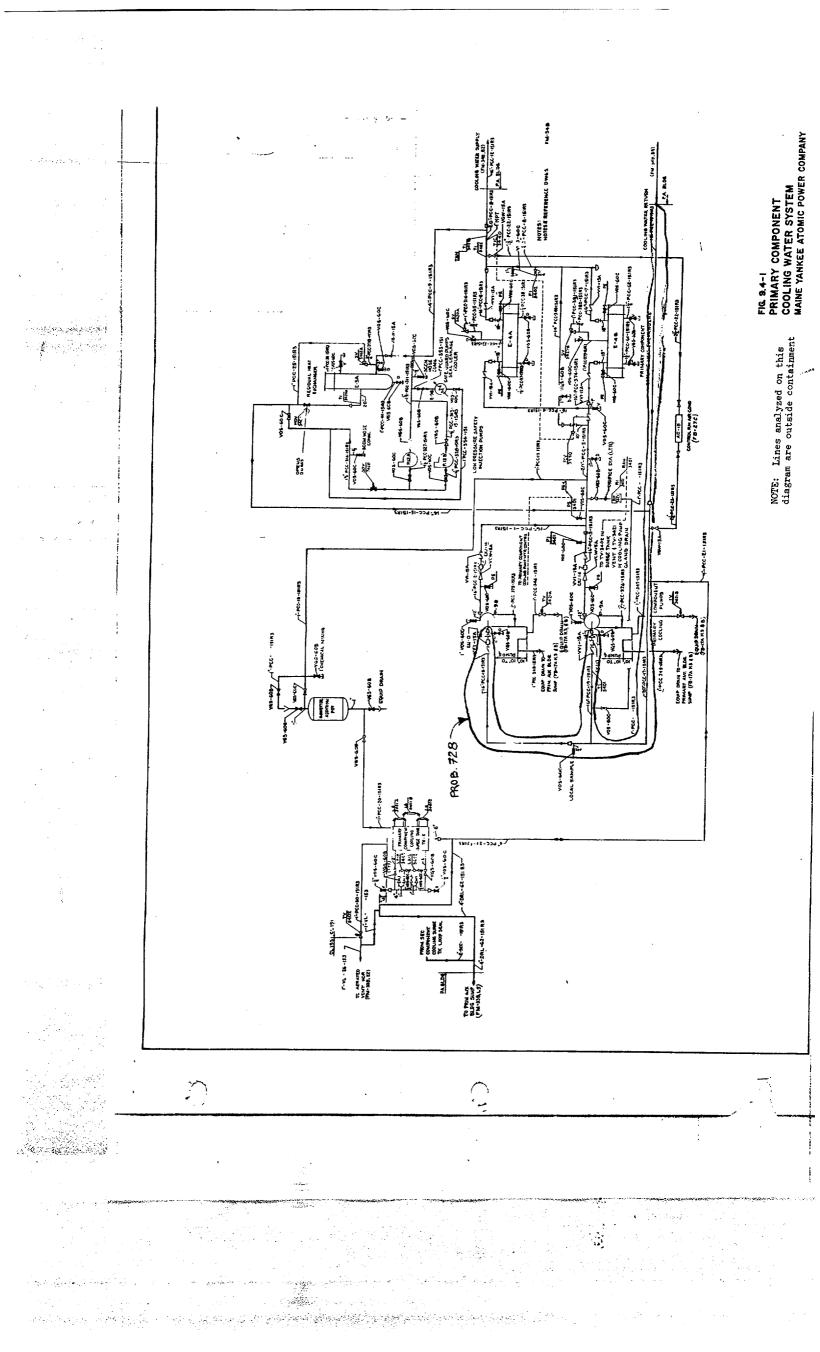
		SK 146 AI-A4, 155	UE I PROB	. #70				
		SYSTEM S.V.RELIEFL		- 13A	-10, 16D.	- 11	A	_
		DISPOSITION: ACC		<u> </u>	REVIEW	1 (-	TBula	ang-
		FURTHER EVALUA	rion		SUPERV		the UTm	
•				D)	DATE	29	MAR JY	
		THE LOCAL SYSTEM					DINATE AXES	5
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		X-AXIS AND UNLESS THE	INCAL X-AXI	S IS		((C)-f	Γx [
		ALI INED WIT	H THE GLOBA	L Y-AXIS, 👘		\sim		
		THEN THE LO PARALLEL TO	THE GLOBAL	X-AXIS.		+ F _Z	'+ M Z	
		.+ Z) ACCORDING T	U RIGHT HAN	D RULE	L			an a
				IPMENT LOAD	ING SUMMAR	NOZZIE	CONNECTIO	\mathcal{N}
		POIN	T NO. 23			LINE K	+"- RH-1-30	2R2 .
				Rows as Ap			TED MOMENTS	
		LCADING		ATED FORCES			МҮ	MZ
		CONDITION	FX	FY	FZ	MX		
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		EAX.		1				-
		THEEMAL 1			4			
	3313 2013	DEADLOAD						
	TELUCION		19	66	66	195	8	66
		CBIL						
		DBDF	30	70	105	95	21	50
		· 		. . .		4		
			<u>A1.</u>	LOWABLE LO	ADS			
					FZ	MX	МҮ	MZ
		CONDITION	FX	FY	<u> </u>	F.A		
			THESE	REACTIO	NS ARE	LOW	ANP HAV	E AN
			11/51	KNIFICH	INT EP	FECT	QN THE	
			RHR	LINE .	<u> 14"-RH</u>	-1-302	+ R2	
	ł							
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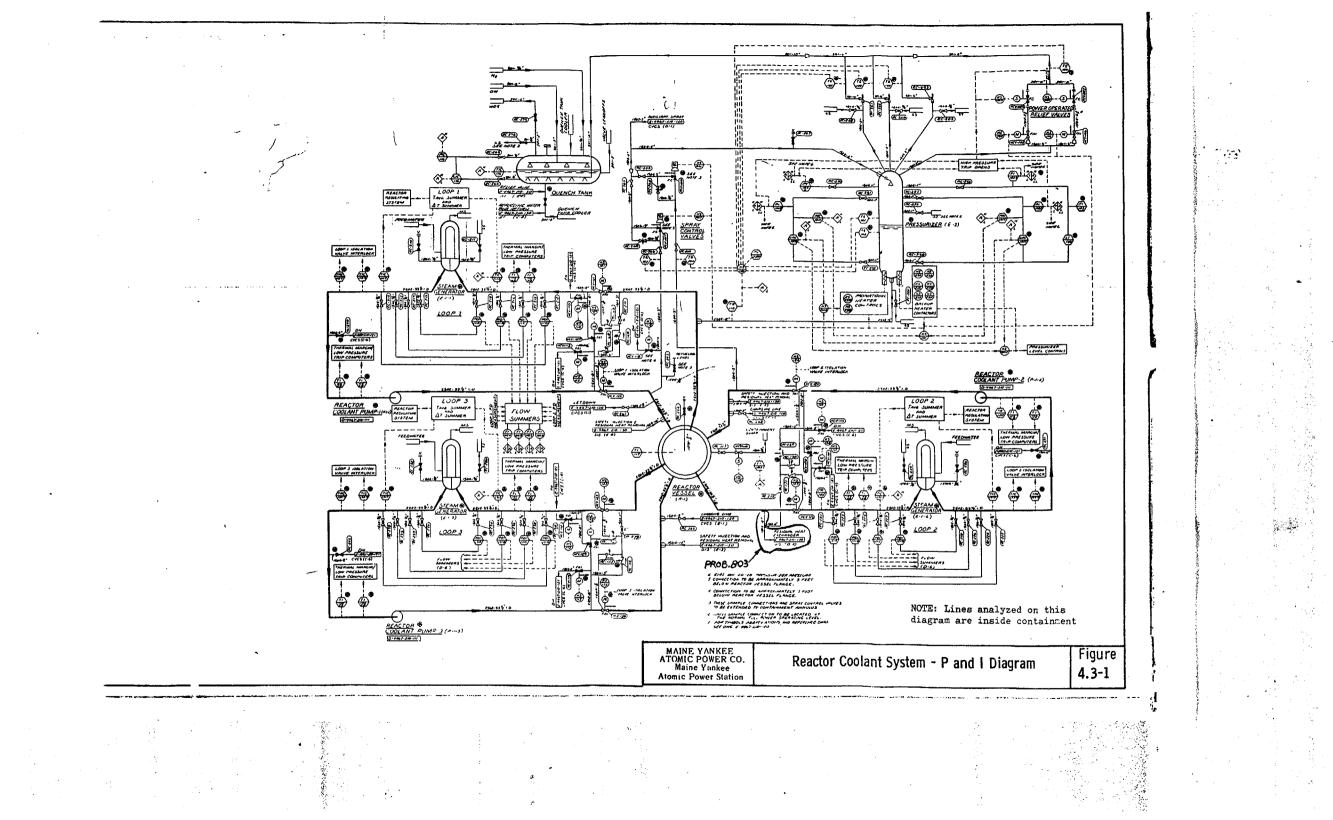
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		1:5K146A1-A4, 1550	<u>el PROB.</u>	# 70				
		SYSTEM SURELIEF	LINE 11990	-FP- 13A-	10,160-	11		
		DISPOSITION: ACC	<i>" " " "</i>	7	REVIEW	the the	T. Bulance	
		FURTHER EVALUA		· · · · · · · · · · · · · · · · · · ·	SUPERV	ISOR PZ	: QTim	
			(LN	ວ <u>ັ</u> ງ	DATE		MAR 79	
		THE LOCAL SYLTEM	IS DEFINED A	S FOILOWS:		TT COOND	INATE AXES	
		+ X) IS ALONG TH	E AXIS OF TH	E PIPE,	GI		4 + F.	
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		(4 Y) IN THE PLAN Y AVID AND	THE GLOBAL +	Y-AXIS		C	The Art	
		INTERS THE	LOCAL X-AXIS	13			UT	^ }
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		PARALLEL TO	THE GLOBAL	X-AXIS.		+ F _Z	r 194 Z	
	1	+ 3) ACCORDING T	O RIGHT HAND	RUFE				لمبت. ا
	ł		EQUI	PMENT LOADI	ICI SUMMARY			
		POIN	т но. <u>Аз</u>	-57 EQU	IPPENT NO.	<u>10-RC-</u>	<u> 18-302-R2</u>	
				Fows as App				•
	[CALCULA	TED FORCES	(LB)	CALCULAT	ED MOMERTS (FT. LBS)
		LOADING	FX.	FY	FZ	ЖX	мү	MZ
	 	CONDITION						
		MAX.						
		THEFMAL 1						
		DAOLDAD						
							101	145
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		EAX.						•
	ł	THERMAL 1				ļ		
		DEADLOAD			Į			
	THUNDON SOUTH	4				1117	43	297
		GBET	42	42	34	167	45	271
	12.1	· · · · · · · · · · · · · · · · · · ·	1.2	17	53	183	76	322
		DBET	63	47	55	100		
			τī	OWABLE LOA	US.			
'			FX	FY	FZ ·	МХ	MY	MZ
	1	CONDICION						
			THESE	REACTI	ONS AR	E LOW	AND HAV	EAN
			INSI	FNIFIC	ANTE	1=1=EC7	ON THE	+
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H+HJ       G+121       2652       2350       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G       G										ļ									İ	ļ		
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H+H       C3-11       C-43-0			-						ļ	<b>_</b>		<u> </u>						551- <b>†</b> I	L#-H			
H+K     C3-14     C3-14     C3-14     C3-14     C3-14     C3-16     C3-16 <t< td=""><td></td><td></td><td>-</td><td></td><td></td><td> i</td><td>L</td><td></td><td></td><td></td><td></td><td>ļ</td><td></td><td></td><td> 4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>			-			i	L					ļ			4							
H+H       C3-10       DFEID       SHOOK       S										<b>_</b>	1									1		
Mill       Dr       -400       -400       -400       02810 H80 10 H10F 0470 017         DE       H       -108       -108       -108       0810 H40F 0470 017       0810 H40F 0470 017         DE       H       -108       -108       -108       -108       -108       0810 H40F 0470 017       017         DE       H       -108       -108       -108       -108       -108       0101         H      2123       -108       -108       -108       -108       -108       0101         H      2123       -108       -108       -108       -108       -108       0101         H      2123       -118       -118       -118       -118       -118       -118       -118       -118         H      2123       -118       -118       -118       -118       -118       -118       -118       -118 <td>Lupper With</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><u> </u></td> <td></td> <td>   </td> <td></td>	Lupper With								<u> </u>		 											
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Myse     Mill	ORIGINAL CALC. REVIEWED. SUPPORT		-		ł·				<u> </u>	+											i L	
My32     CC-81     3732     S320     S320     S320       My32     CC-81     C-97     C-97     C-97     C-97     C-97       My32     CC-81     C-97     C-97     C-97     C-97     C-97       My32     CC-91     C-97     C-97     C-97     C-97     C-97       My32     CC-97     C-97     C-97     C-97     C-97     C-97       My33     CC-97     C-97     C-97     C-97     C-97     C-97       My33     CC-97     C-97     C-97		++					2800		1		+		2658	1 1								
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	NEW LOADS APPLIED TO OBIGINAL	/								+		·•	AE8 62-							(		
	DITIZOARIA	C32 332	3.6AT 48004	(187-12) 7 m	1 (197-295 AW	(ET-LA.)	1 23	) ('an) - ^_	(	('87-247 74	(197-28) 194	U Carseraan , Pin	ליינטי) : שיי אין אין אין אין אין אין אין אין אין א	ريغ. ريغ.	('@") "=	⋽⋳⋖⋺	100	-6.H 2011-1	.0.	<b>`</b> 1	1	
MAINE YANNEE   PIPE SUPPORT REVIEW   STREES PROSLEM NO. 225										1	=	= ~	2029			L				]		
	TABLE C-3 (Con€)	~~~	- 't'	562	ON I	ane Derem	an Me	STRES 57872	1 20'a	ス 肖 と	00년을 814년년 -	120de	ne an	dia dia	==	مر 1/1 × 1 =	い (人 当	マラ	N			
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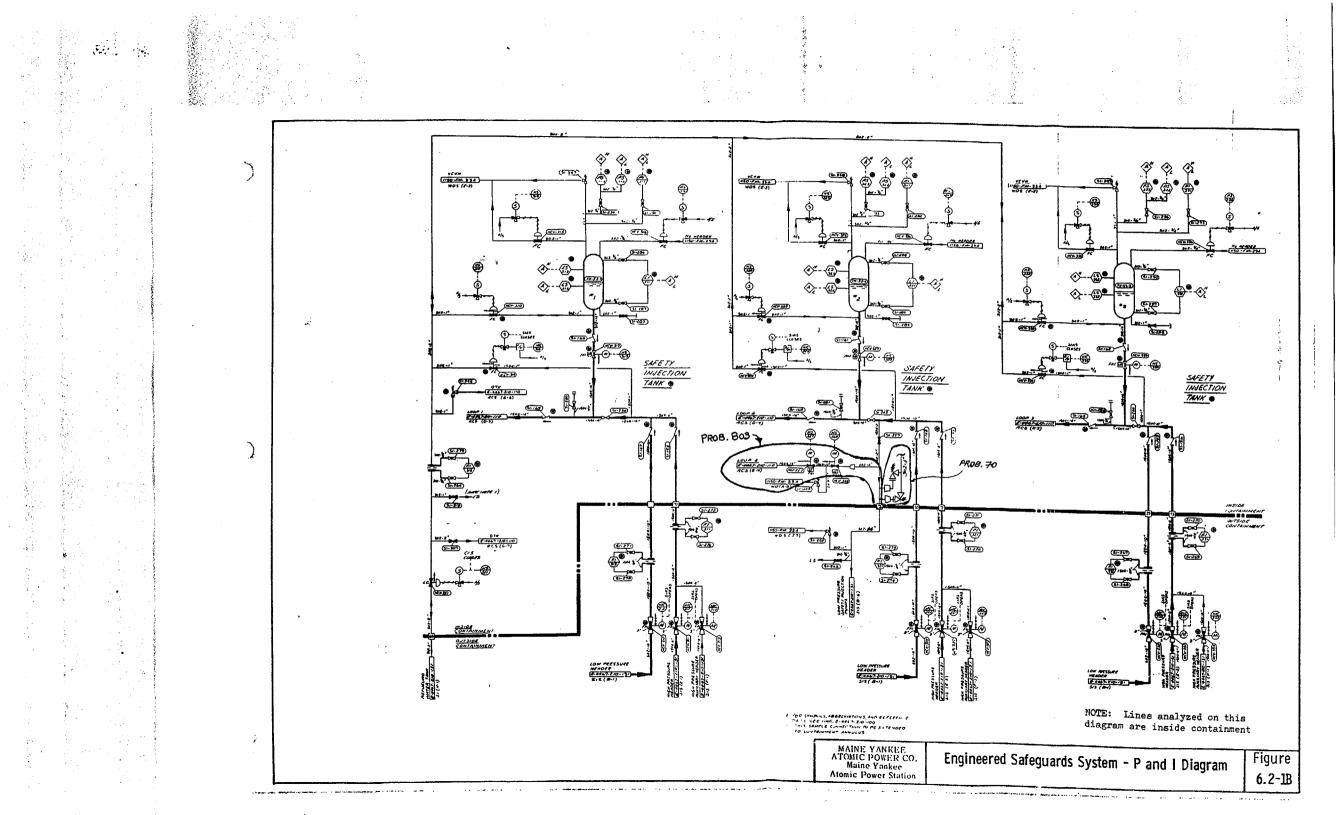
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「「大学になった」」の中日の「日本の」」「「「大学」」」」「「「大学」」」」」 「「大学」」」の日本の「大学の日本」」「「大学」」」「「大学」」」」」 「「大学」」」」」」」」「「大学」」」」」」「「大学」」」」」					4/1/79	KCC		4/1/77	Rec		 	Pec	4/1//77	Rec		CALL CHARTER AND AND AND AND AND AND AND AND AND AND				

## MAINE YANKEE ATOMIC POWER STATION

## APPENDIX C

REANALYSIS RESULTS - COMPARISON TABLES

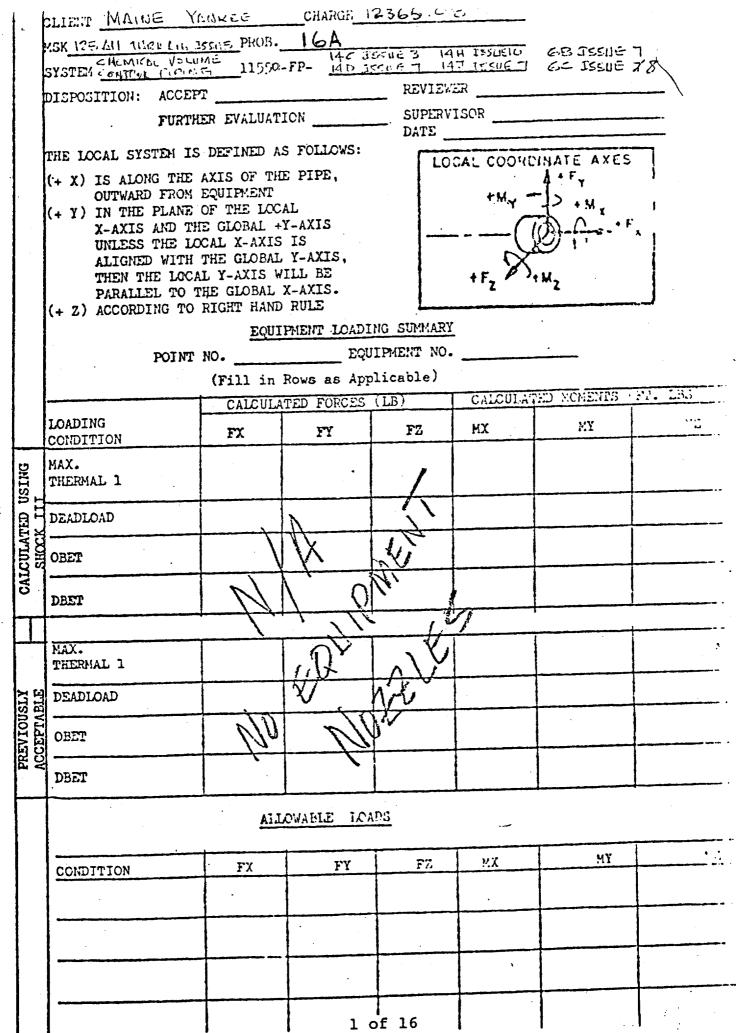
## TABLE C-1

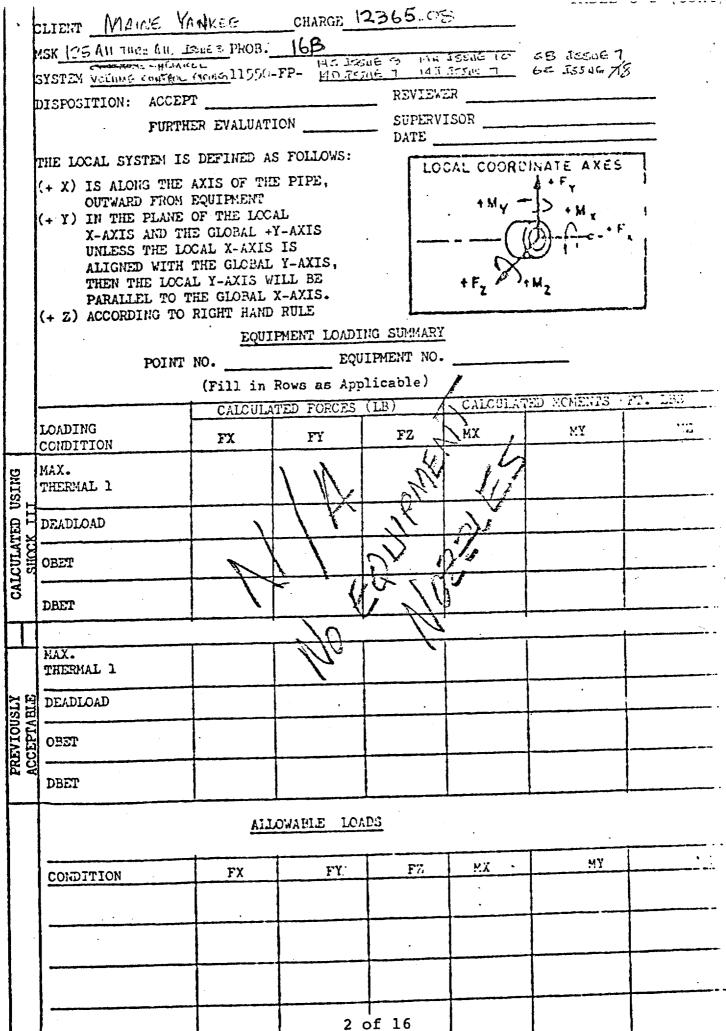
Problem No.	<u>Primary Stresses</u> *	Allowable Stress	SHOCK3 Maximum Calculated
(System)		(psi)	Stress at Point No. (psi)
16A	UPSET	21,972	4,681 a 39
(HPSI)	FAULTED	32,958	4,901 a 24
16B	UPSET	21,972	2,494 a 235
(HPSI)	Faulted	32,958	2,719 a 235
803	UPSET <b>a 650 F</b>	19,200	5,365 a 30
(RHR/RC)	UPSET <b>a 450 F</b>	17,700	6,388 a 1
	FAULTED & 650 F FAULTED & 450 F	28,800 26,550	6,109 a 30 7,297 a 1
728	UPSET	14,400	3,757 a 204
(PCC)	FAULTED	21,600	3,608 a 216
795(Part 1	) UPSET	19,620	9,593 a 46
(CS)	FAULTED	29,430	17,732 a 46
70	UPSET	17,700	8,031 a 21
(RHR)	FAULTED		13,030 a 11

## SUMMARY OF COMBINED LINE STRESSES

*Primary Stresses:	Upset S _{LP} + S _{DL∵} + S _{OBE} ≤ 1.2 S _h
	Faulted S _{LP} + S _{DL} + S _{DBE} ≤ 1.8 S _h
Definitions:	S _h = Allowable Stress at Operating Temperature
-	S _{LP} = Longitudinal Pressure Stress
	S _{DL} = Dead Load Stress
	S _{OBE} = Operational Basis Earthquake Stress
	S _{DBE} = Design Basis Earthquake Stress

1 of 1





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1	CLIENT MAINE	TANAEE	UNARUE.	12303,0	2		
1	MSK 107 81-851						
1	SYSTEM <u>RHR</u>		2FP- 16.	D 1554E	13	· - R	
	DISPOSITION: ACC		21	REVIEW		JT Bu	inery
	FURTHER EVALUA		ມ)	SUPERV	ISOR <u>1</u>	WITR 79	
	THE LOCAL SYSTEM				CAL COOR	DINATE AXE	TRANSCRIBED 3/28/79
	(+ X) IS ALONG TH	E AXIS OF TH	E PIPE,			$\frac{1}{4} + F_{y}$	
	OUTWARD FRO (+ Y) IN THE PLAN	M EQUIPMENT IE OF THE LOO	CAL		+ M _Y ·		1
	X-AXIS AND	THE GLOBAL - LOCAL X-AXIS	+Y-AXIS		(	TA-A-··	F,
	ALIGNED WIT	THE GLOBAL	L Y-AXIS,		N		
	THEN THE LO	CAL Y-AXIS N THE GLOBAL	VILL BE X-AXIS.		+ F _Z	+ WZ	
	(+ Z) ACCORDING 7	NO RIGHT HAND	RULE				
		EQU	IPMENT LOAD	ING SUMMARY		ta	
	POIN	VT NO. <u>B/-</u> (Fill in	<u>200</u> EQ	UIPMENT NO.	EL 10'-	ATION TY	
		* <b>-</b>	1			TED MOMENTS	(FT TAS)
	LCADING	CALCUL	ATED FORCES				MZ
	CONDITION	FX	FY	FZ	MX	MY	<u>F12</u>
DNIS	MAX. THERMAL 1						
TED U	DEADLOAD						
CALCULAT	OBET	604	158	424	194	4775	1149
CA	DBET	854	250	606	296	6785	1802
	-						1
	MAX. THERMAL 1						
JSLY ABLE	DEADLOAD						
PREVIOUSLY ACCEPTABLE	OBET	2109	959	3938	1670	25837	4145
PI	DBET	8792	4224	17490	7483	111136	17856
		ALI	OWABLE LO	ADS FROM	H MSK-1	07 B 3 - 2)	
1	CONDITION	FX	FY	FZ	нх	МҮ	MZ
		SAN	VE 15	PREIL	usir	ACCER	ASLE
			10-115	11201			
		<b>4</b>	1				
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•		MSK 107 BI-851	SSUE 2 PHOB	. 803	3			
		SYSTEM RHR		()-FP- 16		= 13		
		DISPOSITION: ACCE	/	Ken -	REVIE	, , ,	- T.Bu	tann
		FURTHER EVALUAT			SUPER	VISOR IT	& O Thin	J
			•	MD)	DATE	211	MAR 79	PRISCRIBER
		THE LOCAL SYSTEM I				DCAL COOR	DINATE AXE	
÷		(+ X) IS ALONG THE OUTWARD FROM	AXIS OF T	HE PIPE,			+Fy	1
	· ·	(+ Y) IN THE PLANE	OF THE LO	CAL		+ M -		
		X-AXIS AND T UNLESS THE L				(		F,
		ALIGNED WITH	THE GLOBA	L Y-AXIS,	l	$\sim$		
		THEN THE LOC PARALLEL TO	AL Y-AXIS THE GLOBAL	X-AXIS.		+ F _Z	)+₩Z	
		(+ Z) ACCORDING TO					والإستان والمتناور والمتعاولين والمتعادين	
			EQU	IPMENT LOAD	ING SUMMAR	<u>Y</u>		
		POINT		<u>76</u> EQ		. <u>3312-</u> F	20-7-2502	
			•	Rows as Ap				7
, •		LOADING	CALCUL	ATED FORCES	(LB)	CALCULA	TED MOMENTS	(rt. 135)
		CONDITICN	FX	FY	FZ	МХ	MY	MZ
	DNISD	MAX. THERMAL 1						
• :	1_ H	DEADLOAD						
	CALCULATED SROCK T	OBET	777	345*	421	1944	2354*	2231
. ·	СA	DBET	1130	490	583	2897	3139	2961
•						1		<b> </b>
		MAX. THERMAL 1						
	USLY	DEADLOAD						
	PREVIOUSLY ACCEPTABLE	OBET	1770	325	170	2963	1822	3801
	H 7	DBET	7575	1616	683	12778	7131	14217
• • •		•	LIA	OWABLE LOA	DS	-		
		CONDITION	FΧ	FY	FZ	MX	MY	· MZ
· .		••••••••••••••••••••••••••••••••••••••	-SAM	EAS	PREM	ously	ACCEP	ABGE
		×		_				- 000
		* ACCEPTA	BLE F	ROM ENO	FINEER	ING JU	VGEMEN	f SUL:
		· .		4 01	16		2 2	
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			HTET-Z TROP.	. 728	3	·		. (
		SYOTEM PCC		-rp- 204		UE 9		
			PI EALNY		REVIEW	NER <u>R.C.</u> IISOR OMA	Garella,	
		FURTHER EVALUAT	IC.I		SUPER	ISON ON A	ucharshi	
. '		THE LOCAL SYSTEM I		w) As follows:		4/1/		
		(+ X) IS ALONG THE OUTWARD FROM (+ Y) IN THE FLANG X-AXIS AND T UNLESS THE I	EQUITMENT CF THE LOX HE GLOBAL -	CAL +Y-AXIS		+ NI y	DINATE AXES	F .
		ALIGNED WITH THEN THE LCO PARALLEL TO (+ Z) ACCORDING TO	THE GLOBAL THE GLOBAL THE GLOBAL	L Y-AXIS, MILL BE X-AXIC. D RULE	-	+F2	+ M ₂	
			EQUI	PMENT LOAD	ING SUMMAR	FROM N	UPIPE RUN	A-1-79
		POINT				$P^{-2}$	A JOB 373	
				Rows as App ATED FORCES		L CALCHLA	TED MOMENTS	(FT. LES)
	}	LCADING		FY	FZ	MX	MY	MZ
		CONDITION	FX		<u> </u>	F.A.		
	UNISA	LAX. THEEMAL 1	35	-82	-1	Z	-14	645
:		DEADLOAD	88	2	0	1	-120	101
	CALCULA CENTA	01111	6	44	103	543	76	45
. ·	CA3	DHET	10	145	166	880	123	132
					• •		• •	
		NAX. THERMAL 1	284	-400	-310	0	0	0
	SLY	DEADLOAD						
	PELVIOUSLY ACCUPEAELE	OBUT INCLUDE DEADLOAD	284	900	310	0	0	0
	ri V	DBETSETHERMAL	284	900	310	0	0	0
			ALL	OWABLE LOA	<u>D3</u>			
		CONTINION	FX	FY	F7.	мх	мү	MZ
			SEE NE	XT SHE	ET FOR	MANUFA	CTURER'S A	LOWABLE
1		₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	LOADS	(ALL LO.	ADS WIT	HIN ALL	OW ABLE)	
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				5 0	f 16			

	N.SK 11761-5 11764-5 11762-5 11765-5 11762-5 11765-5	#7E7-2 17808.	728				
	SYSTEM PCC	11550	-FP- 204	1550	YE 9	- 1/1	
	DISPOSITION: ACCEN	Pi & #/114		LEVIEW	$\mathbf{R} \mathcal{R} \mathcal{C}$	Carella	
	FURTHER EVALUAT.	EUN		SUPERV	ISCA ONK	volashi	
		(E)-1		DATE	471.77	<u> </u>	
	THE LOCAL SYSTEM IS			LO	CAL COOHD	NATE AXES	
	(+ X) IS ALONG THE OUTWARD FROM	- SOUTISTRUL			+ M., -		
	L Y) TN THE PLACE	CF THE LOC	AL		· · · · · ·	P+W,	
	X-AXIS AND THE UNLESS THE LA	CAL X-AXIS	IS		( )		A
	ALTGNED WITH	THE GLOBAL	, Y-AXIS,		$\sim X$	- 1.0	
	THEN THE LOC PARALLEL TO	THE GLOBAL	X-AXIS.		**2	^{۴ ۲} ۲	
	(+ Z) ACCORDING TO	RIGHT HAND	RULE		EROM N	UPIPE RUNI JOB 36	No, 1741007
		COMBINED	PMENT LOADI	NG SUMMARY	D-9	B 36	0 4-1-79.
	FOINT	NO. AND DE	SCHARGE I'l	IFTERT NO.		<u>Q</u>	
			Rows as Apr		CALCULAT	NED MOMENTS (	FT. LES)
	LOADING		TED FORCES		······································	MY	MZ
	CONDITION	FX	FY	FZ	HX	F.1	
÷ (g	1.AX.	25	-93	,	/8	-31	587
5MICO	THERAL 1		7.5				
E I	DEADLOAD	160	3	0	-4	9	156
CALCULAT	g gourr	17	81	119	677	80	85
CALC	· [		.176	/33		96	162
	DBET	16	116				
			T				
	MAX. THERMAL I	284	-400	-310	0	0	0
>+	P DEADLWAD						
USL	T DEALEROND						
<u>PREVIOUSLY</u>	DENT INCLUDE DEADLOAD	284	900	310	0	0	0
	DEST & THERMAL	284	900	310	0	0	0
			1	· ·	<u> </u>	- <b></b>	
		<u>A1.1</u>	EWAPLE IN	<u>IDS</u>			,
			FV.	FZ	МХ	МУ	M.Z.
	CODITION		FY				1
Í		SEE A	EXT SH	ET FOR	MANUF	ACTURER	ALLOWAE
1		LOAL	S(ALL L	OADS WI	THIN A	4LOW ABL	ヤ
				· · · · · · · · · · · · · · · · · · ·			
			6	of 16			
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	1	PLIENT MAINE Y	ANKEE	GIAGUA	1000.	00	TABLE (	C-2 (Cont)						
		MSK 118 G1 TO G1	EFF PROB.	795		TR ISSUE C	; 16A ISSUE	R 17C ISSUE						
	1	SYSTEM <u>KHR</u>		-rr = 1/r r	79 REVIEW	$\frac{7813302}{11}$	Cool 4/1/7	つ <i>か</i> フ						
,		DISPOSITION: ACCEP FURTHER EVALUATI		the second second	SUPERV	ISOR ON	Kucharoki							
			(EM		DATE _	4/1/29								
		THE LOCAL SYSTEM IS			Le	COOHD	INATE AXES							
		(+ X) IS ALONG THE CUTWARD FROM	EQUIPMENT		Pre	0 501 U1012 14 -	$A + F_{Y}$	•						
		CUTWARD FROM EQUIPMENT (+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE GLOBAL +Y-AXIS UNLESS THE LOCAL X-AXIS IS ALIGNED WITH THE GLOBAL Y-AXIS,												
	ALIGNED WITH THE GLOBAL 1-AXIS, THEN THE LOCAL Y-AXIS WILL BE PARALLEL TO THE GLOBAL X-AXIS.													
		PARALLEL TO T (+ Z) ACCORDING TO	RIGHT HAND	RULE	-									
			EQUI	PMENT LOADI	NG SUMMARY		00 (SU07							
		POINT	NO. <u>A9-</u>	<u>/53</u> equ	IPMENT NO.	PUMP 1	<u>2A</u> (SUCT	iony .						
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		LOADING	FX	FY	FZ	МХ	MY	MZ						
		CONDITION	<u> </u>											
	USING	MAX. THERMAL 1	-1120	-11	-2271	-1758	-12425	2						
		DEADLOAD	-4	799	197	- 504	1391	-112						
	CALCULATED SHOCY T	OBET	781	1600	4274	8473	14392	3066						
	CAJ	DBET	1091	2719	5421*	15017	23203	3745						
					· · · · · · · · · · · · · · · · · · ·		1							
		MAX. THERMAL 1	-1784	493	-2930	-7294	-22532	12456						
·	SLY BLE	DEADLOAD												
	PREVIOUSLY ACCEPTARLE	OBET	1035	4171	4404	2521	6056	13580						
	PR AG	DBET	1173	4308	5203	3038	6600	14085						
			ALL	OWABLE LOA	DS		· · · · · ·							
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		* SLIGHTLY A	IGHER TH	N THE CRI	GINAL ; Hou	ATED RESO	E THE NEW	NESULTAINT VALUE IS						
		CUNSIDERED	ACCEPTABL	<b>€</b>										
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		MSK 11861 TO GIO	FEE PROB.		- 10		. 17C 1550	e 10						
		system <u>RHR</u>	11550	-FP - 17A / 15		• ()								
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		(+ X) IS ALONG THE	AXIS OF TH	E PIFE,	GL	OBAL	4 + Fy							
		OUTWARD FROM (+ Y) IN THE PLANE	OF THE LOC	AL		EVIOLALY	-1> + M x	1						
	X-AXIS AND THE GLOBAL +Y-AXIS UNLESS THE LOCAL X-AXIS IS													
		ALIGNED WITH THE GLOBAL Y-AXIS,												
		THEN THE LOCAL Y-AXIS WILL BE PARALLEL TO THE GLOBAL X-AXIS.												
:		(+ Z) ACCORDING TO	RIGHT HAND	RULE										
			EQUI	PMENT LOAD	ING SUMMARY	<u>(</u>								
		POINT	NO. <u>A7-</u>	<u>181</u> EQI	IPMENT NO.	PUMP 1	<u>ZB (</u> SUCTI							
·				Rows as App		CALCULA	ED MOMENTS (	FT LBS)						
		LOADING		TED FORCES				MZ						
	ļ	CONDITION	FX	FY	FZ	MX	<u>MY</u>	1-121						
	USING	MAX. THERMAL 1	-1090	189	2663	2985	15619	-26						
	1	DEADLOAD	- 29	807	-203	503	-1605	-1/3						
	CALCULATED SRCCK T	OBE <b>T</b>	3334	2187	4371	7596	11535	2004						
	CA	DBET	3973	3184	5592	14718	21391	2497						
		MAX. THERMAL 1	-1234	-520	5174	12 <b>9</b> 42	32620	21469						
	SLY BLE	DEADLOAD												
	PREVIOUSLY ACCEPTABLE	OBET	3571	4737	4778	1638	7662	12494						
	PF AC	DBET	4123	5048	5554	2004	8094	12818						
			ALL	OWABLE LOA	DS									
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				8 0	f 16		· ·							

CILANIA 12365.08 MAINE YANKEE SK 118 GI TO GIO SEC P.UB. 795 199 - FP- 17A ISSUE 10; 17B ISSUE 9; 16A ISSUE 8, 176-10 SYSTEM CONT. SPRAY KEVIE MALADON / MA DISPUSITION: ACCEPT (4))7 SUPERVISOR FURTHER EVALUATION DATE THE LOCAL SYSTEM IS DEFINED AS FOLLOWS: COORDINATE AMES + X) IS ALON', THE AXIS OF THE PIPE, 1 + F. GLOBAL OUTWARD FROM EQUIPHENT PREVIOUSLY' 4 , > •y, (+ Y) IN THE PLANE OF THE LOCAL REPORTED X-AXIS AND THE CLOPAL +Y-AXIS UNLESS THE LOCAL X-AXIS IS ALIGNED WITH THE GLOBAL Y-AXIS. +F, X, THEN THE ICCAL Y-AXIS WILL BE PARALLEL TO THE GLOBAL X-AXIS. 1. 2 ACCORDING TO RIGHT HAND RULE EQUIPMENT LOADING SUMMARY POINT NO. A8-1711 EQUIPMENT NO. PUMP P-GIA SUCTION (Fill in Nows as Applicable) CALCULATED MCMENING FT. LEG CALCULATED FORCES (LB) LOADING  $\mathbb{N}\mathbb{Z}$ MT MX F2 FY FX CONDITION MAX. .4503 DRIEL -7228 A563 1437 489 1050 THERMAL 1 -203 -575 -94 -84 <u>F</u> DEADLOAD -31 17 CALCULATI 7170 1205 277 447 1411 CBET 1129 2053 13933 2782 846 2161 480 DBET 14109 FTLBS DBET RESULTANT 3555 LB DBET <u>э:::</u>Х. -10198 - 7451 -3481 1831 THEFMAL 1 -122 980 DEADI.CAD ACCEPTAI 4332 2262 OBET 400 827 1126 626 4458 2234 377 DEET 1151 623 845 ALLOWABLE ICADS 8.2 MΥ MC FΖ F۲ FΧ CONTRACT ALL RESULTANT RESULTIANIT = 18 000 #-FT = 4000 LBS9 of 16

LILENT MAINE YANKEE CHARUE 12003.00 SEE 118 GI TO GIO REV. P.OB. 795 DISPUSITION: ACUEPT 1007 FP- 17A ISSUE 10; 17B ISSUE 9; 16A ISSUE 8, 17C-10 HEVIEWER Maportul Orbito SUPERVISER Lt Q. FURTHER EVALUATION DATE THE LOCAL SYSTEM IS DEFINED AS FOLLOWS: COOHDINATE AMES 1 . Fy + X) IS ALONG THE AXIS OF THE PIPE, GLOBAL OUTWARD FROM EQUIEVENT 12 . M. Peceroway " " + Y) IN THE PLANE OF THE LOCAL tere X-AXIS AND THE CLOPAL +Y-AXIS REPORTED UNLESS THE LOCAL X-AXIS IS ALIGNED WITH THE GLOBAL Y-AXIS, +F, N.W. THEN THE ICCAL Y-AXIS WILL BE PARALLEL TO THE GLOBAL X-AXIS. . 2 ACCORDING TO RIGHT HAND RULE EQUIPMENT LOADING SUMMARY EQUIPMENT NO. PUMP P-61B SUCTION PO1177 110. A6-139 (Fill in Rows as Applicable) CALCULATED MCMENTS (FT. LES CALCULATED FORCES (LB)  $\Sigma\Sigma$ LOADING MΥ MX FZ FY FX CONDITION MAX. -1750 1358 1274 706 -1047 THERMAL 1 7508 -287 598 150 - 56 - 99 64 DEADLOAD 1822. 966 410 1361 640 ISIO CBFT CALC 16700 1741 2725 291 3230 1259 DBET" 17010 FT-LB DBET 3556 LO. DBET EAX. - 566 10721 10892 -1425 1204 716 THEPHAL 1 CADICAD 1745 VICU 909 492 1162 616 301 0327 .... 1697 780 222 208 869 527 DEET ALLOWABLE LCADS ME N.A. MY FZ. FY ŦΧ CONDITINU ALL RESULTANT RESULTANT 18 000 LB-FT 4000 LBS = | 10 of 16

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DIDPOSITION:     ACCENT     PX     PY     PX     PY     PX     PY     PY       MRE LOORT STERK IS DEFINED A     CALCULATED FORCES (LB)     DATE     CALCULATED FORCES (LB)     CALCULATED FORCES (LB)       MRE LOCAL SYSTEM IS DEFINED AS FOLLOWS     EQUIPAGENT (NO. PROPERT NO. POINT EASET     DATE     CALCULATED FORCES (LB)       MRE LOCAL SYSTEM IS DEFINED AS FOLLOWS     EQUIPAGENT NO. PONDES (LB)     EQUIPAGENT NO. PONDE AS SUCCED       MRE LOCAL SYSTEM IS DEFINED AS FOLLOWS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED       MRE LOCAL SYSTEM IS DEFINED AS FOLLOWS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED       MRE LOCAL SYSTEM IS DEFINED AS FOLLOWS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED       MREADED WITH THE TOTAL TOTALS IS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED       MREADED WITH THE GLOBAL X-AXIS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED       MREADED WITH THE GLOBAL X-AXIS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED       MREADED WITH THE GLOBAL X-AXIS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED       MREADED WITH THE GLOBAL X-AXIS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED       MREADED WITH THE GLOBAL X-AXIS     EQUIPAGENT NO. PONDE AS SUCCED     EQUIPAGENT NO. PONDE AS SUCCED <td< td=""><td></td><td></td><td></td><td>16</td><td>2102</td><td>2951</td><td>1</td><td>31NG</td></td<>				16	2102	2951	1	31NG			
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562 801 01501 15811 XS.	SYSTEM CONT. 502 MY 1159-59-17A ISSOE 10; 17B ISSOE 9; 16A ISSOE 0, 192-10 DIDPOSITION: ACCENT AGAIN 1159-59-17A ISSOE 10; 17B ISSOE 9; 16A ISSOE 0, 1972-10 FURE LOCAL SYSTEM IS DEPINED AS FOLLOWS: THEN THE PLANE OF THE PLOSAL Y-AXIS IS PARELLEL TO THE GLOBAL Y-AXIS IS PLANEMAD FROM SQUIPMENT THEN THE ILOCAL Y-AXIS IS PLANEMAD FROM SQUIPMENT PLANEMAD FROM SQUIP										

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LIERT MAINE YANKEE CHARGE 12365.00 CK 118 GI TO GIO PHOS. 795 SYSTEM CONT. SPRAY 110 - FP- 17A ISSUE 10; 17B JSNE9; 16A ISSUE 8, 17 C-10 HEVIENER ///tapare h Auper »___ DISPOSITION: ACCEPT SUPERVISOR AT FURTHER EVALUATION -25-29 DATE THE LOCAL SYSTEM IS DEFINED AS FOLLOWS: COORDINATE AYES + X) IS ALONG THE AXIS OF THE PIPE, SLOBAL OUTWARD FROM EQUITMENT Pequalsin" > . M. + Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE CLOPAL +Y-AXIS PEPOPTED UNLESS THE LOCAL X-AXIS IS ALIGNED WITH THE GLOBAL Y-AXIS, THEN THE ICOAL Y-AXIS WILL BE PARALLEL TO THE GLOBAL X-AXIS. (. 2) ACCORDING TO RIGHT HAND RULE EQUIPMENT LOADING SUMMARY POINT NO. A2-48 EQUIDMENT NO. PENT (Fill in Rows as Applicable) CALCULATED MOMENTES (FT. LEG CALCULATED FORCES (LB) 22 LOADING MT НX F2 FY FX CONDITION EAX. 149 1-6470 -3697 THERMAL 1 -806 711 182 450 -252 -6016 -19 -1640 ç, DEADLOAD 44 5632 5295 2088 2568 747 CBFT 892 5115 41122 9651 11064 1399 5063 1718 DBET YAX. -7402 -3 -10571 360 -1473 1257 THEPHAL 1 DEADLOAD 17 h 11496 5 7502 963 825 678 OBET 314 31 10566 7390 992 324 DEET 738 695 ALLOWABLE LOADS N.L. MY MX FZ. FX F۲ CONDITION APPLICABLE NOT : . 12 of 16

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	CK 118 GI TO GIO	PROB.	795				
	SYSTEM CONT. SP	RAY 1150	-FP- 17A I	SUE 10 ; 1	7BIJUE9	; 16A I 200	28,17(40
	DISPUSITION: ACCEP	T Ght	hipe		ER THE	pretty	
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#### April 2, 1979

United States Nuclear Regulatory Commit don Washington, D. C. 20555

Attention: Office of Nuclear Reactor Regulation Mr. Harold R. Denton. Director

1

(a) License No. B' 8-36 (Docket No. 50-307) (b) USNRC Order to Show Cause for MYAPC dated Parch 13, 1979 Reference: annen

Dear Sir:

Maine Tankee Answer to USNRC Order to Show Coune Subject:

In accordance with the requirements set forth in 10 CER Part 50, we hereby submit thirty-four (34) additional copies of Maine Faulter's answer to the USNRC order to show cause, (Reference h). The original and five (5) copies of this answer were separately hand delivered to your office. In addition, we have also hand delivered to you, the Interim Report for the Maine Yankee Atopic Power Station, dated April 1, 1979, which was completed by Stone & Webster, and the Containment Spray Piping Analysis of Pipe Supports H-51 and H-53.

We trust this information will be of service to you in performing an evaluation for Maine Yanker. Should you have any questions, please contact us at once.

### Very truly yours,

MAINE YANKEE ATOMIC PORTE COMPANY

120.1 Johnson Vice President

Enclosures:

1) Original and 5 copies of Licensee's answer to show course order (provided separately).

- Thirty-four (34) additional copies of Licensee's answer to show 23 cause order.
- Interim Report by Stone & Webster dated April 1, 1979 (provided 3)
- Containment Spray Piping Analysis of Pipe Supports H-51 and H-53 (provided separately).

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WESTBORU MASSACHUSETTS 01581 617-366 9011

April 13, 1979 B.3.3.1 WMY 79-33

United States Nuclear Regulatory Commission Washington, DC 20555

Attention: Office of Nuclear Reactor Regulation

References: (a) License No. DPR-36 (Docket 50-309) (b) MY Letter to NRC WMY 79-31, April 12, 1979.

Dear Sir:

Subject: Maine Yankee Seismic Piping Analysis

As discussed in Reference (b), Maine Yankee has reviewed the PSTRESS/SHOCK1 and NUPIPE-SW comparison conducted by Stone and Webster.

Three piping problems previously analyzed using PSTRESS/SHOCK1 were reanalyzed using NUPIPE-SW. The resulting stresses, forces, and moments were compared with the original PSTRESS/SHOCK1 results. The general stress distributions were similar in shape, with the NUPIPE-SW results lower in magnitude. Some of the low stress points from the NUPIPE-SW analysis were higher than in the PSTRESS/SHOCK1 results, but these were not critical stress values. One would not be surprised to see small difference between two different analytical methods, so these differences are not considered significant.

The three problems selected for the comparison were "typical piping problems" in that they were three dimensional piping arrangements consisting of elbows, tees, reducers, valves, and piping of different sizes. See Enclosure 1 for details.

Based on the results of this study and detailed discussions with Stone and Webster engineering personnel, Maine Yankee concludes that PSTRESS/SHOCK1 is a suitably conservative method of seismic analysis. It is our conclusion that the piping systems analyzed using PSTRESS/SHOCK1 are in compliance with the FSAR requirements for seismic category 1 piping.

As also stated in Reference (b), Maine Yankee has conducted a field check of piping restraints included in the re-analyzed piping problems. Some discrepancies between the as-built hangers and the FP-series piping drawings were found. This was not unexpected since the FP-series drawings were not updated during construction to reflect

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United States Nuclear Regulatory Commission Attention: Office of Nuclear Reactor Regulation April 13, 1979 Page Two

hanger modifications. Hanger design was based upon the hanger design sketches and design calculations.

No non-conservative discrepancies between the hanger design calculations and the field checks was found. (In some cases conservative discrepancies were found - i.e. a 4 inch channel was used where 3 inch channel was specified).

To summarize, no modifications to any safety related piping or supports was necessary as a result of the PSTRESS/SHOCK2 re-analysis effort. Two piping restraints were modified to account for the baseplate flexability considerations of I&E Bulletin 79-02. These modifications will be completed prior to startup.

As a result of the studies described in this letter and our previous submittals, Maine Yankee has demonstrated that all seismic category 1 piping in Maine Yankee is in compliance with the FSAR requirements.

Should you have questions on this material, please feel free to contact Mr. J. R. Hoffman of this office.

Very truly yours,

MAINE YANKEE ATOMIC POWER COMPANY

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Robert H. Groce Licensing Engineer

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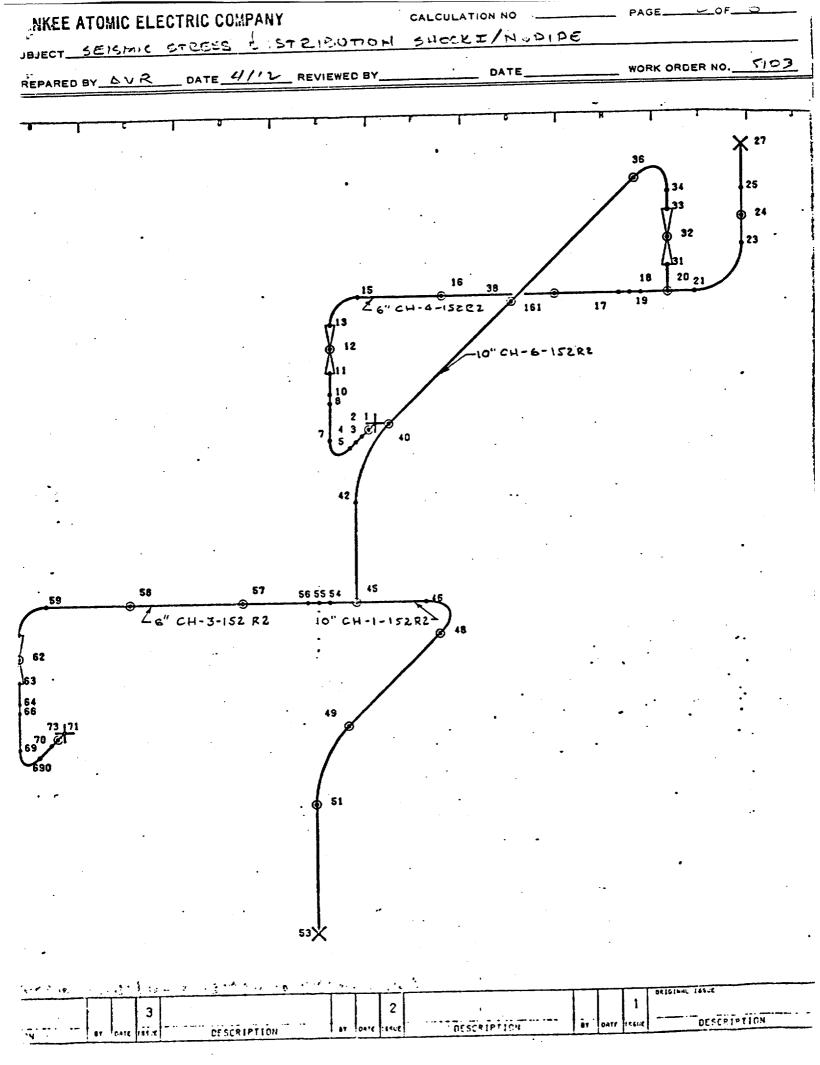
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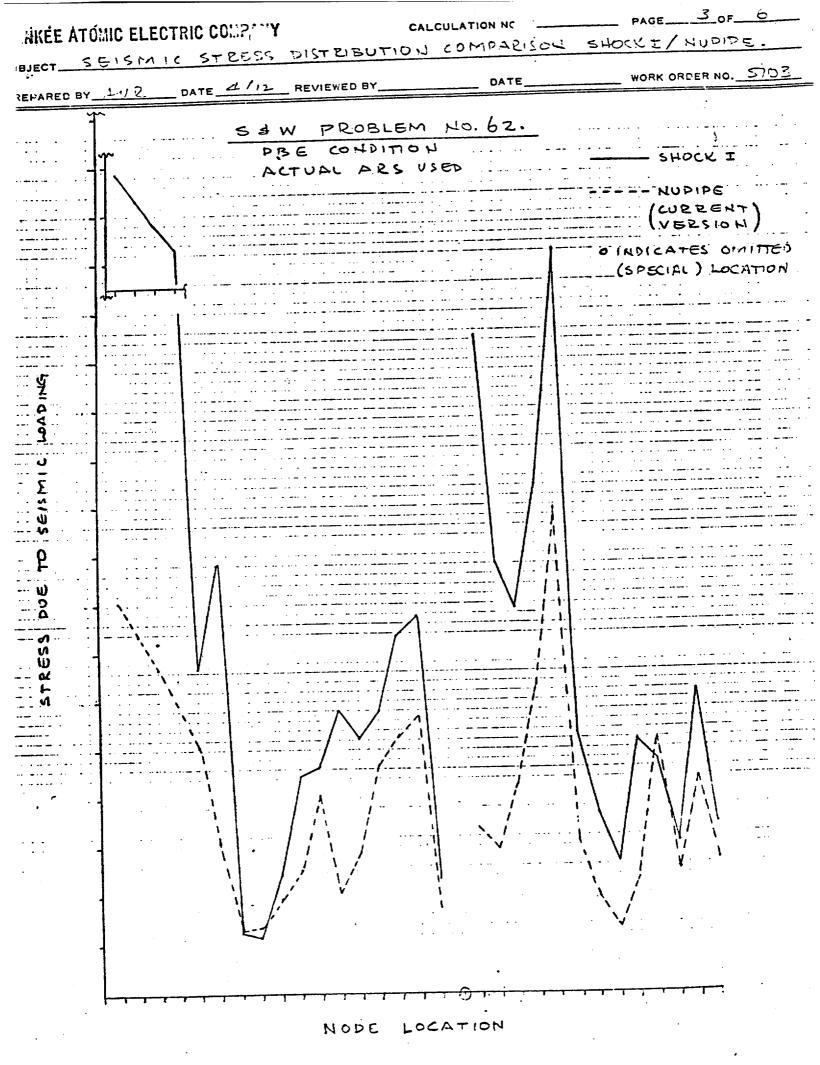
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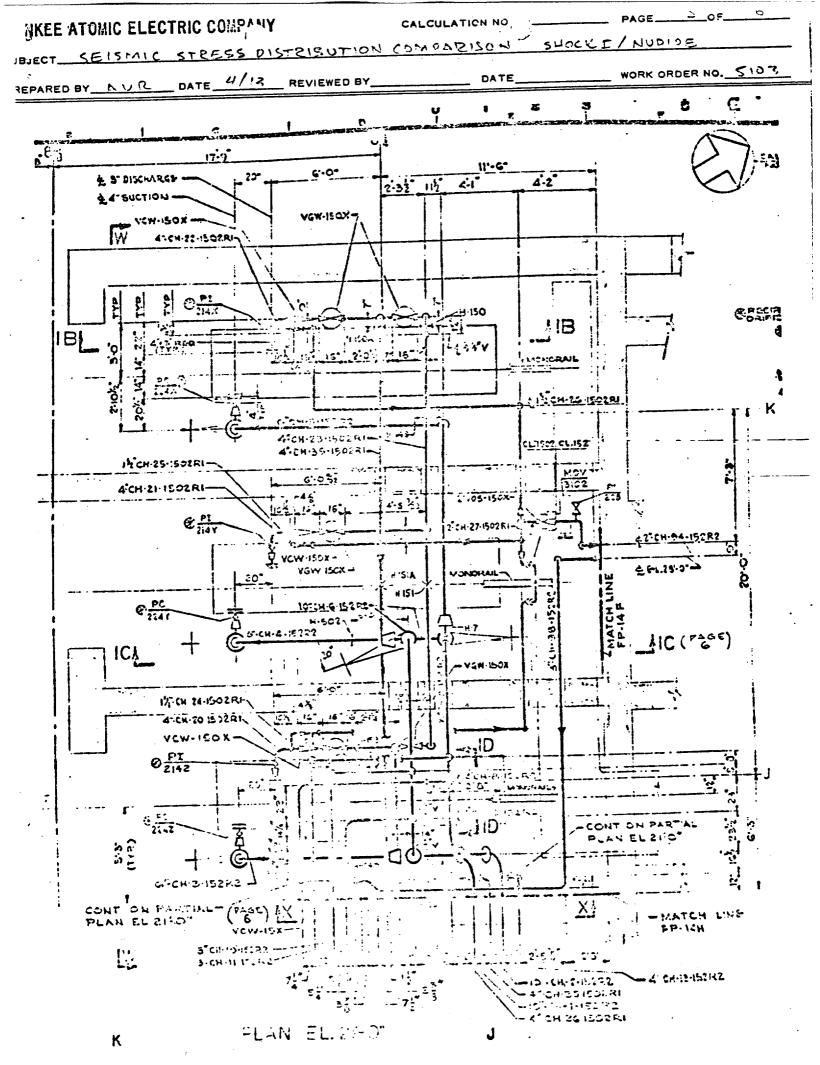
A comparison of PSTRESS/SHOCK1 and NUPIPE-SW for a typical Maine Yankee piping problem.

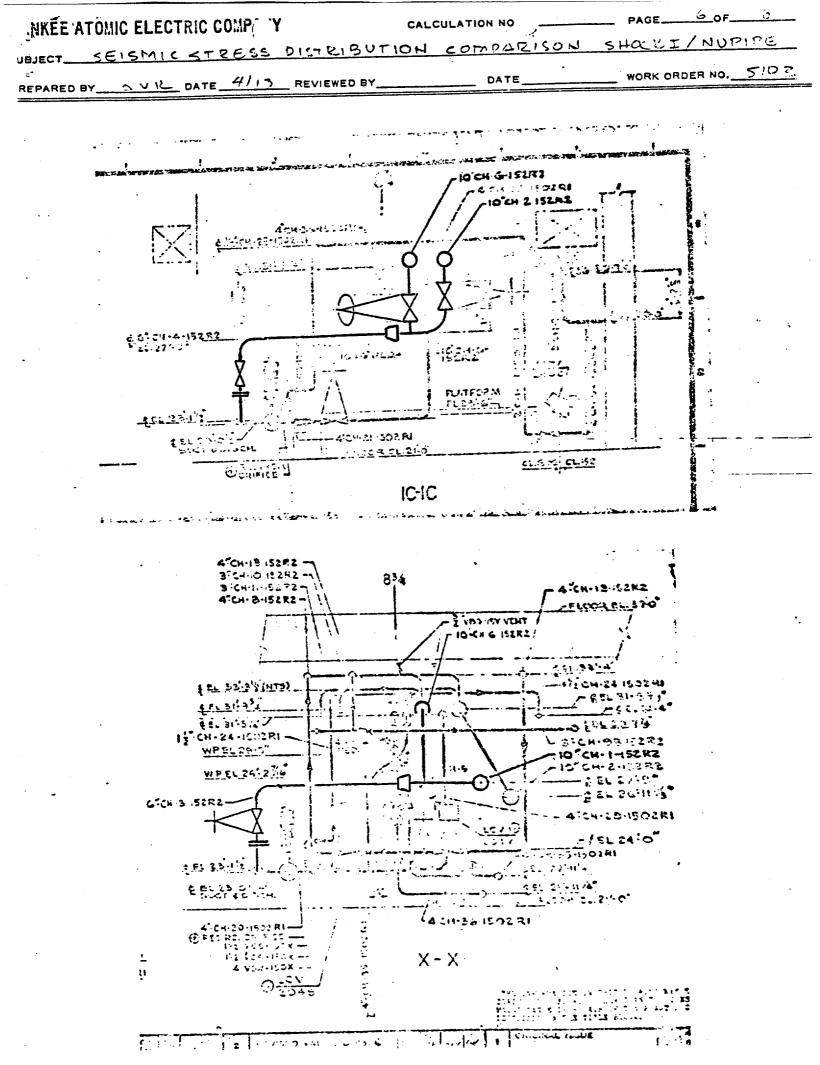
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### B.3.2.1

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WMY 79-41

May 2, 1979

United States Nuclear Regulatory Commission Washington, D.C. 20555

References: (a) License No. DPR-36 (Docket 50-309).
(b) MYAPC Letter WMY 79-34, April 19, 1979.
(c) MYAPC Letter WMY 79-27, April 2, 1979.
(d) MYAPC Letter WMY 79-29, April 3, 1979.
(e) MYAPC Letter WMY 79-31, April 12, 1979.
(f) MYAPC Letter WMY 79-33, April 13, 1979.
(g) MYAPC Letter WMY 79-34, April 19, 1979.

#### Dear Sir:

Subject: Maine Yankee Piping System Seismic Review

This letter submits for NRC review information requested at a meeting between Maine Yankee and NRC on April 20, 1979.

Attachment 1 provides the amplified response spectrum (ARS) curves that were used for the sample problems submitted via Reference (b).

Attachment 2 lists the support stiffnesses utilized by NUPIPE-SW and PSTRESS/SHOCK1. The problem numbers refer to the sample problems submitted via Reference (b). The ANSI B31.1 flexibility factors for elbows and tees are used in both NUPIPE-SW and PSTRESS-SHOCK1.

The modifications performed to supports H-51 and H-53 were completed in accordance with the requirements of the Yankee Operational Quality Assurance Program (YOQAP-1A). Certified material and qualified welders were employed; a visual examination of welds was performed in accordance with Yankee specification requirements.

As discussed in our April 20, 1979 meeting, Maine Yankee was informed by Stone and Webster that three versions of the Shock program of an earlier vintage than that verified in the Reference (b) report were utilized in the design of Maine Yankee. Listings of those versions are unavailable; only computer output from archives is available.

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United States Nuclear Regulatory Commission May 2, 1979 Page Two

A sampling of problems was selected and rerun on PSTRESS/SHOCK1; results from this run and the earlier versions were compared. The pattern of stress throughout the piping runs is generally comparable between PSTRESS/SHOCK1 and the earlier versions (denoted as SHOCK0). In some cases SHOCK0 results in higher stresses and in other cases SHOCK1 produces higher results. Attachment 3 provides the results of these seven (7) reruns.

Although program listings for "SHOCKO" are not available, conclusions about their adequacy can be drawn from existing information. The use of SHOCKO was terminated prior to May 1971, when the "Robinson Fix" program was initiated. The "Robinson Fix" program resulted in all piping stresses and support loads being increased by a factor. The factor was equal to twenty-two (22) times the zero period acceleration divided by the peak acceleration from the original ARS. For the design basis earthquake (DBE) the factor was on the order of three (3) to ten (10) depending on the building and the particular elevation in the building. The requirement was that after being increased by these "bump factors" pipe stresses had to be below Code allowable (1.8  $S_H$ ) for emergency conditions and support loads had to be below yield. "If these requirements were not met, the system had to be resupported or re-analyzed using a modified ARS. In either case the analysis of record would be dated later than May 1971. Thus, we know that as a minimum all SHOCKO piping problems have stresses below FSAR allowable, even after having the stresses and support loads increased by the "bump factor" from the Robinson Fix.

The effect of these "bump factors" was seen in the SHOCK2 re-analysis effort - no supports or piping systems exceeded FSAR allowable loadings after re-analysis even when the original design was based on a method of questionable conservatism, i.e., the algebraic summation method of intra-modal combination.

As stated earlier, in some cases the new SHOCK1 stresses and loads were lower than SHOCKO, producing even more conservatism. In the cases where SHOCK1 produced higher results, the magnitudes of the increase are less than the corresponding "bump factors" for those systems. Note also that additional conservatism is present in that the FSAR values are significantly below levels that will result in failure. Support loads have increased in some cases. The major load carrying supports experienced load increases less than the "bump factors". United States Nuclear Regulatory Commission May 2, 1979 Page Three

Based on the results of these studies, Maine Yankee concludes that "SHOCKO" results in piping designs that are conservative with respect to current criteria; this information, in conjunction with previous submittals on this subject demonstrates that Maine Yankee can withstand the effects of the design basis earthquake.

It is Maine Yankee's conclusion that the above information and the information presented in References (c) through (g) demonstrate that the requirements of the Order to Show Cause of March 13, 1979 have been satisfied and as such we respectfully request an expeditious review to allow speedy plant restart.

As additional support for these conclusions, Maine Yankee will submit under separate cover summaries of stress comparisons, natural frequency tabulations for SHOCKO and SHOCKI and a listing of support loads for ten (10) SHOCKO problems covering the three versions of SHOCKO used in the design of Maine Yankee.

In addition, Maine Yankee will submit a comparison of PSTRESS/SHOCKO and NUPIPE-SW for one (1) problem from each of the three versions of SHOCKO.

Should you have any questions on this material, please contact Mr. J. R. Hoffman of this office.

Very truly yours,

MAINE YANKEE ATOMIC POWER COMPANY

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Vice President

JRH/slw

## ATTACHMENT 1

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Amplified Response Spectrum Curves for Problems 39, 62 and 63 OPERATIONAL

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# ATTACHMENT 2

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Anchor and Support Stiffnesses for NUPIPE-SW and PSTRESS/SHOCK1

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PROB #63	Anchor	1 27	1 x 10 ¹⁶ 1 x 10 ¹⁶ 1 x 10 ¹⁶	$1 \times 10^{15}$ 1 x 10 ¹⁵ 1 x 10 ¹⁵
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Anchor & Restraint Stiffnesses (lb/in.)

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 $\mathbf{O}_{\mathbf{6}}$  Way Restraint

# ATTACHMENT 3

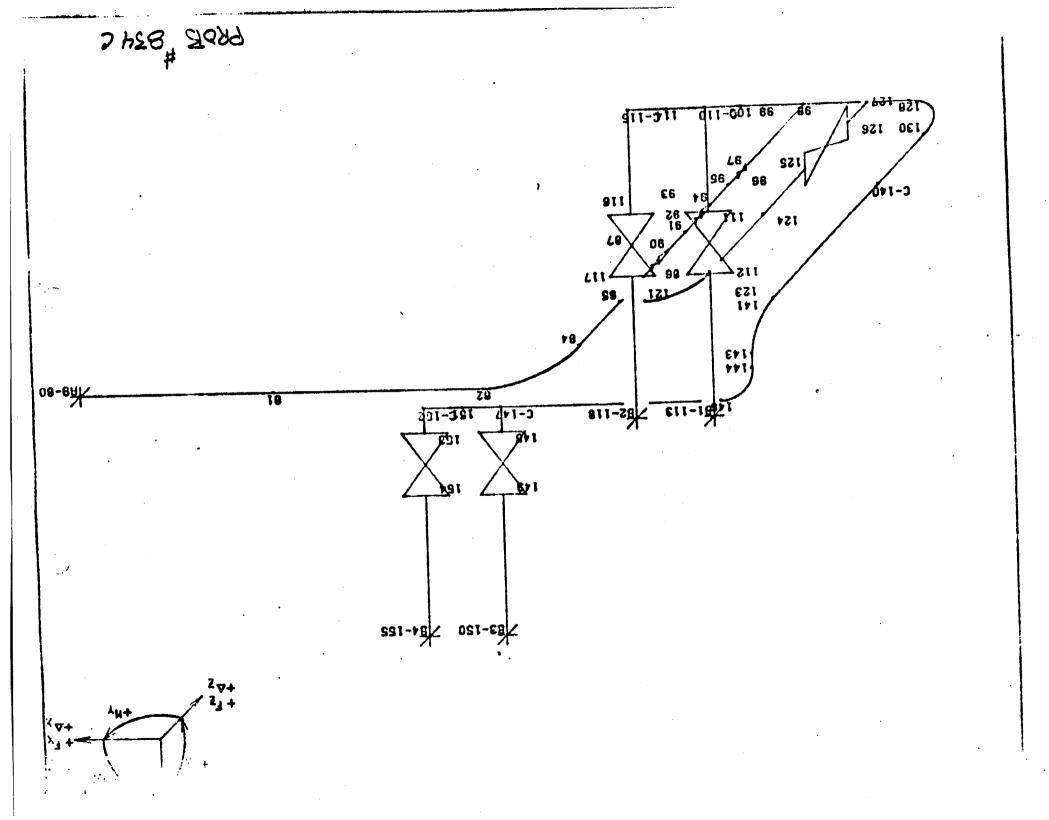
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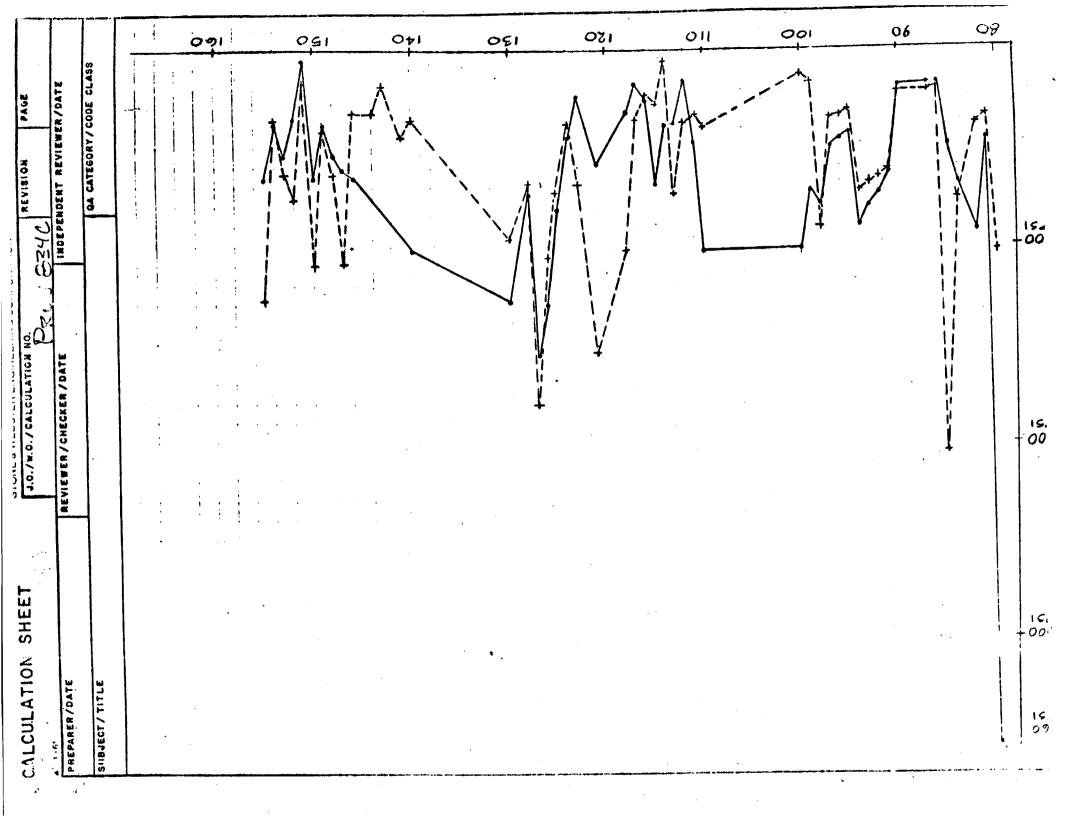
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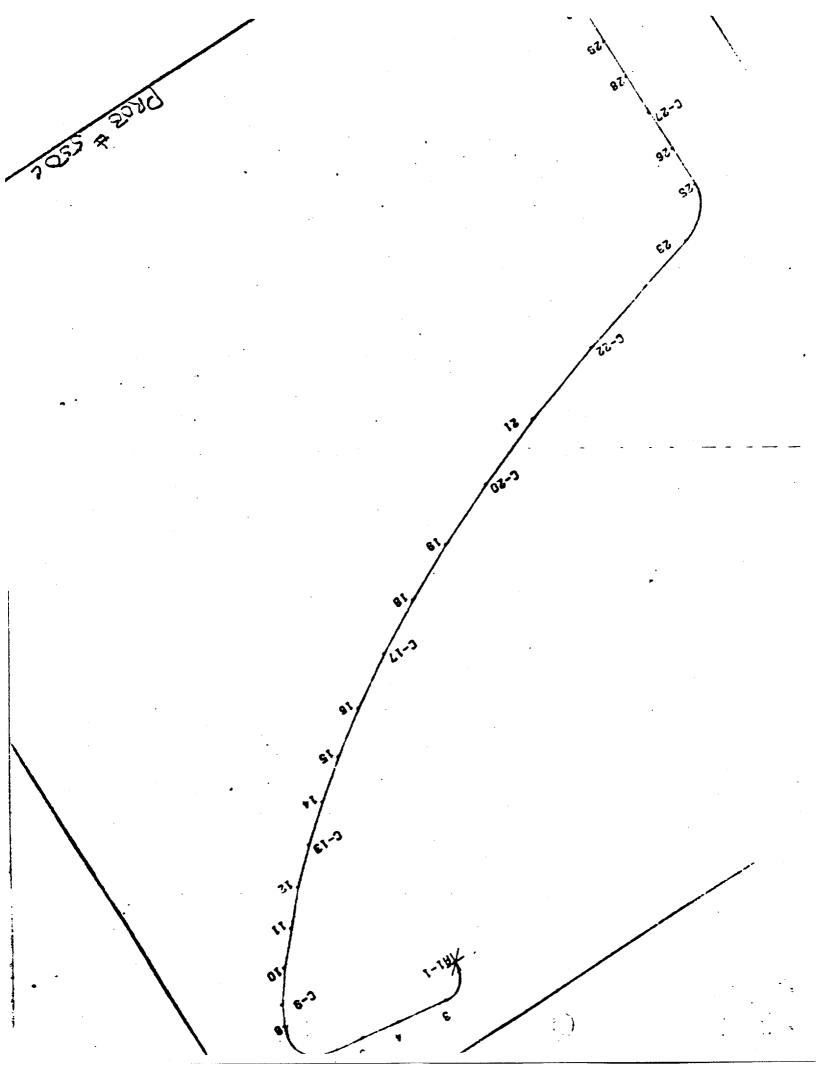
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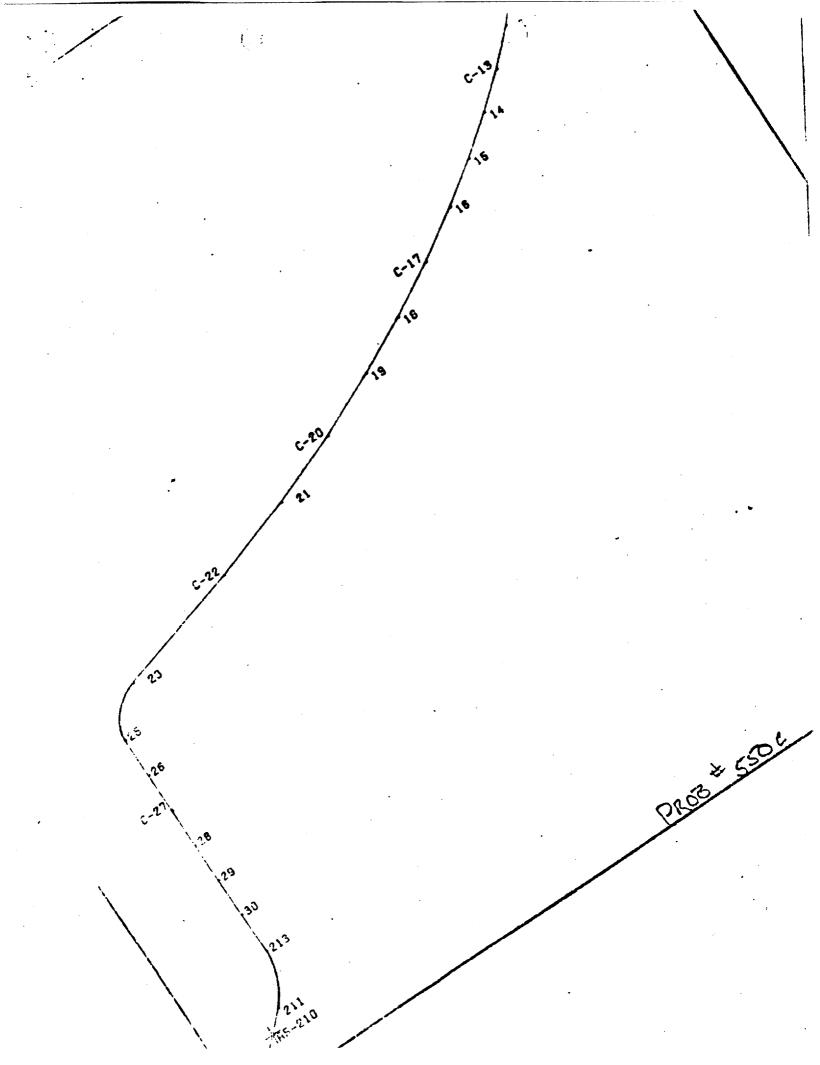
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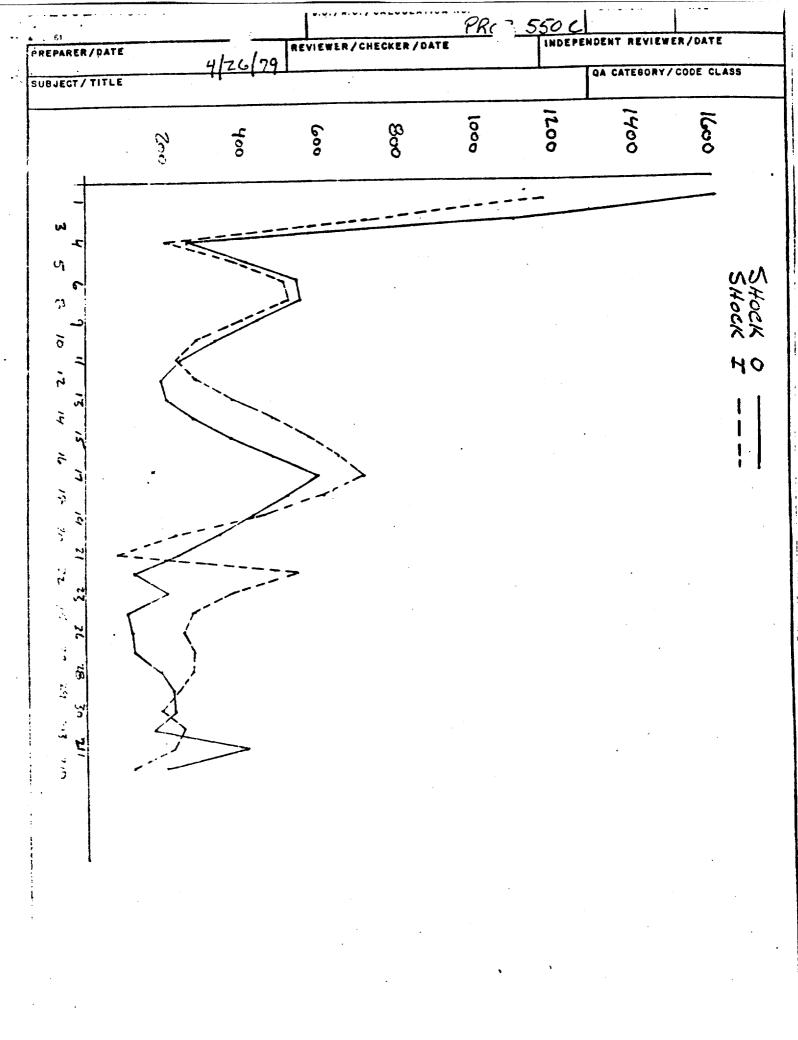
A Comparison of Pipe Stress Results from SHOCKO and SHOCK1 for Identical Piping Geometries



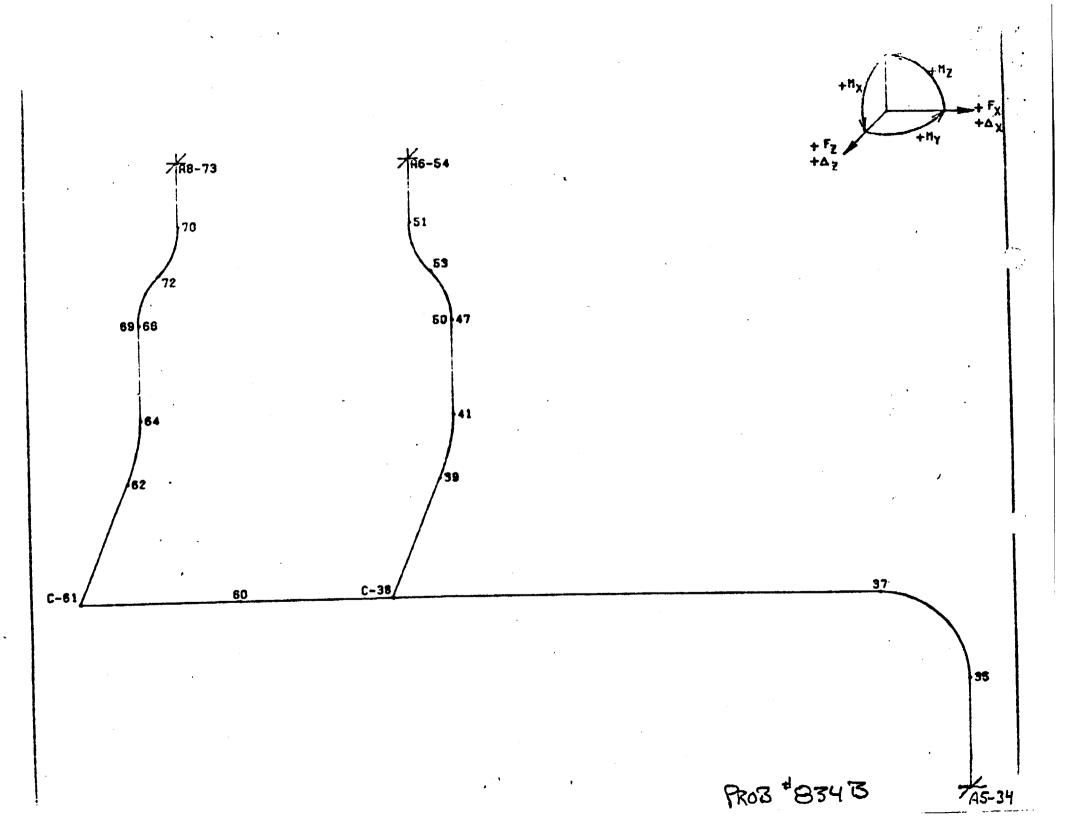






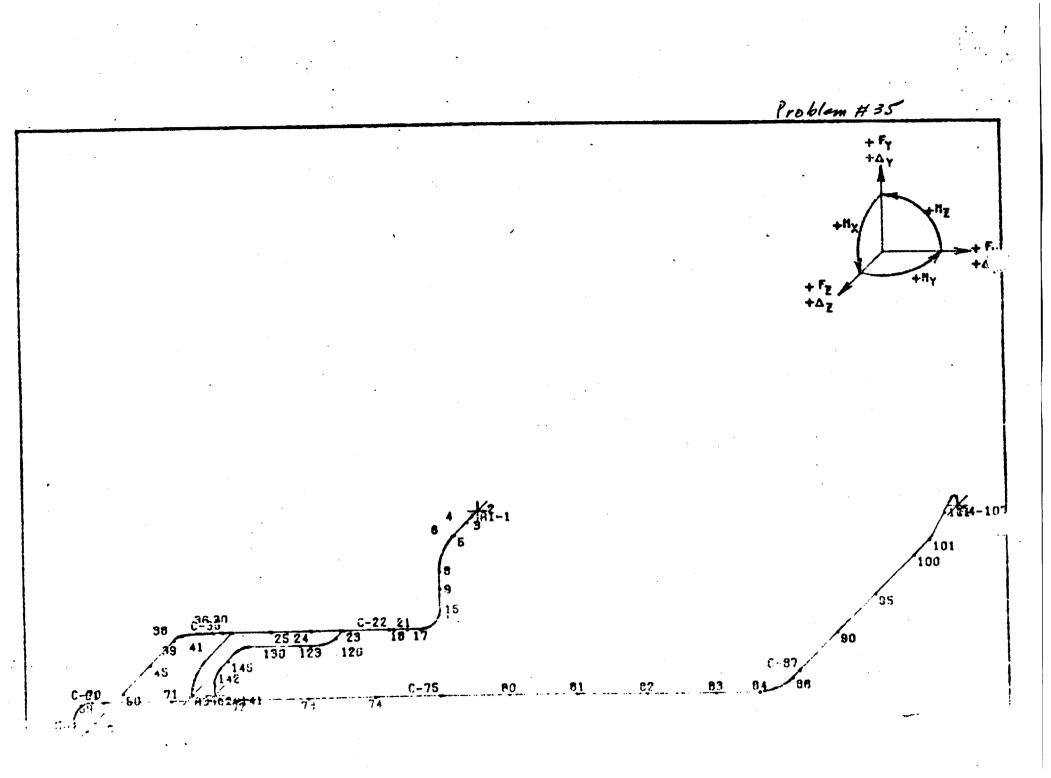


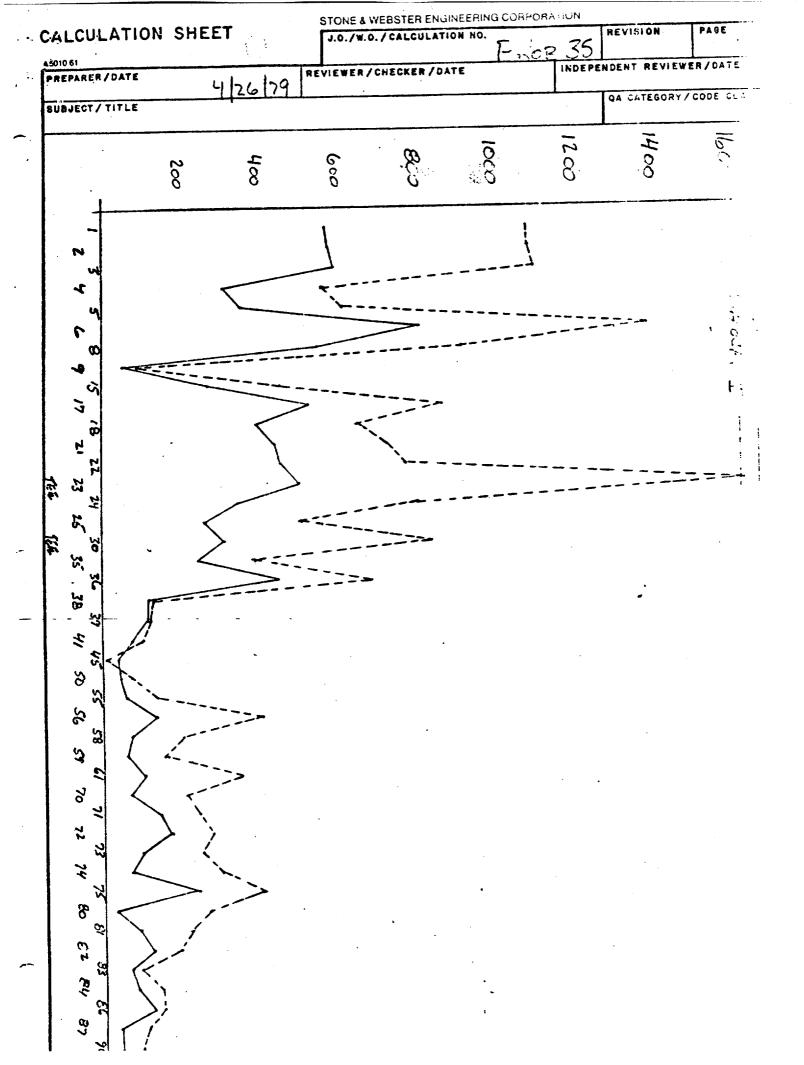
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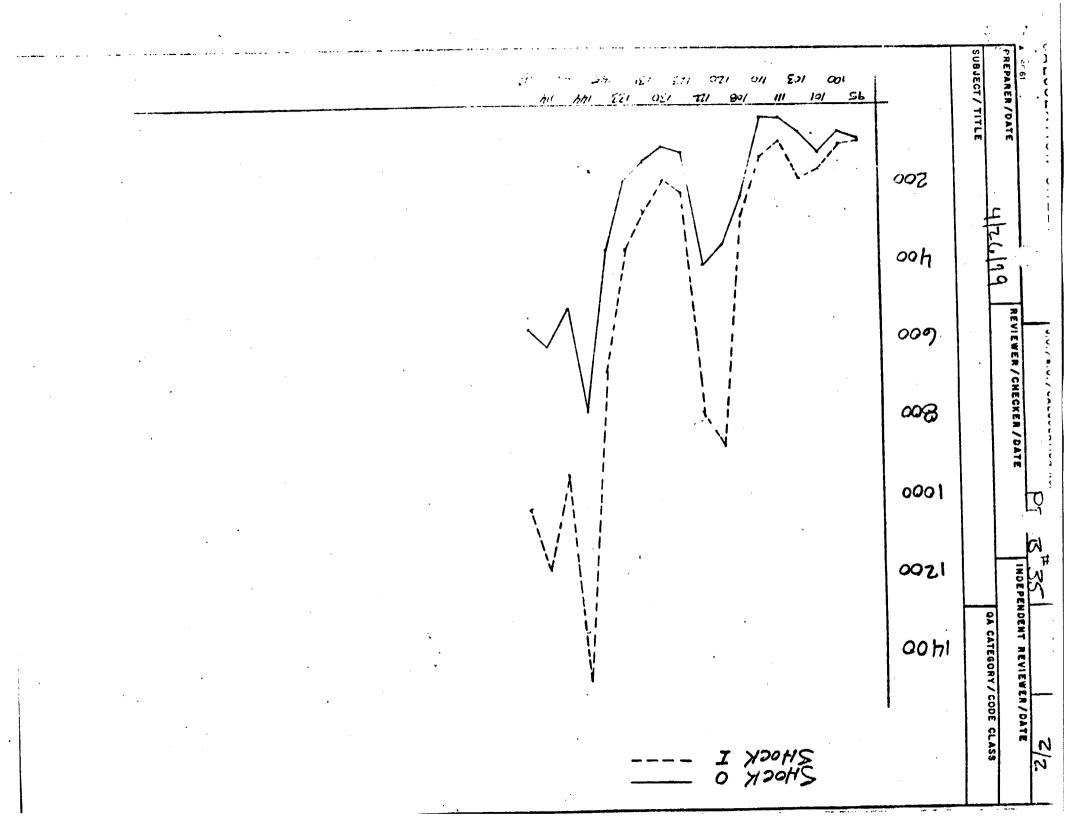


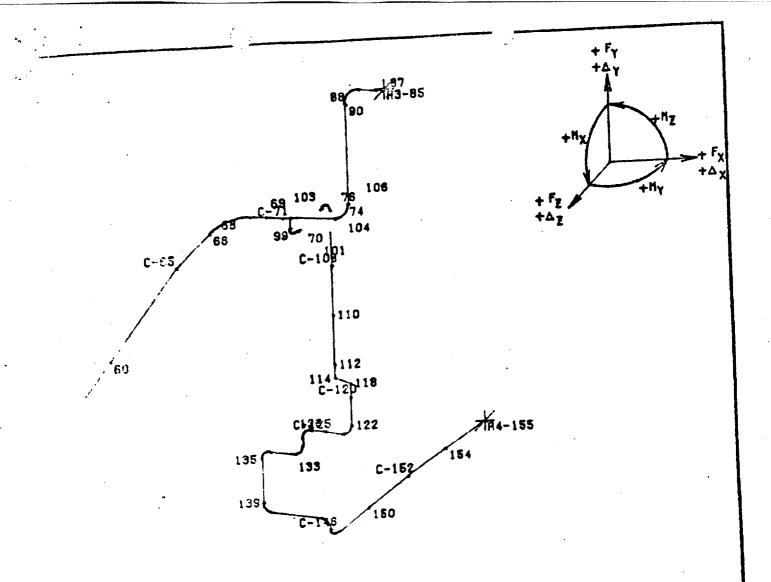
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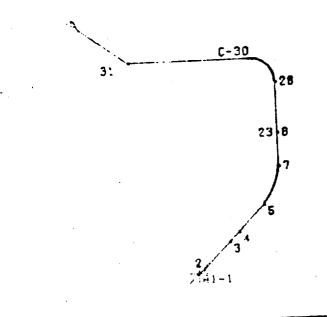


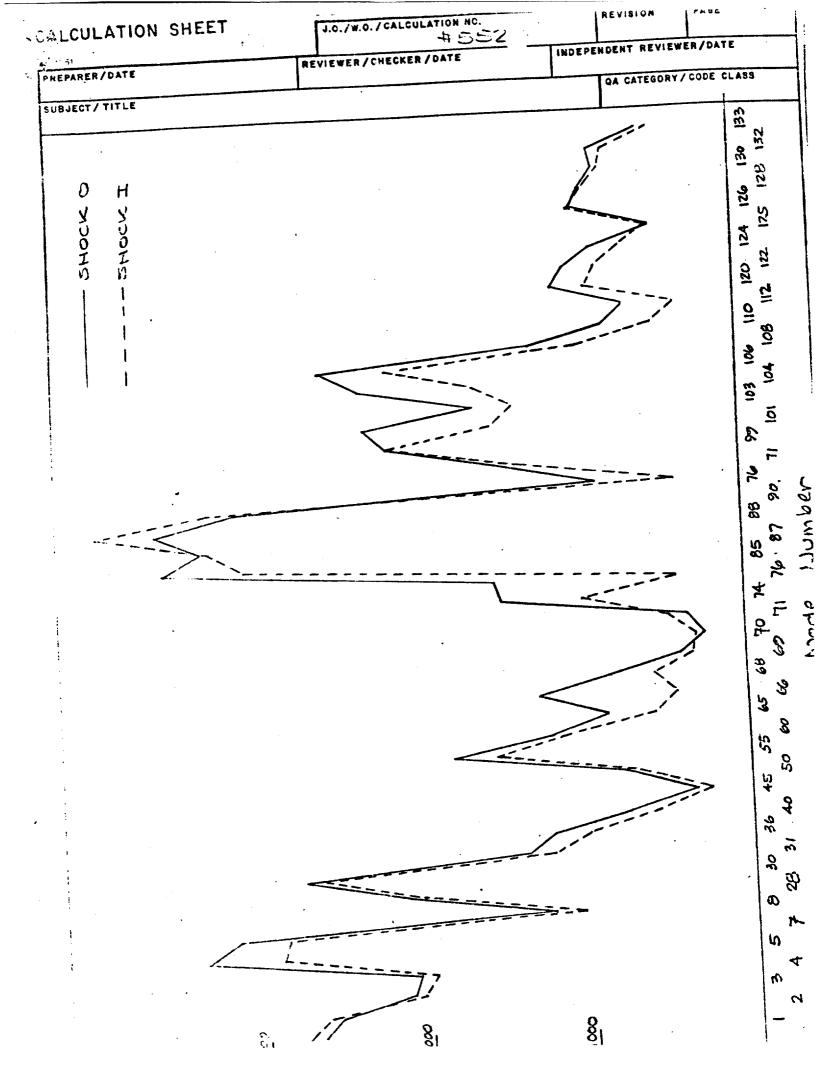


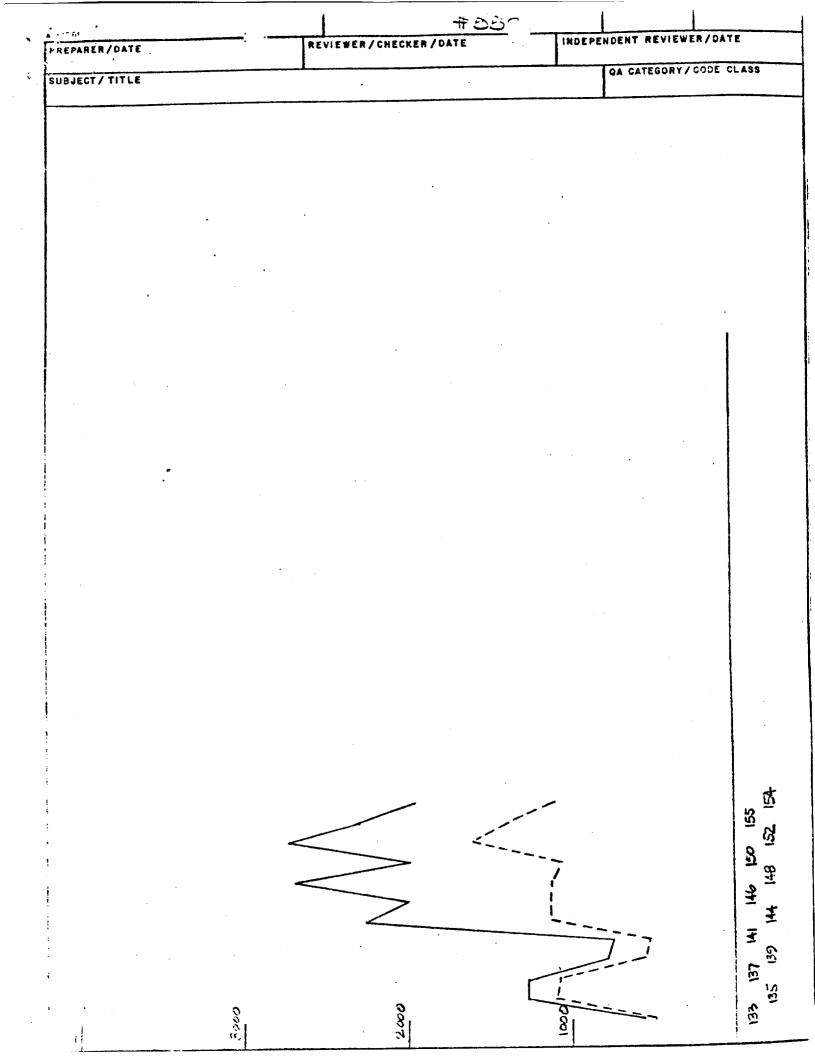


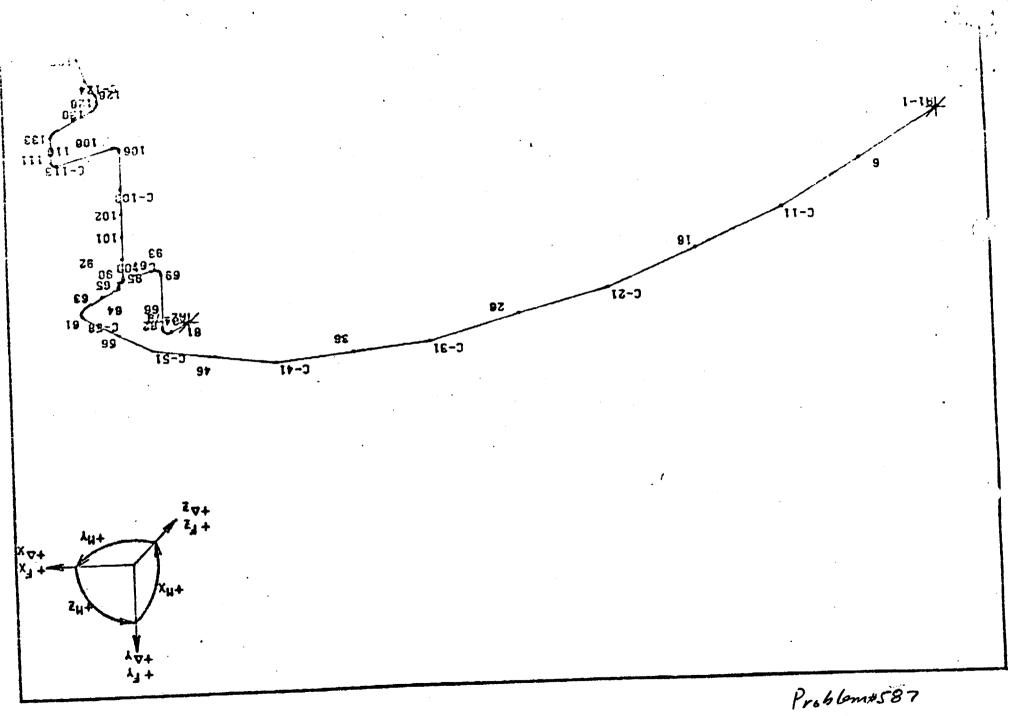


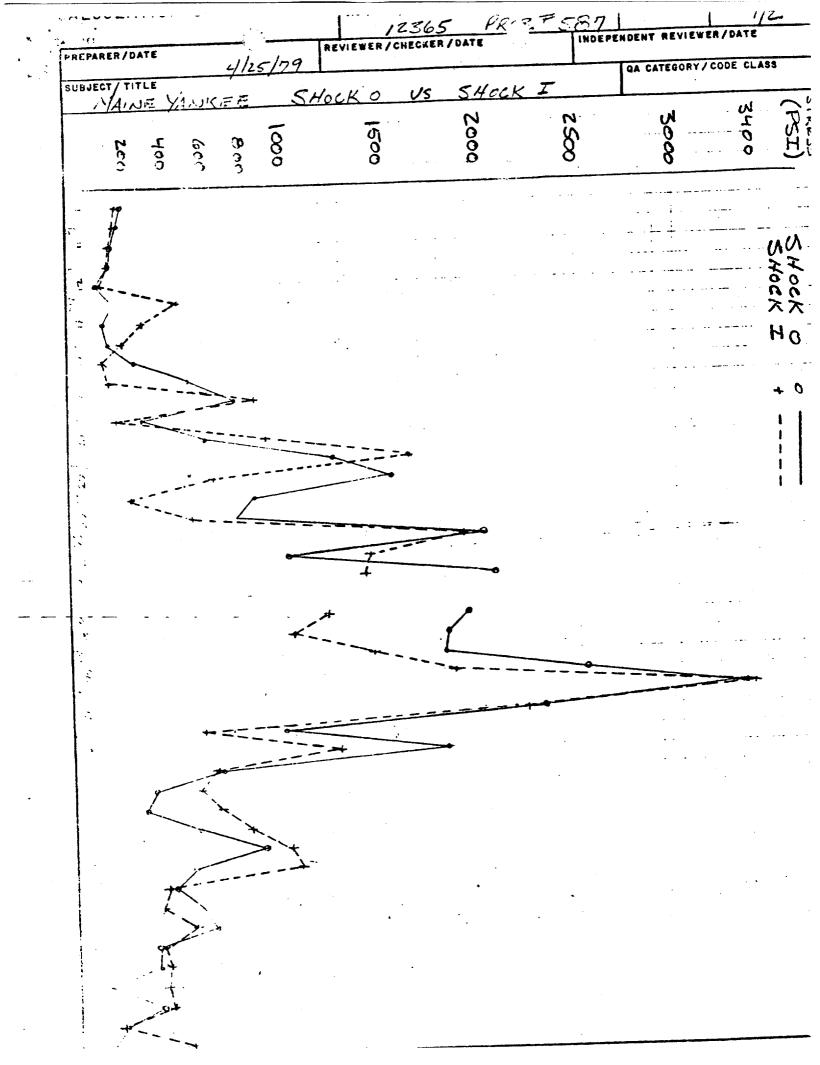
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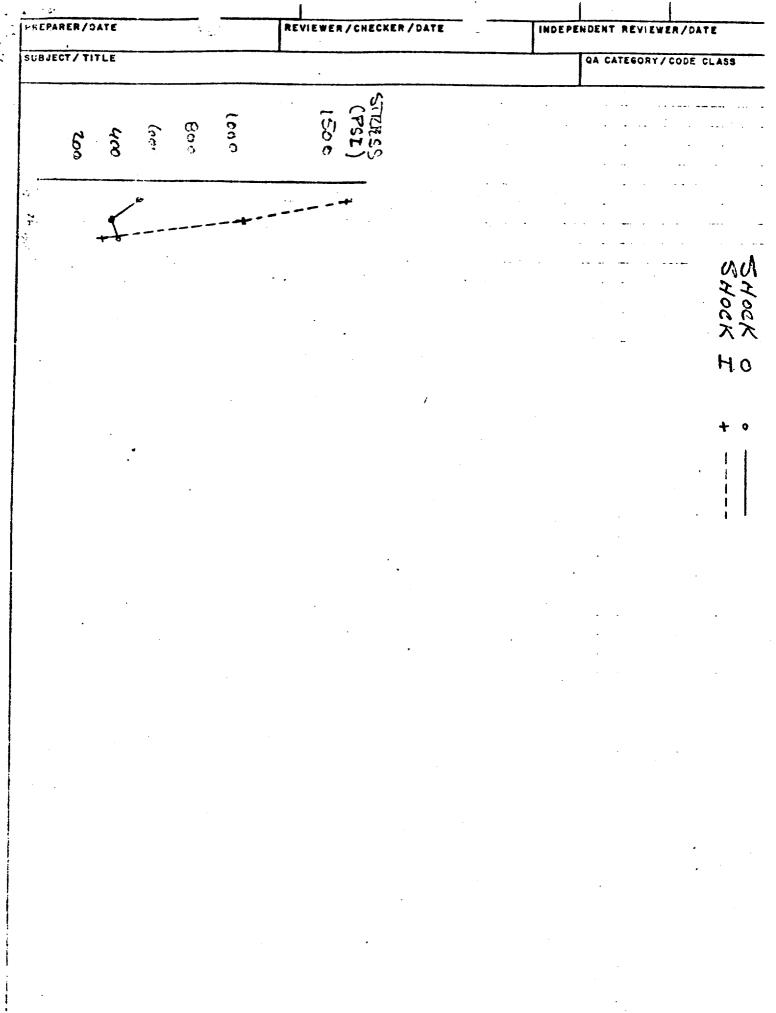


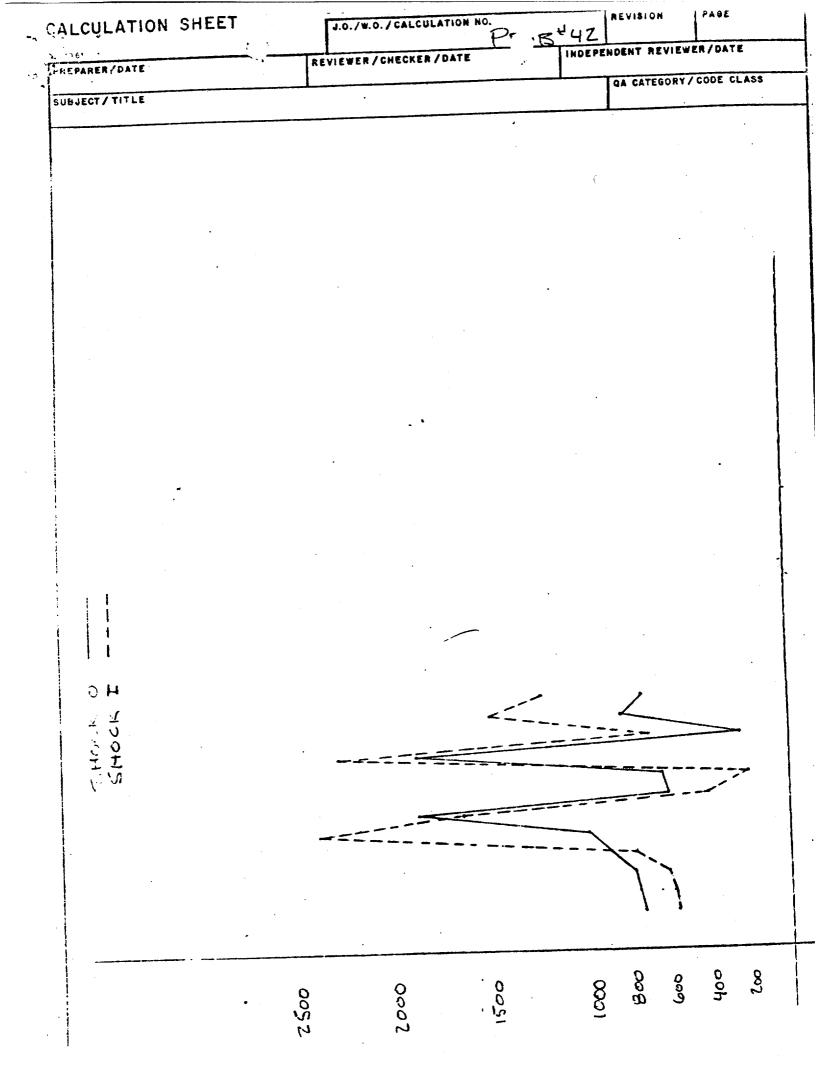












From:David KernTo:DXC1@OWFN_DO.OWF4_PO,Date:Thu, Apr 1, 1999 5:37 PMSubject:DRAFT Meeting Minutes for Small Bore Piping Support Meeting -Reply

Dan:

Great summary of the meeting! Once additional comment may be worthwhile for future follow-up. During the meeting they indicated that their analysis to date did not address wet lagging weight. With your background you indicated that this may be applicable to their accident scenarios.

I think it would be useful to note that observation and state that they acknowledged it for further review. Documenting this observation would be useful in case either of us is reassigned before the NRC does a closeout review.

Dave

Page 1

	David Kern OWFN_DO.OWF4_PO(dxc1)
Date:	Mon, Feb 1, 1999 12:35 PM
Subject:	Re: Meeting with Duquesne Light re: Small Bore Piping Hangar Issues -Reply

Hi Dan:

My preference would be to hold the meeting here at the site for the following reasons.

1. If held @ HQ, I don't think the region would agree to send a resident inspector.

2. Since this issue was found by the licensee and there have determined they meet GL 91-18 for

operability, there probably would be no follow-up from HQ. Just validation form the resident staff.

3. It would be less burden to the licensee and would let me have a chance to meet you in person.

4. I would still welcome a tech staff representative to help listen for something out of the ordinary.

The other option would be to have the meeting @ HQ. The one good part is it might give me the chance to sneak in on the NRR PPR screening if we scheduled this right.

I'll call you later,

Dave