NRC FORM 464 Part I (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) / PRIVACY ACT (PA) REQUEST

FOIA/PA	RESPONSE NUMBER
99-364	4

RESPONSE TYPE ☑ FINAL ☐ PARTIAL

REQUESTER: Jennifer Palmer

DATE: FEB 07 2000

PART I. -- INFORMATION RELEASED

☐ No additional agency records subject to the request have been located.

☐ Requested records are available through another public distribution program. See Comments section.

☑ APPENDICES G — Agency records subject to the request that are identified in the listed appendices are already available for public inspection and copying at the NRC Public Document Room.

☑ APPENDICES H — Agency records subject to the request that are identified in the listed appendices are being made available for public inspection and copying at the NRC Public Document Room.

☑ Enclosed is information on how you may obtain access to and the charges for copying records located at the NRC Public Document Room, 2120 L Street, NW, Washington, DC.

☑ APPENDICES H — 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 * $ 2570.93
* See comments for details

☐ You will be billed by NRC for the amount listed.

☑ You will receive a refund for the amount listed.

☐ None. Minimum fee threshold not met.

☐ 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 pursuant to the exemptions described in and for the reasons stated in Part II.

☐ 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

for Carol Ann Reed

FOIA No. 99-364b

APPENDIX G
RECORDS ALREADY AVAILABLE IN THE PDR

NO.	DATE	ACCESSION NUMBER	DESCRIPTION/(PAGE COUNT)
1.	See attached		

APPENDIX H
RECORDS BEING RELEASED IN THEIR ENTIRETY

NO.	DATE	DESCRIPTION/(PAGE COUNT)
1.	3/30/79	In 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
==== 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

File Locations: PDR ADOCK 05000309 Q 800109 Package: 8002150484 #

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

G/1

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== 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

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Dockets: 05000000 50-000 Generic Docket
05000280 50-280 Surry Power Station, Unit 1, Virginia Electric & Powe
Internal Tracking # IEB-79-02

File Locations: PDR FOIA * HERRMAN85-301 850703 Package: 8508130019 A
PDR FOIA * GILBERT85-301 850703

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== 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 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7912130086 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 01543-112 01543-114
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.
:
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-79-02

File Locations: PDR ADOCK 05000309 Q 791114 Package: 7912130086 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7911050127 ====== Start ==== End ===
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.
:
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 79-109

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

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7908080710 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 00535-341 00535-344
Size: 4pp.

Document Type: Incoming Correspondence Issued: 790705
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

File Locations: PDR ADOCK 05000309 Q 790705 Package: 7908080710 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 8007280458 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 06015-291 06015-294
Size: 4pp.

Document Type: Incoming Correspondence Issued: 800625
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.

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
Other Related Number WMY 80-99

File Locations: PDR ADOCK 05000309 Q 800625 Package: 8007280458 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 8004100406 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 04551-346 04551-346
Size: 1p.

Document Type: Incoming Correspondence Issued: 800307
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.

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 800307 Package: 8004100406 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 8004100422 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 04552-100 04552-101
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 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 8001240159 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 01794-351 01794-352
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
: days 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 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7912310472 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 01654-194 01654-195
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 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7912180073 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 01611-115 01611-118
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.
Authors: SCARANO,R.A. Uranium Recovery Licensing Branch (NMSS, Pre 870413)

Recipients: HIGGINBOTHAM,L. Division of Fuel Facility & Materials Safety Insp

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Dockets: 04001162 40-1162 Western Nuclear, Inc., Lakewood, CO,

File Locations: PDR ADOCK 04001162 C 791109 Package: 7912180073 #

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

<<NUDOCS/HD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7912040019 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 01470-282 01470-283
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.

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 791107 Package: 7912040019 #

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7911020276 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 01249-062 01249-063
Size: 2pp.

Document Type: Incoming Correspondence Issued: 790925
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 #

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

<<NUDOCS/HD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7908270511 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 15219-291 15219-291
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.

Recipients: GRIER,B.H. Region I, RI (IE, 720101-810228)

Dockets: 05000029 50-29 Yankee-Rowe Nuclear Power Station, Yankee Atomic Elect

Internal Tracking # IEB-79-14
Other Related Number WYR 79-84

File Locations: PDR ADOCK 05000029 Q 790718 Package: 7908270511 #

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

<<NUDOCS/HD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== 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.

Recipients: * Office of Nuclear Reactor Regulation, Director

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 *

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7904130203 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 02490-090 02490-152
Size: 61pp.

Document Type: General External Technical Reports Issued: 790412
Desc/: "Non-Dynamic Seismic Analysis of Piping & Supports."
Title:
:
:
Authors: * Maine Yankee Atomic Power Co.

Recipients:

Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic

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

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

<<NUDOCS/HD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7904240432 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 02695-117 02695-173
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.

Recipients: REID,R.W. Operating Reactors Branch 4 (Pre 790625)

Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic

Other Related Number WMY 79-34

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.
Count: *0 <Replace>

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7904240434 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 02695-118 02695-173
Size: 52pp.

Document Type: Topical Report Issued: 790419
Desc/: "Verification of SHOCK 1 Program."
Title:
:
:
Authors: * Maine Yankee Atomic Power Co.

Recipients:

Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic

File Locations: PDR ADOCK 05000309 P 790419 Package: 7904240432 A
PDR TOPRP EMVSTW B 790419

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

<<NUDOCS/AD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 8402160454 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 22268-309 22268-312
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.
Authors: VARELA,A.A. Region 1 (RI, Post 820201)
DURR,J.P. Region 1 (RI, Post 820201)
Recipients:

Dockets: 05000309 50-309 Maine Yankee Atomic Power Plant, Maine Yankee Atomic

Inspection Report # 50-309/83-19
Internal Tracking # IEB-79-02

File Locations: PDR ADOCK 05000309 Q 840201 Package: 8402160452 A

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

<<NUDOCS/HD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 8308240494 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 20143-092 20143-094
Size: 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.
Authors: EAMES,C.H. Maine Yankee Atomic Power Co.
GARRITY,J.H. Maine Yankee Atomic Power Co.
Recipients: MURLEY,T.E. Region 1 (RI, Post 820201)

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

File Locations: PDR ADOCK 05000309 S 830809 Package: 8308240494 #

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

<<NUDOCS/HD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== 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 #

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

<<NUDOCS/HD>> Nuclear Regulatory Commission ADQ42 V6.3.23.0
==== TCON69 ========== Accession Number - 7904060342 ====== Start ==== End ===
Availability: PDR Format: * Microfilm Address: 05373-237 05373-258
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.

Recipients: STELLO,V. Division of Operating Reactors

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 #

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

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.

#11

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

Dated: March 30, 1979

By Wendell P. Johnson
Wendell P. Johnson
Vice President

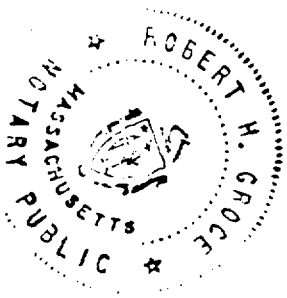
Counsel: Thomas G. Dignan, Jr.
Ropes & Gray
225 Franklin Street
Boston, MA 02110
617/423-6100

*The power of the Director to rescind or modify the Order insofar as it requires the presently in force 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. Compare Portland General Electric Co. (Trojan Nuclear Plant), CLI-78-14, CCH Nuclear Reg. Rep. Para. 30,311 (July 7, 1978) with Consumers Power Company (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,

Robert H Groce

Notary Public
My Commission Expires: 9/14/84

12365 . 08 N.Y. 11 OF 13

PREPARER/DATE R. MARTIN 3/24/79

REVIEWER/CHECKER/DATE [illegible] 3/25/79

INDEPENDENT REVIEWER/DATE

QA CATEGORY/CODE CLASS

SUBJECT/TITLE P.S. TAB (W/SHOCK III STRESS ANALYSIS)

SUPPORT NO. H-51 PIPING DWG. # FP17G-6

LINE NO. 16" CS-13-152 SUPPORT DWG. FB17G

BASED ON MSK 118G6-6

PROE NO. 795 PT. NO A4-120

COLUMN	LOAD TYPE		FX(LB)	FY(LB)	FZ(LB)	MX(FT LB)	MY(FT LB)	MZ(FT LB)
1	ØCC U,E,F	LARGEST +	+	+	+	+	+	+
2		LARGEST −	−	−	−	−	−	−
3	EARTHQUAKE (LARGEST VALUE, OBET OR SSE)		± 918	± 4431	± 3828	± 11559	± 9809	± 8657
4	$+\left[\lvert COL\ 1\rvert^2+\lvert COL\ 3\rvert^2\right]^{\frac{1}{2}}$		+	+	+	+	+	+
5	$-\left[\lvert COL\ 2\rvert^2+\lvert COL\ 3\rvert^2\right]^{\frac{1}{2}}$		−	−	−	−	−	−
6	DEAD LOAD			−13480				
7	THERMAL	MOST POSITIVE ALGEBRAICALLY	[illegible]	−3002	+6352	−6419	[illegible]	−17883
8		MOST NEGATIVE ALGEBRAICALLY						
9	$\left[+(COL\ 4)+(COL\ 6)+(COL\ 7)\right]$							
10	$\left[+(COL\ 5)+(COL\ 6)+(COL\ 8)\right]$							
12	SUPPORT DESIGN LOAD (COL 9 & 10 COMPARED) PER DCC-161		[illegible]	[illegible]	+10180	+5140 −17978	[illegible]	−26540

PIPE THK .375 PRESS 50 psi

MAT'L A 358 TP 304 S.S. TEMP 220°F

INSUL ______ SH 17,750 PSI

COMPUTER PRINTOUT TYPE ☐

1. ☑ FITRUST

2. ☐ FILUG

3. ☑ STRUDL

RUN DATE 3/24/79

RUN TIME .82 MIN

Run # 034 & 135 (STRUDL)

037 & 039 (FITRUST)

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

Stone & Webster Engineering Corporation
Boston, Massachusetts

4/2

CONTENTS

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:

1. 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:

Line Number	System	Problem No.	Description	FSAR Fig. No.
10"-CH-1-152R2 10"-CH-2-152R2	High Pressure Safety Injection System (HPSI)	16A 16B	High pressure safety 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 discharge from RHR suction off reactor coolant loop to pressurizer 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.

Line Number	System	Problem No.	Description	FSAR Fig. No.
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 Safety Injection System (LPSI)	795 (Part 1)	Containment spray system consisting of CS pumps suction 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 system 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.

System	Line No.	Description
Residual Heat Removal	*4"-PL-22	Supply and Return to RWST
	*2"-PL-21	Heater
Steam Generator Feedwater	*1 1/2"-WCPR-5	Supply and Return to DWST
	*3"-WCPR-6	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	Line No.	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
	3"-BR-2	Boron Waste Storage Tank to Liquid 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:

BWST = Boron Waste Storage Tank
RWST = Refueling Water Storage Tank
DWST = Demineralizer Water Storage Tank
HX = Heat Exchanger
* = Safety-related

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.	System	FSAR Fig.No.
16A & 16B	High Pressure Safety Injection System	9.1-2

Problem No.	System	FSAR Fig.No.
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 (Part 1)	Containment Spray System/ Low Pressure Safety Injection System	6.2-1A

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 resulted in decreased thermal stresses.

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.

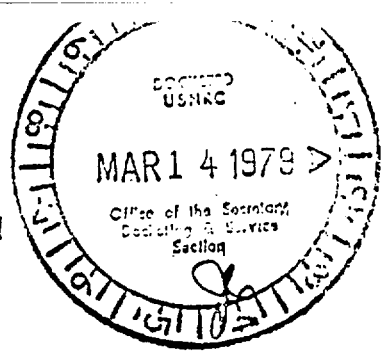
Particular attention was paid to the following anchors (six-way restraints) for which SHOCK3 loads exceeded SHOCK2 results. These restraints involve trunnions welded to one or more pads which are in turn welded to the pipe itself.

Problem	Restraint
16A	H-4
16B	H-3, H-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) Docket No. 50-309
(Maine Yankee Atomic Power Station))

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 time-history 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

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 architect-engineer 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.

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

(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.

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

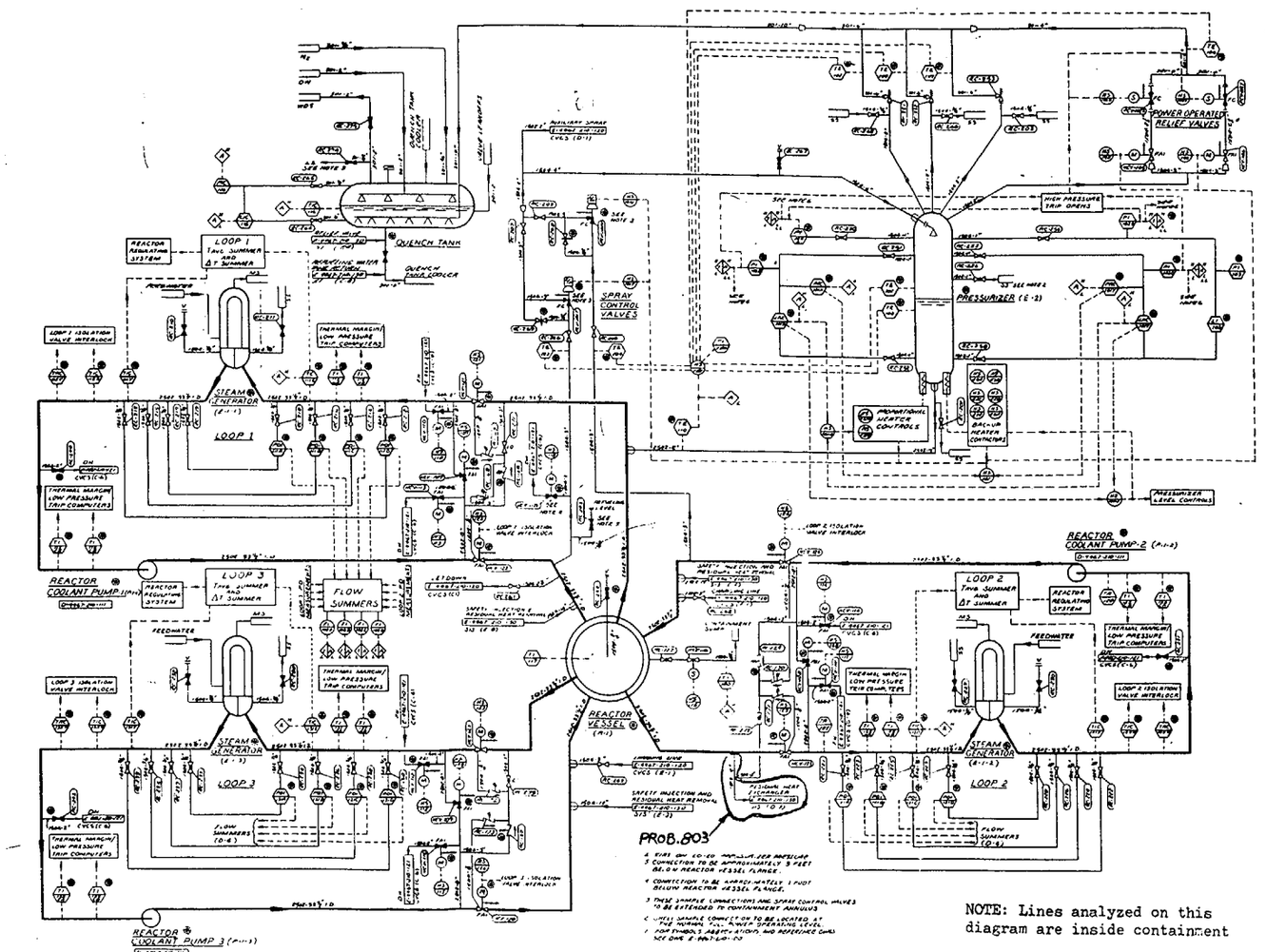
Harold R. Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

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

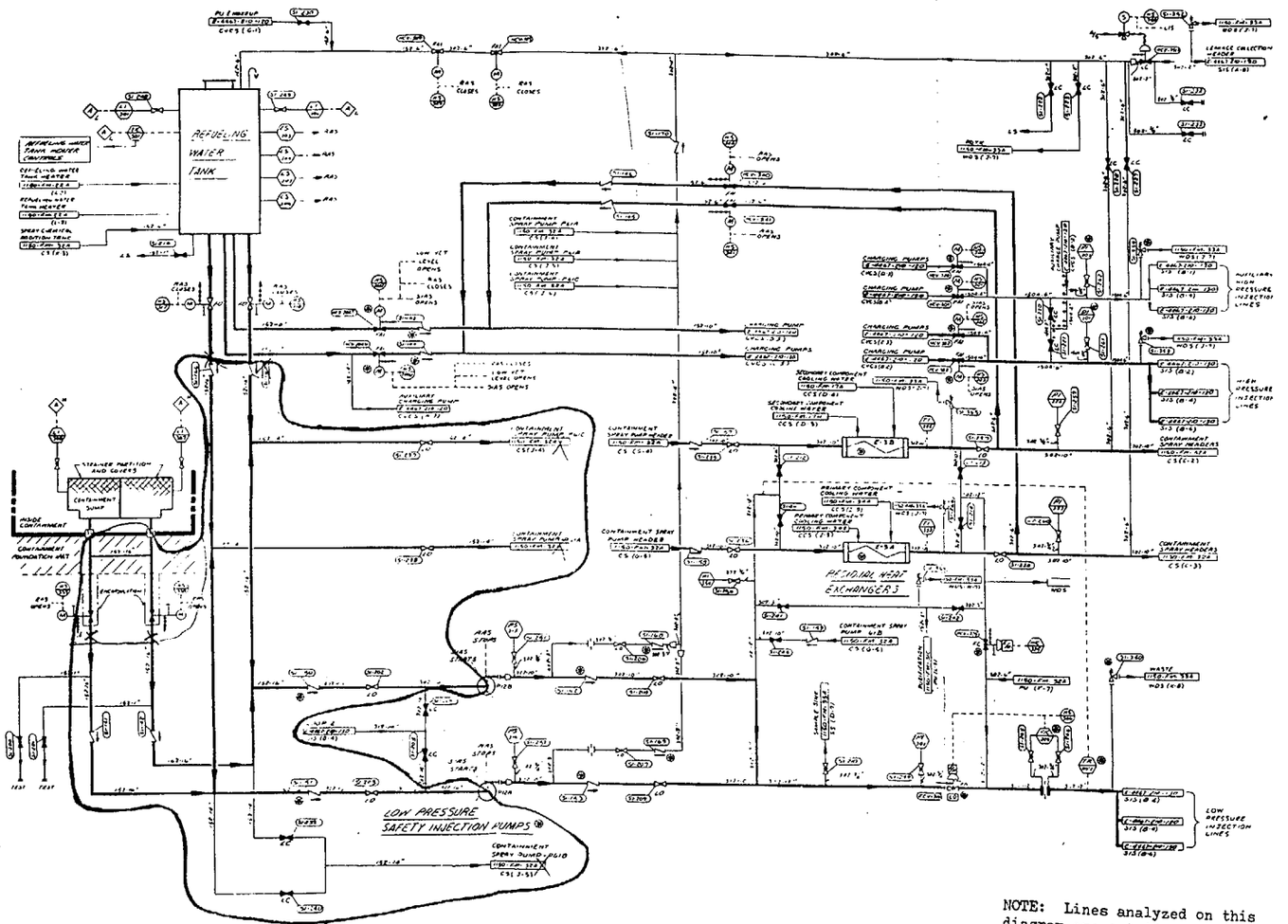
APPENDIX B

FLOW DIAGRAMS - IDENTIFICATION OF SYSTEMS AFFECTED



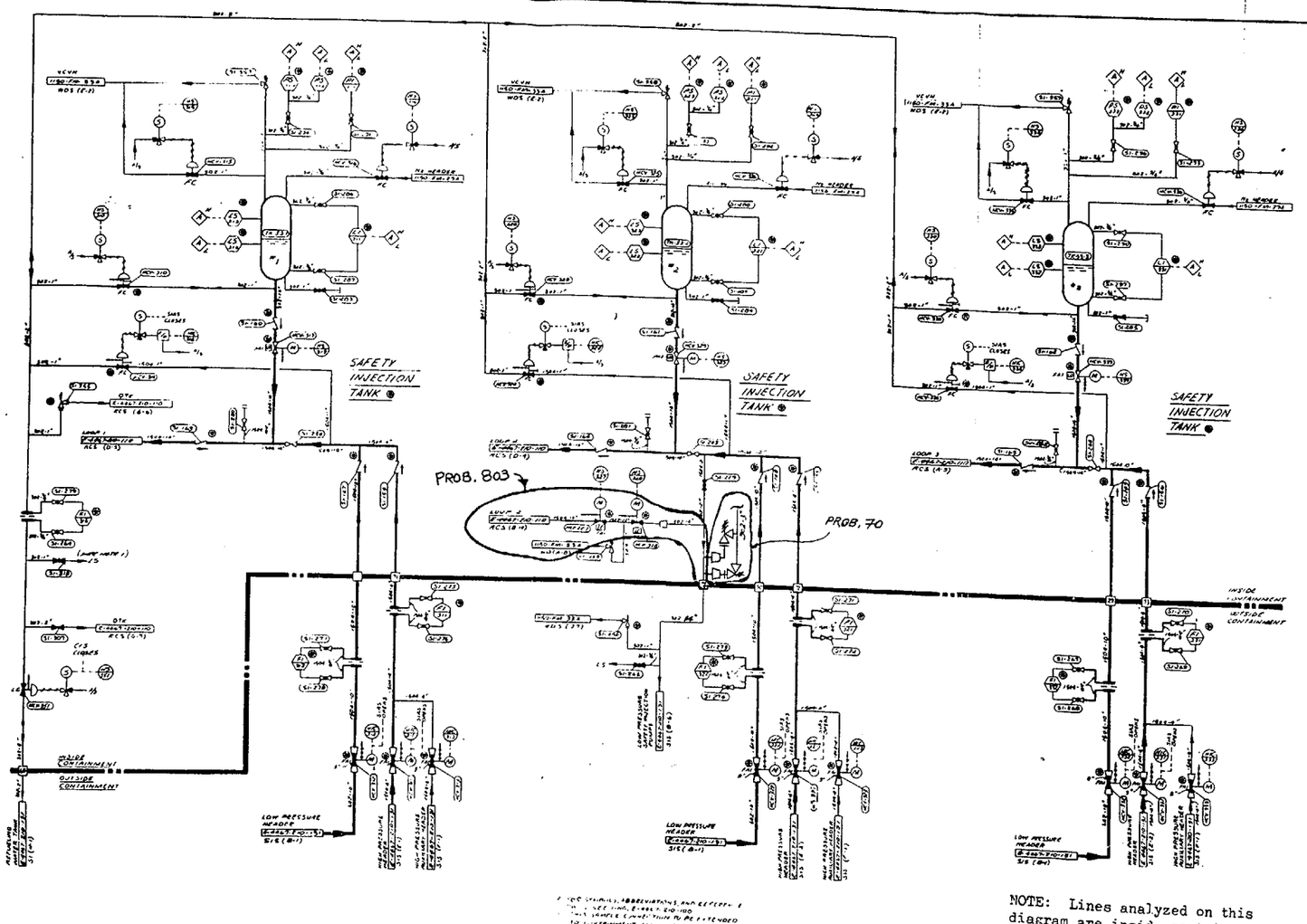
NOTE: Lines analyzed on this diagram are inside containment

MAINE YANKEE ATOMIC POWER CO. Maine Yankee Atomic Power Station	Reactor Coolant System - P and I Diagram	Figure 4.3-1



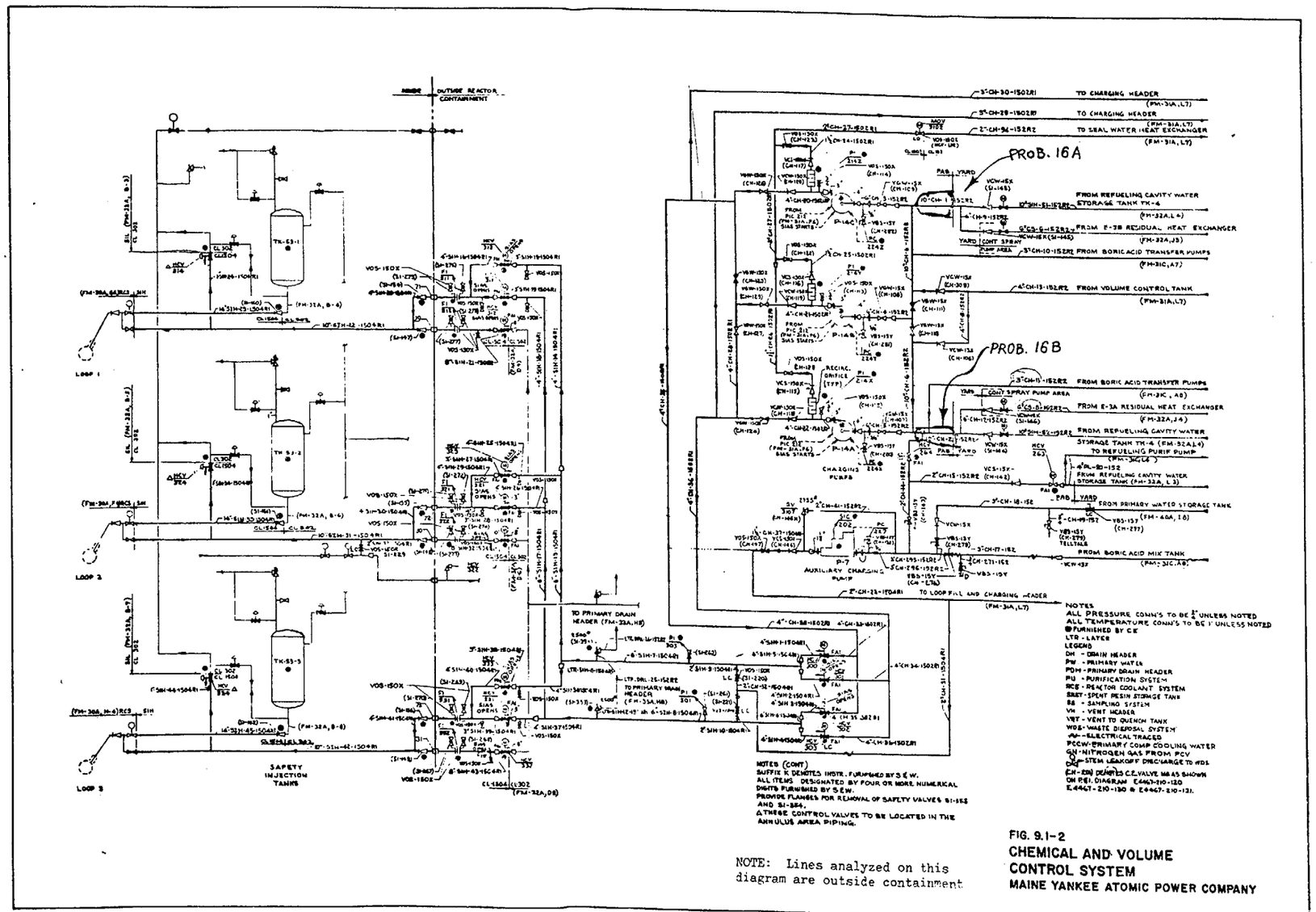
NOTE: Lines analyzed on this diagram are outside containment

MAINE YANKEE ATOMIC POWER CO. Maine Yankee Atomic Power Station	Engineered Safeguards System - P and I Diagram	Figure 6.2-1A



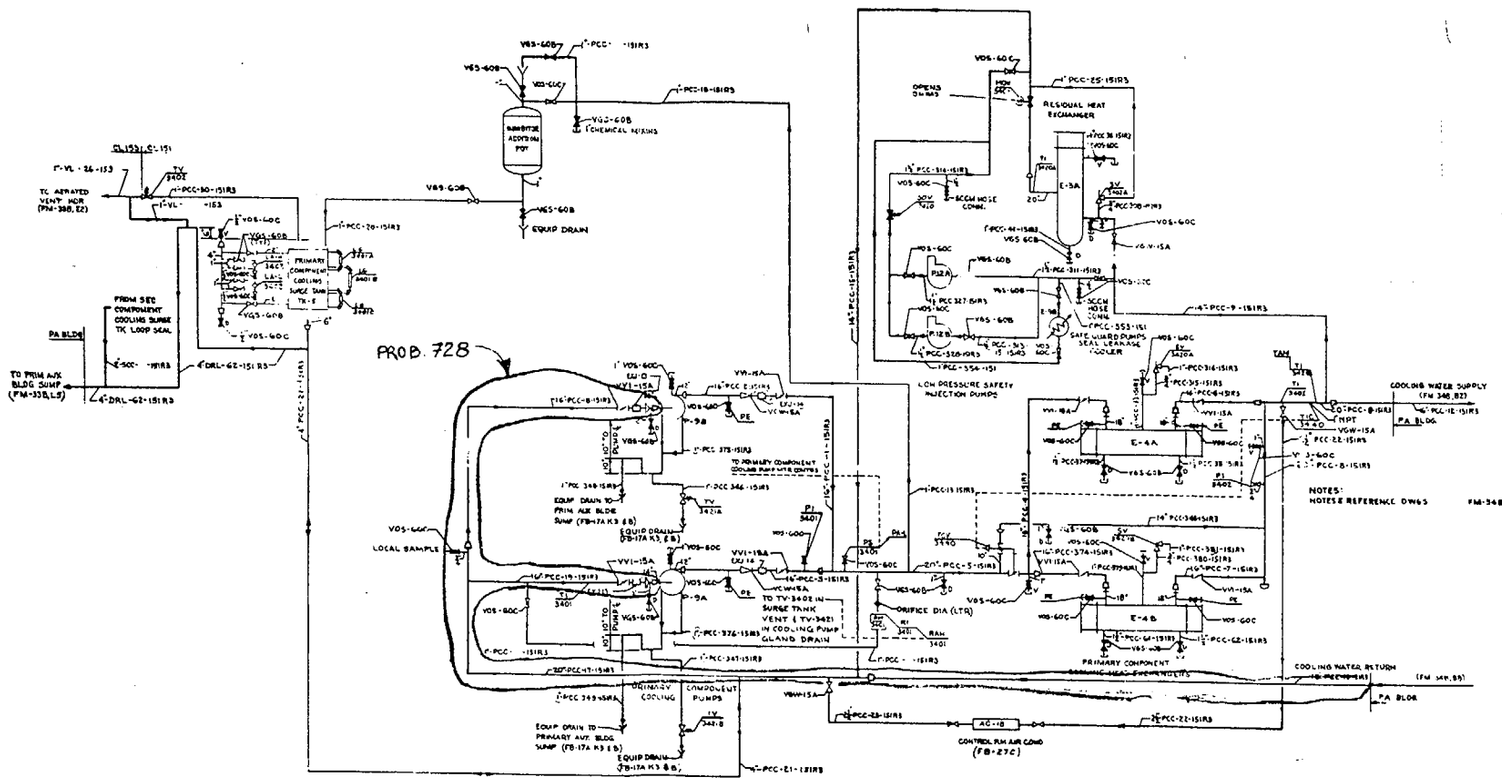
NOTE: Lines analyzed on this diagram are inside containment

MAINE YANKEE ATOMIC POWER CO. Maine Yankee Atomic Power Station	Engineered Safeguards System - P and I Diagram	Figure 6.2-1B



NOTE: Lines analyzed on this diagram are outside containment

FIG. 9.1-2
CHEMICAL AND VOLUME CONTROL SYSTEM
MAINE YANKEE ATOMIC POWER COMPANY



NOTE: Lines analyzed on this diagram are outside containment

FIG. 9.4-1
PRIMARY COMPONENT
COOLING WATER SYSTEM
MAINE YANKEE ATOMIC POWER COMPANY

APPENDIX C

REANALYSIS RESULTS - COMPARISON TABLES

MAINE YANKEE ATOMIC POWER STATION

TABLE C-1

SUMMARY OF COMBINED LINE STRESSES

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

*Primary Stresses: Upset $S_{LP} + S_{DL} + S_{OBE} \leq 1.2\ S_h$

Faulted $S_{LP} + S_{DL} + S_{DBE} \leq 1.8\ S_h$

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

CLIENT MAINE YANKEE CHARGE 12365.08

MSK 125 All thru Lis Issue PROB. 16A

SYSTEM CHEMICAL VOLUME CONTROL PIPING 11550-FP- 14C ISSUE 3 14D ISSUE 7 14H ISSUE 10 14J ISSUE 7 6B ISSUE 7 6C ISSUE ~~7~~ 8

DISPOSITION: ACCEPT ______ REVIEWER ______

FURTHER EVALUATION ______ SUPERVISOR ______

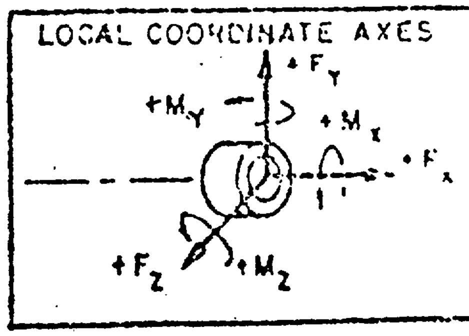
DATE ______

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. ______ EQUIPMENT NO. ______

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1						
	DEADLOAD						
	OBET						
	DBET						
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET						
	DBET						

N/A NO EQUIPMENT NOZZLES

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ

CLIENT MAINE YANKEE CHARGE 12365.03

MSK 125 All Tubes All Issue 3 PROB. 16B

SYSTEM Volume Control (Mech) 1155(-FP- MS Issue 3 MH Issue 10 GB Issue 7
MD Issue 7 MI Issue 7 GE Issue 7

DISPOSITION: ACCEPT _____ REVIEWER _____

FURTHER EVALUATION _____ SUPERVISOR _____

DATE _____

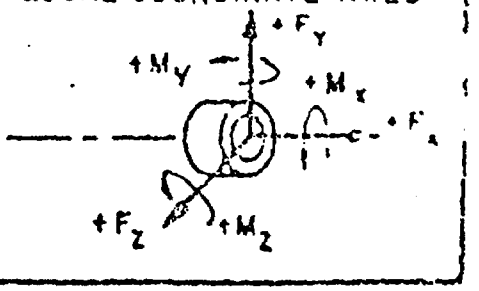
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

(+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

LOCAL COORDINATE AXES



EQUIPMENT LOADING SUMMARY

POINT NO. _____ EQUIPMENT NO. _____

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1						
	DEADLOAD						
	OBET						
	DBET						
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET						
	DBET						

N/A
NO EQUIPMENT
NO NOZZLES

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ

CLIENT ITHINE [illegible]

MSK 107 B1-B5 ISSUE 2 PROB. 803

SYSTEM RHR 11550-FP- 16P ISSUE 13

DISPOSITION: ACCEPT SEM

FURTHER EVALUATION _____ (EMD)

REVIEWER H. T. Bulaney

SUPERVISOR Ste E Fin

DATE 21 MAR 79

TRANSCRIBED 3/28/79

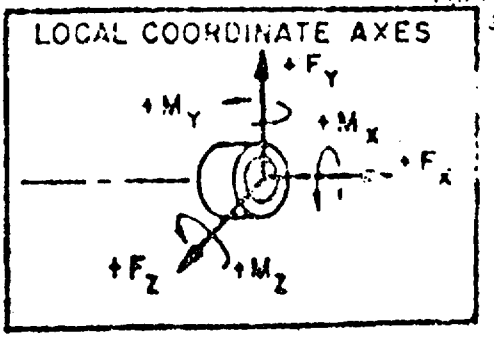
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

(+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

LOCAL COORDINATE AXES



EQUIPMENT LOADING SUMMARY

POINT NO. B1-200 EQUIPMENT NO. PENETRATION #9 EL 10'-3"

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1						
	DEADLOAD						
	OBET	604	158	424	194	4775	1149
	DBET	854	250	606	296	6785	1802
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	2109	959	3938	1670	25837	4145
	DBET	8792	4224	17490	7483	111136	17856

ALLOWABLE LOADS (FROM MSK-107B3-2)

CONDITION	FX	FY	FZ	MX	MY	MZ
	SAME AS PREVIOUSLY ACCEPTABLE					

CLIENT [illegible]

MSK 107 B1-B5 ISSUE 2 PROB. 803

SYSTEM RHR 11550-FP-160 ISSUE 13

DISPOSITION: ACCEPT [signature] REVIEWER [signature]

FURTHER EVALUATION _____ (EMD) SUPERVISOR [signature]

DATE 21 MAR 79

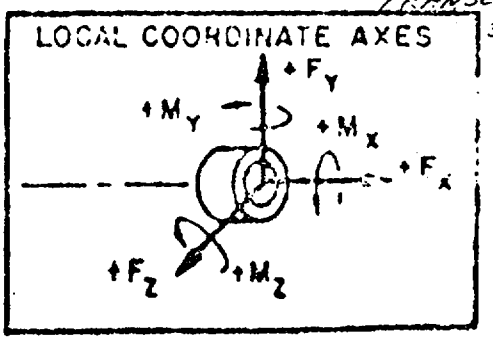
TRANSCRIBED 3/28/79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A2-76 EQUIPMENT NO. 33½"-RC-7-2502 CE PIPING

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1						
	DEADLOAD						
	OBET	777	345 *	421	1944	2354 *	2231
	DBET	1130	490	583	2897	3139	2961
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	1770	325	170	2963	1822	3801
	DBET	7575	1616	683	12778	7131	14217

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	~~SAME AS PREVIOUSLY ACCEPTABLE~~					

* ACCEPTABLE FROM ENGINEERING JUDGEMENT [signature]

PLANT PHASE THREE UNIT 2 REVISION

MSK 11705-5 11724-3 11787-2 11753-5 11765-5 11753-2 11716-5 ERR. 728

SYSTEM PCC 11550-FP- 20A ISSUE 9

DISPOSITION: ACCEPT EAIM REVIEWER R.C. Cavella

FURTHER EVALUATION _____ SUPERVISOR J.H. Kucharski

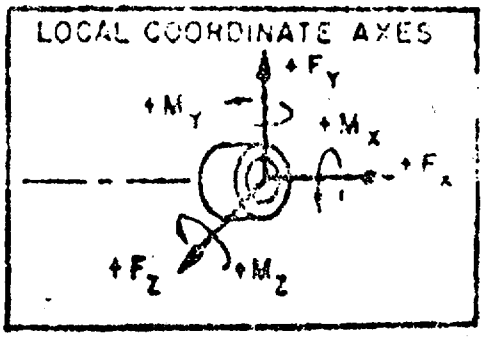
(END) DATE 4/1/79

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 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



EQUIPMENT LOADING SUMMARY FROM NUPIPE RUN No. 1741011

POINT NO. COMBINED SUCTION AND DISCHARGE EQUIPMENT NO. P-9A JOB 373 4-1-79

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING CHAX-11	MAX. THERMAL 1	35	-82	-1	2	-14	645
	DEADLOAD	88	2	0	1	-120	101
	OBET	6	44	103	543	76	45
	DBET	10	145	166	880	123	132
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	284	-400	-310	0	0	0
	DEADLOAD						
	OBET (INCLUDE DEADLOAD & THERMAL)	284	900	310	0	0	0
	DBET (INCLUDE DEADLOAD & THERMAL)	284	900	310	0	0	0

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	SEE NEXT SHEET FOR MANUFACTURER'S ALLOWABLE LOADS (ALL LOADS WITHIN ALLOWABLE)					

NSK 11761-5 11765-5 11767-2 11763-2 11765-5 11766-5 PROB. 728

SYSTEM PCC 11550-PP- 20A ISSUE 9

DISPOSITION: ACCEPT E'ville REVIEWER R.C Casella

FURTHER EVALUATION _____ SUPERVISOR J.H Kuhanek

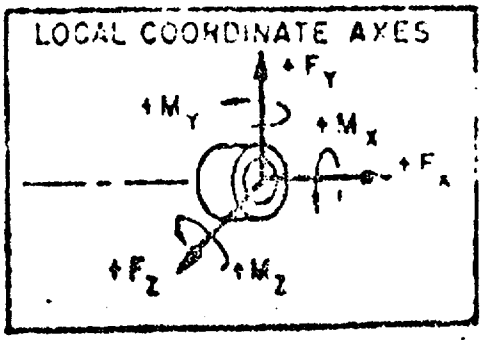
(END) DATE 4/1/79

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 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



EQUIPMENT LOADING SUMMARY FROM NUPIPE RUN No. 1741007 JOB 360 4-1-79.

POINT NO. COMBINED SUCTION AND DISCHARGE EQUIPMENT NO. P-9B

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING NSK [illegible]	MAX. THERMAL 1	25	-93	1	18	-31	587
	DEADLOAD	160	3	0	-4	9	156
	OBET	17	81	119	677	80	85
	DBET	16	176	133	742	96	162
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	284	-400	-310	0	0	0
	DEADLOAD						
	OBET (INCLUDE DEADLOAD & THERMAL)	284	900	310	0	0	0
	DBET (INCLUDE DEADLOAD & THERMAL)	284	900	310	0	0	0

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	SEE NEXT SHEET FOR MANUFACTURER'S ALLOWABLE LOADS (ALL LOADS WITHIN ALLOWABLE)					

TABLE C-2 (Cont)

CLIENT MAINE YANKEE CHARGE 12565.06

MSK 118G1 TO G10 FOR REV 2 PROB. 795

SYSTEM RHR 11550-FP- 17A ISSUE 10; 17B ISSUE 9; 16A ISSUE 8; 17C ISSUE

DISPOSITION: ACCEPT H Bob 4-1-79 REVIEWER J.J. Cook 4/1/79

FURTHER EVALUATION _____ SUPERVISOR J.W. Kuckarski

(END) DATE 4/4/79

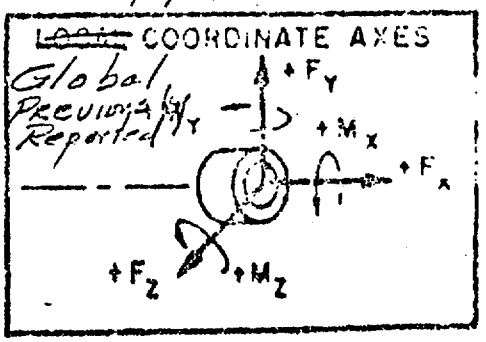
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

(+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

~~Local~~ COORDINATE AXES



EQUIPMENT LOADING SUMMARY

POINT NO. A9-153 EQUIPMENT NO. PUMP 12A (SUCTION)

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1	-1120	-11	-2271	-1758	-12425	2
	DEADLOAD	-4	799	197	-504	1391	-112
	OBET	781	1600	4274	8473	14392	3066
	DBET	1091	2719	5421*	15017	23203	3745
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	-1784	493	-2930	-7294	-22532	12456
	DEADLOAD						
	OBET	1035	4171	4404	2521	6056	13580
	DBET	1173	4308	5203	3038	6600	14085

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL	4000	4000	4000	40000	40000	40000

* SLIGHTLY HIGHER THAN THE ORIGINAL; HOWEVER, SINCE THE NEW RESULTANT IS LOWER THAN THE PREVIOUSLY CALCULATED RESULTANT, THIS VALUE IS CONSIDERED ACCEPTABLE.

MSK 11861 TO G10 FOR RH SEE SH-1 PROB. 795

SYSTEM RHR 11550-FP- 17A ISSUE 10; 17B ISSUE 9; 17C ISSUE 10; 16A ISSUE 8

DISPOSITION: ACCEPT HBal 4-1-79 REVIEWER J.S. Goh 4/1/79

FURTHER EVALUATION ~~Y~~ (EMD) SUPERVISOR DH Kuchanski

DATE 4/4/79

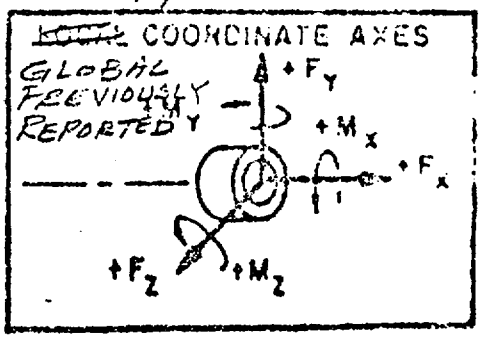
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

(+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

~~LOCAL~~ COORDINATE AXES



EQUIPMENT LOADING SUMMARY

POINT NO. A7-181 EQUIPMENT NO. PUMP 12B (SUCTION)

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1	-1090	189	2663	2985	15619	-26
	DEADLOAD	-29	807	-203	503	-1605	-113
	OBET	3334	2187	4371	7596	11535	2004
	DBET	3973	3184	5592	14718	21391	2497
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	-1234	-520	5174	12942	32620	21469
	DEADLOAD						
	OBET	3571	4737	4778	1638	7662	12494
	DBET	4123	5048	5554	2004	8094	12818

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL	4000	4000	4000	40000	40000	40000

CLIENT MAINE YANKEE CHARGE 12500.108

TASK 118 G1 TO G10 FOR REF. SEE SHT P-OB. 795

SYSTEM CONT. SPRAY 115 -FP- 17A ISSUE 10 ; 17B ISSUE 9 ; 16A ISSUE 8) 17C-10

DISPOSITION: ACCEPT ADT REVIEWER

FURTHER EVALUATION _____ SUPERVISOR

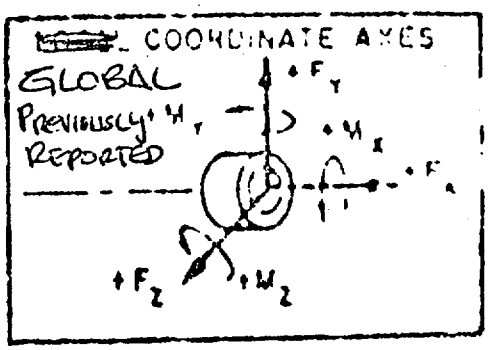
DATE 3-25-79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A8-1711 EQUIPMENT NO. PUMP P-61A SUCTION

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED LOADS	MAX. THERMAL 1	489	1050	1437	-7228	-4563	-4503
	DEADLOAD	-31	17	-84	-94	-575	-203
	OBET	1129	1411	277	447	1205	7170
	DBET	2161	2782	480	846	2053	13933
	RESULTANT 3555 LB DBET				14109 FT LBS DBET		
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	-122	980	1831	-10198	-7451	-3481
	DEADLOAD						
	OBET	827	1126	626	400	2262	4332
	DBET	845	1151	623	377	2234	4458

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL						
		RESULTANT		RESULTANT		
		= 4000 LBS		= 18 000 #-FT		

CLIENT MAINE YANKEE CHARGE 12[illegible]

PIPE REV. PROB. 795

LINE 118 G1 TO G10 SEE SH. 1

SYSTEM CONT. SPRAY ISO. -FP- 17A ISSUE 10 ; 17B ISSUE 9 ; 16A ISSUE 8 ; 17C-10

DISPOSITION: ACCEPT 1007 REVIEWER Marcoulier/Orbeta

FURTHER EVALUATION _____ SUPERVISOR [signature]

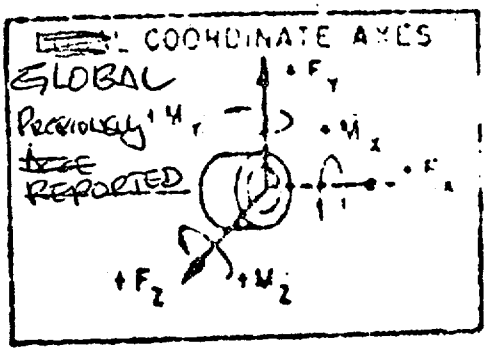
DATE 3-25-99

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. R6-139 EQUIPMENT NO. PUMP P-61B SUCTION

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED PIPING STRESS	MAX. THERMAL 1	1274	706	-1047	7508	7358	-1750
	DEADLOAD	-56	-99	64	150	598	-287
	OBET	640	1510	410	1361	966	7822
	DBET	1259	3230	791	2725	1741	16700
		3556 LB. DBET			17010 FT-LB DBET		
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	1204	716	-1425	10721	10892	-566
	DEADLOAD						
	OBET	1162	616	301	492	909	1745
	DBET	869	527	208	222	780	1697

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL		RESULTANT = 4000 LBS			RESULTANT = 18 000	LB-FT

CLIENT MAINE YANKEE CHARGE 12

MSK 118 G1 TO G10 FOR REV. SEE SHT 1 P.O.B. 795

SYSTEM CONT. SPRAY ISO-FP- 17A ISSUE 10 ; 17B ISSUE 9 ; 16A ISSUE 8 , 17C-10

DISPOSITION: ACCEPT DG Hessen REVIEWER JMcAdoo DSlater

FURTHER EVALUATION _____ SUPERVISOR Stan Elms

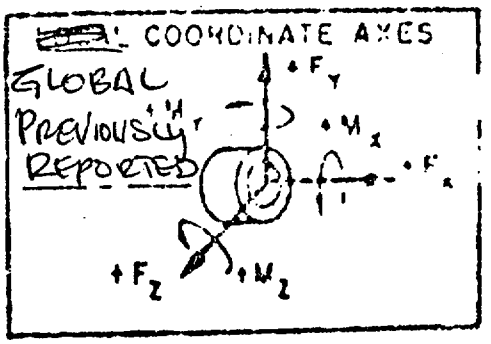
DATE 3-25-94

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. R3-90 EQUIPMENT NO. PUMP P-61S SUCTION

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING					11556 THERMAL		
	MAX. THERMAL 1	1562	3012	97	-39	421	-11549
	DEADLOAD	-215	101	17	-24	48	-583
	OBE†	537	1178	1138	908	4263	5170
	DBE†	910	2400	2339	1813	8753	10536
	RESULTANT	3473 LB. DBE			2288 FT-LB DBE		
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	1466	4033	112	-15	560	-15803
	DEADLOAD						
	OBE†	539	689	86	99	168	2335
	DBE†	564	704	147	165	372	2379

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL						
		RESULTANT			RESULTANT	
		= 4000	LBS		= 18 000	LB-FT

CLIENT MAINE YANKEE CHARGE 12365.08 TABLE C-2 (CONT.)

RISK 118 G1 TO G10 PROB. 795

SYSTEM CONT. SPRAY 1" -FP- 17A ISSUE 10 ; 17B ISSUE 9 ; 16A ISSUE 8), 17C-10

DISPOSITION: ACCEPT GH Harper JR REVIEWER JHarrison

FURTHER EVALUATION _____ SUPERVISOR Site Wm

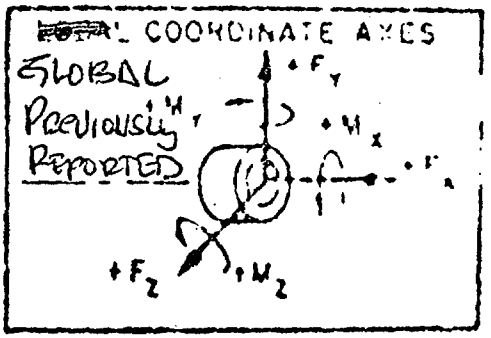
DATE 3-25-79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A2-48 EQUIPMENT NO. PENT

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED LOADS	MAX. THERMAL 1	711	-806	182	149	-6470	-3697
	DEADLOAD	44	-1640	-19	-252	450	-6016
	OBET	892	2568	747	5632	5295	20881
	DBET	1718	5063	1399	11064	9651	41122
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	1257	-1473	360	-3	-10571	-7402
	DEADLOAD						
	OBET	314	825	678	963	7502	11496
	DBET	324	738	695	992	7390	10566

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	NOT APPLICABLE					

CLIENT MAINE YANKEE

CHECK 118 G1 TO G10 PROB. 795

SYSTEM CONT. SPRAY 1900-FP-17A ISSUE 10; 17B ISSUE 9; 16A ISSUE 8), 17C-10

DISPOSITION: ACCEPT GH Hansen

FURTHER EVALUATION _____

REVIEWER JH Mauldin

SUPERVISOR Ste Dun

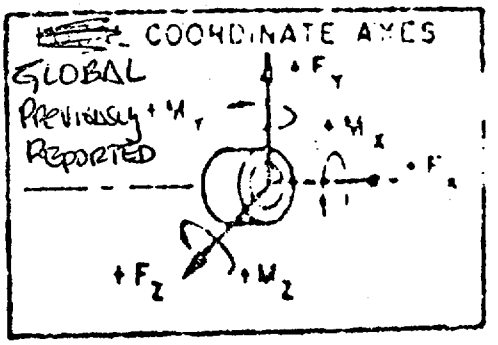
DATE 3-25-29

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A1-1 EQUIPMENT NO. PENT.

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SSE	MAX. THERMAL 1	-509	136	-858	495	11369	1445
	DEADLOAD	-157	7680	-62	-480	539	-5855
	OBET	583	442	327	724	2200	3309
	DBET	1024	857	511	1527	3662	6760
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	-527	199	-868	245	11496	1967
	DEADLOAD						
	OBET	384	310	449	4	2658	1682
	DBET	431	343	504	11	2983	1797

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	NOT APPLICABLE					

NSK 146A-A4, ISSUE 1 PROB. # 70

SYSTEM S.V. RELIEF LINE LINE-FP- 13A-10, 16D-11

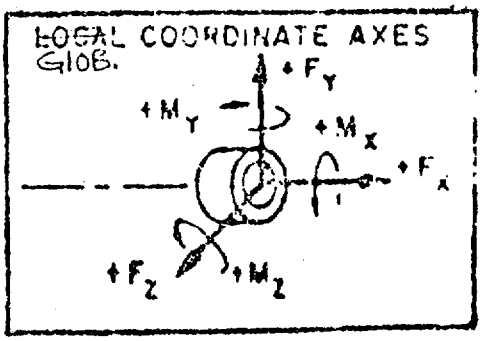
DISPOSITION: ACCEPT SAT REVIEWER H. T. Bryant

FURTHER EVALUATION _____ SUPERVISOR [signature]

(END) DATE 28 MAR 79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A1-1 EQUIPMENT NO. NOZZLE CONNECTION LINE 14"-RH-1-302 R2

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED DESIGN (BASE -)	MAX. THERMAL 1						
	DEADLOAD						
	OBET	50	49	130	433	129	136
	DBET	74	97	185	709	189	198
INVOLVED EQUIPMENT	MAX. THERMAL 1						
	DEADLOAD						
	OBET	6	43	7	301	6	77
	DBET	9	41	14	309	17	76

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	THESE REACTIONS ARE LOW AND HAVE AN INSIGNIFICANT EFFECT ON THE RHR LINE (14"-RH-1-302-R2)					

NSK 146A-A4, ISSUE 1 PROB. #70

SYSTEM S.V. RELIEF LINE ISO-FP- 13A-10, 16D-11

DISPOSITION: ACCEPT [signature] REVIEWER [signature]

FURTHER EVALUATION _____ SUPERVISOR [signature]

(END) DATE 29 MAR 79

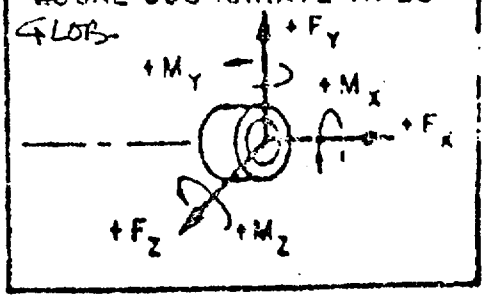
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

~~LOCAL~~ GLOBAL COORDINATE AXES



EQUIPMENT LOADING SUMMARY

POINT NO. 23 EQUIPMENT NO. NOZZLE CONNECTION LINE 14"-RH-1-302R2

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED LOADS (DEAD WT + THERM)	MAX. THERMAL 1						
	DEADLOAD						
	OBET	18	40	162	554	140	64
	DBET	26	77	237	962	204	100
INSTALLED ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	19	66	66	195	8	66
	DBET	30	70	105	95	21	50

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	THESE REACTIONS ARE LOW AND HAVE AN INSIGNIFICANT EFFECT ON THE RHR LINE 14"-RH-1-302-R2					

DISK 146A1-A4, ISSUE 1 PROB. # 70

SYSTEM S.V. RELIEF LINE 11990-FP- 13A-10, 160D-11

DISPOSITION: ACCEPT 1807

FURTHER EVALUATION _____ (ENG)

REVIEWER Jim T. Bulaway

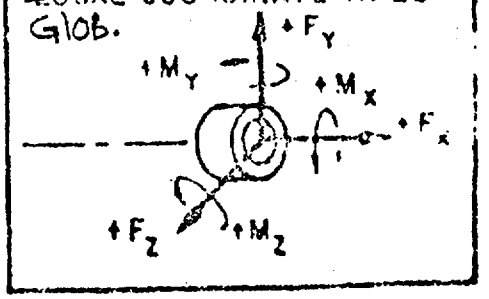
SUPERVISOR [signature]

DATE 28 MAR 79

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 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

~~LOCAL~~ COORDINATE AXES G106.



EQUIPMENT LOADING SUMMARY

POINT NO. A3-57 EQUIPMENT NO. 10"-RC-28-302-R2

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED PIPING LOADS	MAX. THERMAL 1						
	DEADLOAD						
	OBET	15	31	27	146	181	145
	DBET	21	60	39	286	257	275
EQUIPMENT ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	42	42	34	167	43	297
	DBET	63	47	53	188	76	322

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	THESE REACTIONS ARE LOW AND HAVE AN INSIGNIFICANT EFFECT ON THE 10"-RC-28-302-R2 LINE.					

MAINE YANKEE
J.O. 12563.08

PIPE SUPPORT REVIEW
SHOCK I/E VS. SHOCK II/NUPIPE

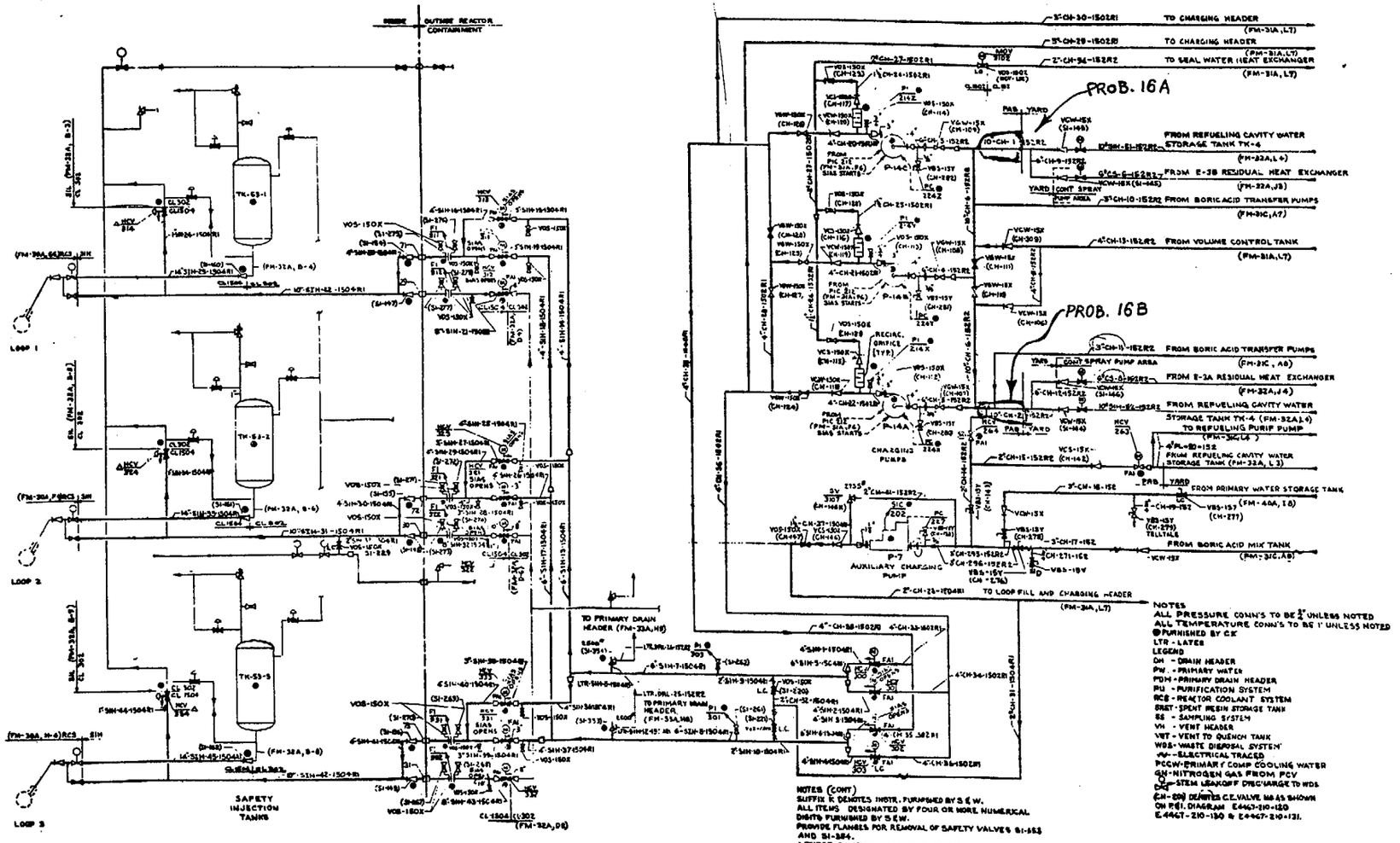
STRESS PROBLEM NO. 16A
SYSTEM NAME CHEMICAL VOLUME CONTROL PIPING P. NO 14

TABLE C-3

MARK/SPD NO.	MSK PRINT NO.	FD I.D.	LOAD CASE	SHOCK I/E F_x (LB.)	F_y (LB.)	F_z (LB.)	M_x (FT.-LB.)	M_y (FT.-LB.)	M_z (FT.-LB.)	SHOCK II/NUPIPE F_x (LB.)	F_y (LB.)	F_z (LB.)	M_x (FT.-LB.)	M_y (FT.-LB.)	M_z (FT.-LB.)	ACCEPTABLE	RECALC. REQUIRED	DISPOSITION
H1	125A43 C1-24	14D	TH													D.T.Kang 3-30-79		
			DL															
			OBET	—	1420	—	—	—	—	—	309	—	—	—	—			
			DBET	—	3140	—	—	—	—	—	818	—	—	—	—			
H2	C3-52	14C	TH													D.T.Kang 3-30-79		
			DL															
			OBET	—	867	827	—	—	—	—	41	49	—	—	—			
			DBET	—	1941	1915	—	—	—	—	75	102	—	—	—			
PENT. (TERMINAL)	A1-1	14O	TH															DBE LOADS ESSENTIALLY SAME AS DBE BEFORE THEREFORE SUPPORT IS OK RTKenni 3-30-79
			DL															
			OBET	597	84	820	2061	2324	1219	188	279	113	156	242	276			
			DBET	1306	119	1897	4760	5363	2845	494	738	285	322	542	698			
* H4	A3-53 (SHK III A2-72)	14H	TH													D.T.Kang 3-30-79		
			DL															
			OBET	1489	282	652	527	4352	1043	73	50	24	169	72	593			
			DBET	1984	373	930	619	5765	1387	139	97	46	301	165	1097			
			TH															
			DL															
			OBET															
			DBET															
			TH	* A3-53 (H-A) SHOCK II LOADINGS ARE REPORTED FOR PROB. 16A ONLY. FOR TOTAL LOADS AT ANCHOR SEE MSK 125A14-3											
			DL															
			OBET															
			DBET															

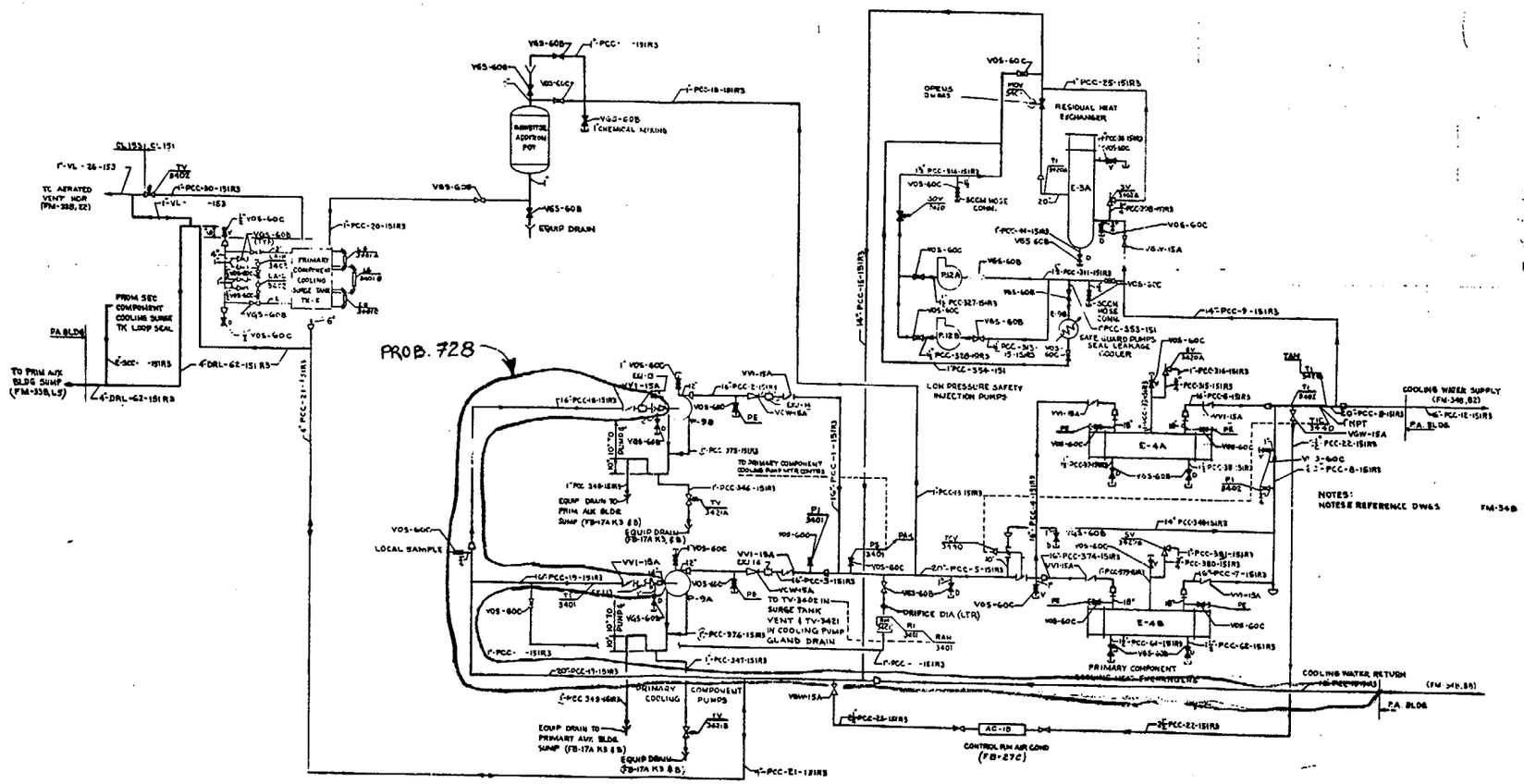
* ADDITIONAL LOADS REQUIRE ENGINEER'S SIGNED APPROVAL

FORM 7 (...



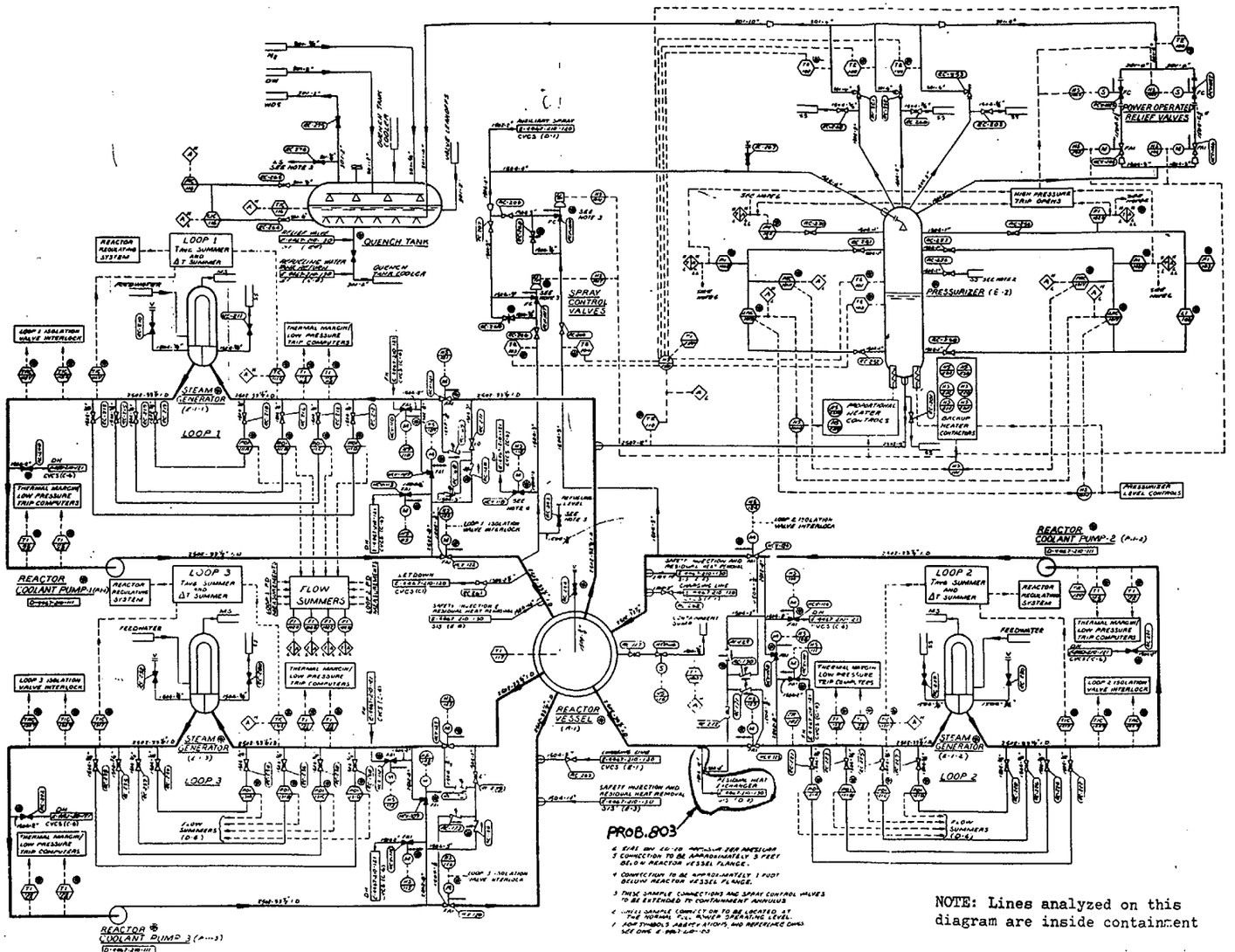
NOTE: Lines analyzed on this diagram are outside containment

FIG. 9.1-2
CHEMICAL AND VOLUME CONTROL SYSTEM
MAINE YANKEE ATOMIC POWER COMPANY



NOTE: Lines analyzed on this diagram are outside containment

FIG. 9.4-1
PRIMARY COMPONENT COOLING WATER SYSTEM
MAINE YANKEE ATOMIC POWER COMPANY



MAINE YANKEE ATOMIC POWER CO. Maine Yankee Atomic Power Station	Reactor Coolant System - P and I Diagram	Figure 4.3-1

MAINE YANKEE
J.O. 12565.09

PIPE SUPPORT REVIEW
SHOCK I/E VS. SHOCK III/NUPIPE

STRESS PROBLEM NO. 16.B
SYSTEM NAME CHEMICAL VOLUME CONTROL PIPING P.No 1C

TABLE C-3 (Cont)

HANGER NO.	MARK POINT NO.	FD NO.	LOAD CASE	SHOCK I/E Fx (LB.)	SHOCK I/E Fy (LB.)	SHOCK I/E Fz (LB.)	SHOCK I/E Mx (FT-LB.)	SHOCK I/E My (FT-LB.)	SHOCK I/E Mz (FT-LB.)	SHOCK III Fx (LB.)	SHOCK III Fy (LB.)	SHOCK III Fz (LB.)	SHOCK III Mx (FT-LB.)	SHOCK III My (FT-LB.)	SHOCK III Mz (FT-LB.)	* ACCEPTABLE	RECALC. REQUIRED	DISPOSITION
H-7	125A-11-3 A2-27 COPING A4-235 TERMINAL PT	14H	TH													PCH 3/30/79		
			DL															
			OBET	681	73	776	381	3660	143	34	37	42	246	215	35			
			DBET	1544	257	1758	1426	8170	314	97	101	117	651	603	59			
PENETRATION	A5-130 TERMINAL PT	14D	TH													PCH 3/30/79		
			DL															
			OBET	501	198	725	2075	1376	1131	45	79	57	126	91	153			
			DBET	1124	389	1689	4798	3203	2663	116	177	122	273	167	371			
H-1	150	14D	TH													PCH 3/30/79		
			DL															
			OBET		647						56							
			DBET		1451						117							
H-3	190	14C	TH													PCH 3/30/79		
			DL															
			OBET	1050	897	875	278	36	1394	79	67	54	135	387	299			
			DBET	2305	2010	1941	716	327	3423	372	137	170	271	855	612			
H-500	221	14C	TH													PCH 3/30/79		
			DL															
			OBET		88						32							
			DBET		201						57							
H-501	211	14H	TH													PCH 3/30/79		
			DL															
			OBET	406	779					35	51							
			DBET	842	1777					100	116							

* [illegible]
ENGINEER'S SIGNATURE APPROVAL

FORM 7 [illegible]

MAINE YANKEE — PIPE SUPPORT REVIEW — STRESS PROBLEM NO. 16B

SYSTEM NAME CHEMICAL VOLUME CONTROL PIPING P No.14

TABLE C-3 (Cont

		LOAD CASE														DISPOSITION
125A-11-3															PCH 3/30/79	
H-503	165	14D		867						263						
				1966						530						

* NOTE : A2-27 (H-7) SHOCK II LOADINGS ARE REPORTED FOR PROBLEM 16B ONLY. FOR TOTAL LOADS AT ANCHOR SEE MSK125A 14-3.

MAINE YANKEE
J.O. 12565.08

PIPE SUPPORT REVIEW
SHOCK II

STRESS PROBLEM NO. 803
SYSTEM NAME RHR P-No 16D-13

TABLE C-3 (Cont)

HANGER NO.	MSK PRINT NO.	ISO NO.	LOAD CASE	SHOCK II F_x (LB.)	F_y (LB.)	F_z (LB.)	M_x (FT-LB.)	M_y (FT-LB.)	M_z (FT-LB.)	SHOCK III F_x (LB.)	F_y (LB.)	F_z (LB.)	M_x (FT-LB.)	M_y (FT-LB.)	M_z (FT-LB.)	* ACCEPTABLE	SPECIAL REQUIRED	DISPOSITION
PENETRATION	10783 ISSUE 2	16D	TH	-	-	-	-	-	-	-	-	-	-	-	-	RPM 3/28/79		
	B1-200		DL	-	-	-	-	-	-	-	-	-	-	-	-			
			OBET	2109	959	3938	1,170	25,837	4145	604	158	424	194	4,775	1,149			
			DBET	8792	4224	17,490	7,483	111,136	17,856	854	250	606	296	6,785	1,802			
H-500	C1-84	16P	TH	-	-	-	-	-	-	-	-	-	-	-	-	RPM 3/28/79		
			DL	-	-	-	-	-	-	-	-	-	-	-	-			
			OBET	-	61	-	-	-	-	-	51	-	-	-	-			
			DBET	-	259	-	-	-	-	-	74	-	-	-	-			
H-101 H-102	25 SNUBBERS	VERT. AS BUILTS & AS PER MSK EW AS PER MSK, 2' AWAY FROM AS BUILT	TH	-	-	-	-	-	-	-	-	-	-	-	-	RPM 3/28/79		
			DL	-	-	-	-	-	-	-	-	-	-	-	-			
			OBET	-	1075	1522	-	-	-	-	434	626	-	-	-			
			DBET	-	4416	6538	-	-	-	-	628	883	-	-	-			
			TH															
			DL															
			OBET															
			DBET															
			TH															
			DL															
			OBET															
			DBET															
			TH															
			DL															
			OBET															
			DBET															

* MARGINAL CASES REQUIRE ENGINEER'S SIGNED APPROVAL

FORM 7 (SH...

MAINE YANKEE
J.O. 12565.08

PIPE SUPPORT REVIEW
SHOCK I/E VS. SHOCK II/NUPIPE

STRESS PROBLEM NO. 728
SYSTEM NAME PRIMARY COMPONENT COOLING WATER

TABLE C-3 (Cont)

HANGER NO.	M&K PRINT NO.	ES NO	LOAD CASE	SHOCK I/E F_x (LB.)	SHOCK I/E F_y (LB.)	SHOCK I/E F_z (LB.)	SHOCK I/E M_x (FT-LB.)	SHOCK I/E M_y (FT-LB.)	SHOCK I/E M_z (FT-LB.)	SHOCK II F_x (LB.)	SHOCK II F_y (LB.)	SHOCK II F_z (LB.)	SHOCK II M_x (FT-LB.)	SHOCK II M_y (FT-LB.)	SHOCK II M_z (FT-LB.)	ACCEPTABLE	FIELD REQ'D	DISPOSITION
H-15	11764 ISSUE 5 C1-25	20A-9	TH													R.P.M. 3/28/79		
			DL															
			OBET		± 2311						487							
			DBET		± 6295						993							
H-14	C2-45	20A-9	TH													R.P.M. 3/28/79		
			DL															
			OBET		± 4531						257							
			DBET		± 1873						525							
H-13	A4-65	20A-9	TH							-1077	+961	±125	-1011	-1573	+353			ORIGINAL CALC. REVIEWED FOR OBET NEW LOADS. OK SEE ATTACHED FORM #5 R.P.M. 3/28/79
			DL							-22	-4554	-236						
			OBET	± 4406	± 3472	± 6366	± 7566	± 325	± 1993	1288	460	970	2781	8546	1306		✓	
			DBET	± 13347	± 10039	± 20068	± 22573	± 2397	± 6554	1079	950	1935	5162	2156	2884			
H-12 INPUT ROD HANGER	AA-204	20A-9	TH													RPM 3/28/79		
			DL															
			OBET		NOT ANALYZED PREVIOUSLY AS BUILT						735							
			DBET								377							
	A1-1	20A-9	TH													RPM 3/28/79		
			DL															
			OBET	2279	270	2010	6300	791	6519	574	440	463	3096	711	4087			
			DBET	9148	1081	8048	25287	3177	26171	775	924	987	6613	752	4656			
H-10	C4-133	20A-9	TH													RDM 3/28/79		
			DL															
			OBET	± 3495		± 1129				1712	218	205						
			DBET	± 556		± 2559				634	966	54						

* ORIGINAL LOADS REQUIRE ENGINEER'S SIGNED APPROVAL

MAINE YANKEE
J.O. 12565.02

PIPE SUPPORT REVIEW
SHOCK I/II VS SHOCK II/NUPIPE

STRESS PROBLEM NO. 728
SYSTEM NAME PRIMARY COMPONENT COOLING WATER

HANGER NO.	MFR PART NO.	FP NO.	LOAD CASE	SHOCK I/II Fx (LB.)	SHOCK I/II Fy (LB.)	SHOCK I/II Fz (LB.)	SHOCK I/II Mx (FT-LB.)	SHOCK I/II My (FT-LB.)	SHOCK I/II Mz (FT-LB.)	SHOCK [redacted] Fx (LB.)	SHOCK [redacted] Fy (LB.)	SHOCK [redacted] Fz (LB.)	SHOCK [redacted] Mx (FT-LB.)	SHOCK [redacted] My (FT-LB.)	SHOCK [redacted] Mz (FT-LB.)	* ACCEPTABLE	REDESIGN REQ'D	DISPOSITION
H-8	117E4 ISSUE 5 SLIPING	20A-9	TH													RPM 3/28/79		
			DL															
			OBET		NOT ANALYZED						15							
			DBET		PREVIOUSLY AS BUILT						19							
H-9	SLIPING	20A-9	TH													RPM 3/28/79		
			DL															
			OBET		NOT ANALYZED						2							
			DBET		PREVIOUSLY AS BUILT						2							
H-20	SLIPING	20A-9	TH													RPM 3/28/79		
			DL															
			OBET		NOT ANALYZED						11							
			DBET		PREVIOUSLY AS BUILT						15							
H-22	C3-80	20A-9	TH													RPM 3/28/79		
			DL															
			OBET	± 227		± 758				123	408	87						
			DBET	± 9040		± 3450				237	821	68						
H-21	SLIPING	20A-9	TH													RPM 3/28/79		
			DL															
			OBET		NOT ANALYZED						2							
			DBET		PREVIOUSLY AS BUILT						3							
			TH															
			DL															
			OBET															
			DBET															

* MARG NAL LOADS REQUIRE ENGINEER'S SIGNED APPROVAL

MAINE YANKEE
J.O. 12565.05

PIPE SUPPORT REVIEW
SHOCK II

STRESS PROBLEM NO. 795
SYSTEM NAME Containment Spray Piping

TABLE C-3 (Cont)

MAN. SPR NO.	MSK POINT NO.	FD NO.	LOAD CASE	SHOCK II F_x (LB.)	F_y (LB.)	F_z (LB.)	M_x (FT-LB.)	M_y (FT-LB.)	M_z (FT-LB.)	SHOCK III F_x (LB.)	F_y (LB.)	F_z (LB.)	M_x (FT-LB.)	M_y (FT-LB.)	M_z (FT-LB.)	* ACCEPTABLE	RECALC. REQUIRED	DISPOSITION
H-48	C1-9		TH		-250						-165						✓	NEW LOADS APPLIED TO ORIGINAL CALC. SUPPORT O.K. R.P.M. 3/28/79
			DL		-1005						-1005							
			OBET		376						772							
			DBET		191						1622							
H-49	C5-16		TH	326	350	688				416	202	633					✓	SUPPORT REANALYSED FOR REVISED LOADS. O.K. R.P.M. 3/28/79
			DL		-4263						-4263							
			OBET	2049	306	2280				1210	993	1810						
			DBET	1476	390	1475				2354	2088	3599						
H-50	C2-21		TH		-918						-191						✓	ORIGINAL CALC. REVISED. SUPPORT DESIGNED TO HIGHER LOAD. O.K. R.P.M. 3/28/79
			DL		-1005						-1005							
			OBET		843						2788							
			DBET		848						5959							
H-51	A4-120		TH	-1645	-1357	22218	-11615	64713	3868	-872	-1266	16205	-8747	47054	1831		✓	SUPPORT REANALYSED FOR REVISED LOADS. O.K. R.P.M. 3/28/79
			DL		-13460						-13460							
			OBET	190	218	2892	895	9528	1029	497	2235	2002	5859	5168	4408			
			DBET	192	239	2812	971	9297	949	918	4431	3828	11559	9809	8657			
H-53	A5-134		TH	-1564	-1615	-21042	12688	-60766	4355	-861	-1443	-15898	9627	-46066	1844		✓	SUPPORT REANALYSED FOR REVISED LOADS. O.K. R.P.M. 3/28/79
			DL		-13430						-13430							
			OBET	241	312	2096	544	4865	411	489	1956	5630	5407	14638	3604			
			DBET	131	264	1142	494	2579	403	953	4104	11258	11486	29249	7230			
H-74	C7-46		TH			25360						18380					✓	NEW LOADS APPLIED TO ORIGINAL CALC. O.K. R.P.M. 3/28/79
			DL															
			OBET			4268						7284						
			DBET			2514						14612						

* UNLESS OTHER REQUIRE

MAINE YANKEE — PIPE SUPPORT REVIEW — STRESS PROBLEM NO. 795

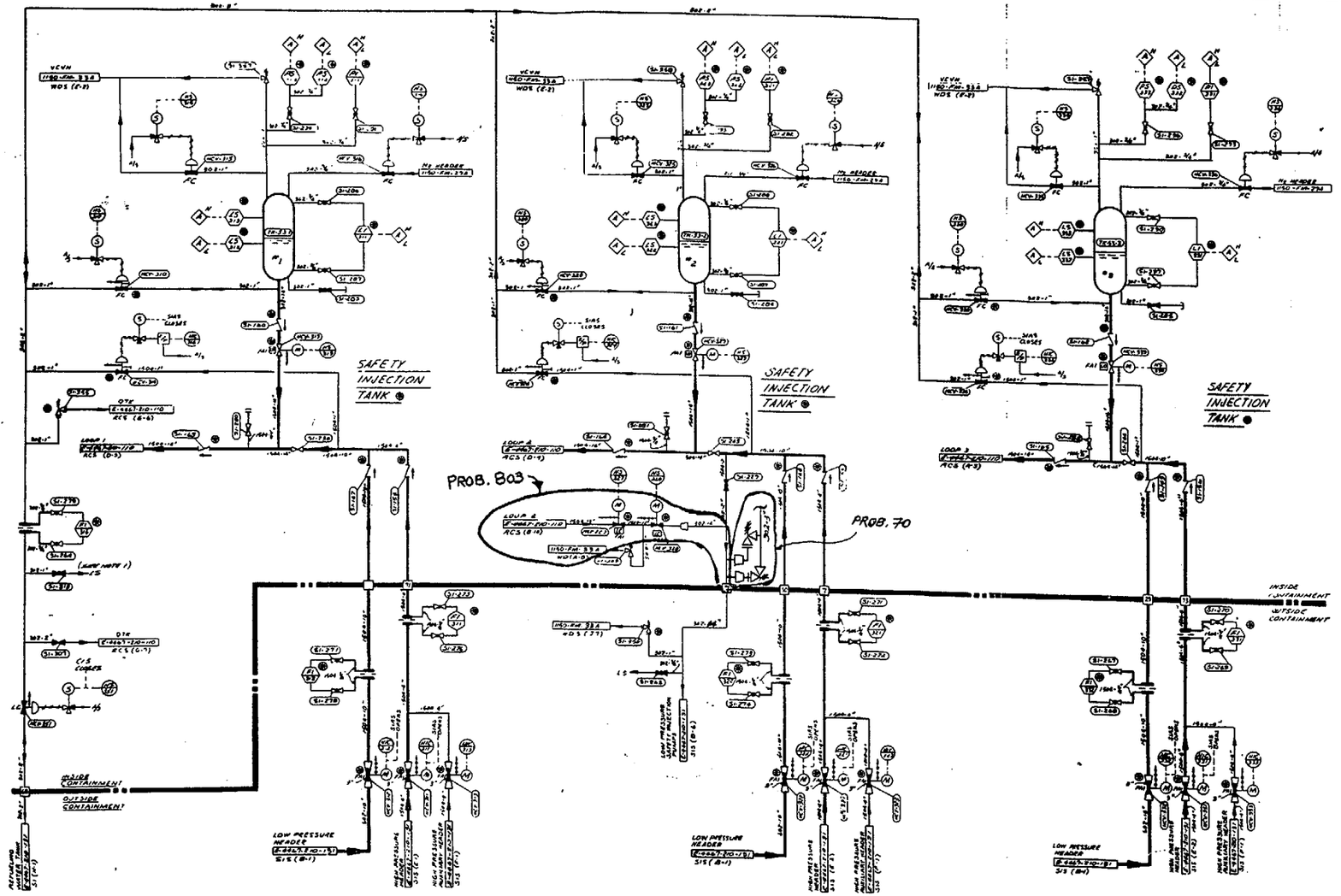
J.O. 12565.02 — SHOCK ≡, N-S/PIPE — SYSTEM NAME Containment Spray Piping

TABLE C-3 (Cont)

HANGER NO.	MARK POINT NO.	FD NO.	LOAD CASE	SHOCK ≡ Fx (LB.)	Fy (LB.)	Fz (LB.)	Mx (FT-LB.)	My (FT-LB.)	Mz (FT-LB.)	SHOCK ≡/ Fx (LB.)	Fy (LB.)	Fz (LB.)	Mx (FT-LB.)	My (FT-LB.)	Mz (FT-LB.)	ACCEPTABLE	REDESIGN REQ'D	DISPOSITION
H-75	C6-81		TH			-27834						-19523					✓	New loads applied to original calc. o.k. R.P.M. 3/28/79
			DL															
			OBET			3632						2350						
			DBET			3597						4482						
H-46	C3-187		TH		-1708						-1708						✓	Original calc. reviewed. Support designed to higher load. o.k. R.P.M. 3/28/79
			DL		-400						-400							
			OBET		2711						2430							
			DBET		2670						5134							
H-47	C4-155		TH		-956						-956						✓	Original calc reviewed. Support designed to higher load. o.k. R.P.M. 5/28/79
			DL		-580						-580							
			OBET		3072						2721							
			DBET		2997						5360							
			TH															
			DL															
			OBET															
			DBET															
			TH															
			DL															
			OBET															
			DBET															
			TH															
			DL															
			OBET															
			DBET															

* MODIFICATIONS TO LOADS REQUIRE ENGINEER'S SIGNED APPROVAL

FORM 7 (REV.



NOTE: Lines analyzed on this diagram are inside containment

MAINE YANKEE ATOMIC POWER CO. Maine Yankee Atomic Power Station	Engineered Safeguards System - P and I Diagram	Figure 6.2-1B

MAINE YANKEE
J.O. 12B..E.CB

PIPE SUPPORT REVIEW
SHOCK I/II VS. SHOCK II/NUPIPE

STRESS PROBLEM NO. 728
SYSTEM NAME PRIMARY COMPONENT COOLING WATER

TABLE C-3 (Cont)

HANGER NO.	MSK MAT NO.	FD NO.	LOAD CASE	SHOCK II Fx (LB.)	Fy (LB.)	Fz (LB.)	Mx (FT-LB.)	My (FT-LB.)	Mz (FT-LB.)	[illegible] Fx (LB.)	Fy (LB.)	Fz (LB.)	Mx (FT-LB.)	My (FT-LB.)	Mz (FT-LB.)	* ACCEPTABLE	RECALC. REQ.	DISPOSITION
H-8	11764 ISSUE 5 SLIDING	20A-9	TH								-57					RCC 4/1/79		
			DL															
			OBET															
			DBET															
H-9	SLIDING	20A-9	TH								52					RCC 4/1/79		
			DL															
			OBET															
			DBET															
H-20	SLIDING	20A-9	TH								-93					RCC 4/1/79		
			DL															
			OBET															
			DBET															
H-21	SLIDING	20A-9	TH								78					RCC 4/1/79		
			DL															
			OBET															
			DBET															
			TH															
			DL															
			OBET															
			DBET															
			TH															
			DL															
			OBET															
			DBET															

* MARGINAL CASES REQUIRE ENGINEER'S SIGNED APPROVAL

APPENDIX C

REANALYSIS RESULTS - COMPARISON TABLES

MAINE YANKEE ATOMIC POWER STATION

TABLE C-1

SUMMARY OF COMBINED LINE STRESSES

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

*Primary Stresses: Upset $S_{LP} + S_{DL} + S_{OBE} \leq 1.2\ S_h$

Faulted $S_{LP} + S_{DL} + S_{DBE} \leq 1.8\ S_h$

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

CLIENT MAINE YANKEE CHARGE 12365.C6

MSK 125 All 14A-14L Issues PROB. 16A

SYSTEM Chemical Volume Control System 11590-FP- 14C Issue 3 14H Issue 10 6B Issue 7
14D Issue 7 14J Issue 7 6C Issue 18

DISPOSITION: ACCEPT _____ REVIEWER _____

FURTHER EVALUATION _____ SUPERVISOR _____

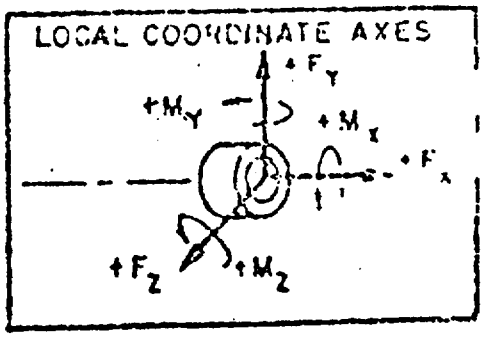
DATE _____

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. _____ EQUIPMENT NO. _____

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS FT. LBS MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1						
	DEADLOAD						
	OBET						
	DBET						
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET						
	DBET						

N/A EQUIPMENT NO NOZZLES

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ

CLIENT Maine Yankee CHARGE 12365.05

MSK 125 All Tubes All Issue 3 PROB. 16B

SYSTEM Volume Control (Tank) 11590-FP- MC Issue 3 MH Issue 10 GB Issue 7
MD Issue 7 MJ Issue 7 GE Issue 7/8

DISPOSITION: ACCEPT _____ REVIEWER _____

FURTHER EVALUATION _____ SUPERVISOR _____

DATE _____

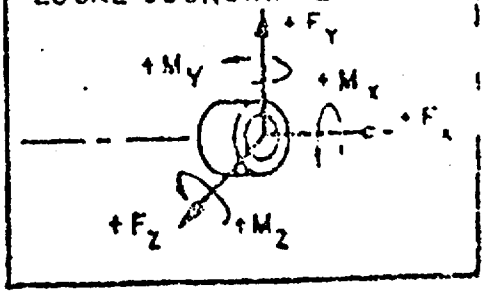
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

(+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

LOCAL COORDINATE AXES



EQUIPMENT LOADING SUMMARY

POINT NO. _____ EQUIPMENT NO. _____

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS FT. LBS MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1						
	DEADLOAD						
	OBET						
	DBET						
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET						
	DBET						

N/A EQUIPMENT NO NOZZLES

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ

CLIENT MAINE YANKEE SHARON 1220.00

MSK 107 B1-B5 ISSUE 2 PROB. 803

SYSTEM RHR 11550-FP- 16D ISSUE 13

DISPOSITION: ACCEPT SAT REVIEWER H. T. Bulaney

FURTHER EVALUATION _____ SUPERVISOR Steven Tsai

(END) DATE 21 MARCH 79

TRANSCRIBED 3/28/79

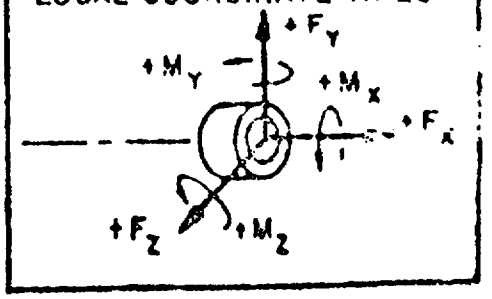
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

(+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

LOCAL COORDINATE AXES



EQUIPMENT LOADING SUMMARY

POINT NO. B1-200 EQUIPMENT NO. PENETRATION #9 EL 10'-3"

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1						
	DEADLOAD						
	OBET	604	158	424	194	4775	1149
	DBET	854	250	606	296	6785	1802
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	2109	959	3438	1670	25837	4145
	DBET	8792	4224	17490	7483	111136	17856

ALLOWABLE LOADS (FROM MSK-107B3-2)

CONDITION	FX	FY	FZ	MX	MY	MZ
	SAME AS PREVIOUSLY ACCEPTABLE					

MSK 107 B1-B5 ISSUE 2 PROB. 803

SYSTEM RHR 11550-FP- 160 ISSUE 13

DISPOSITION: ACCEPT [signature] REVIEWER [signature] T. Bulfamy

FURTHER EVALUATION _____ (EMD) SUPERVISOR [signature]

DATE 21 MAR 79

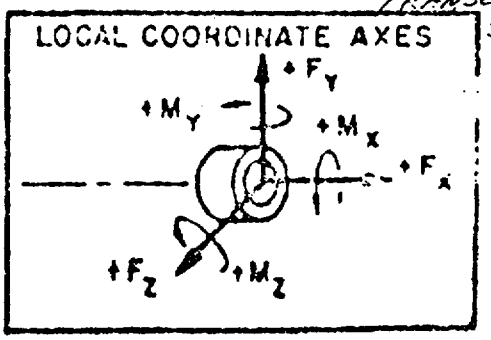
TRANSCRIBED 3/28/79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A2-76 EQUIPMENT NO. 33½"-RC-7-2502 CE PIPING

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK II	MAX. THERMAL 1						
	DEADLOAD						
	OBET	777	345*	421	1944	2354*	2231
	DBET	1130	490	583	2897	3139	2961
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	1770	325	170	2963	1822	3801
	DBET	7575	1616	683	12778	7131	14217

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	SAME AS PREVIOUSLY ACCEPTABLE					

* ACCEPTABLE FROM ENGINEERING JUDGEMENT [signature]

MSK 11761-5 11764-5 11767-2 11762-5 11765-5 11763-3 11766-5 PROB. 728

SYSTEM PCC 11550-FP- 20A ISSUE 9

DISPOSITION: ACCEPT [illegible] REVIEWER [illegible]

FURTHER EVALUATION ______ (EMD) SUPERVISOR [illegible]

DATE 4/1/79

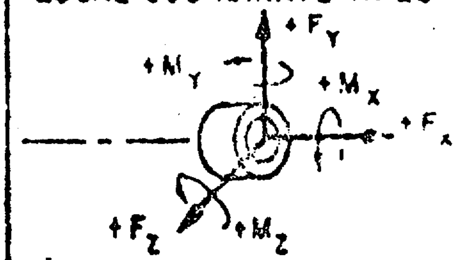
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

(+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

LOCAL COORDINATE AXES



EQUIPMENT LOADING SUMMARY FROM NUPIPE RUN No, 1741011 JOB 373 4-1-79

POINT NO. COMBINED SUCTION AND DISCHARGE EQUIPMENT NO. P-9A

(Fill in Rows as Applicable)

		CALCULATED FORCES (LB)			CALCULATED MOMENTS (FT. LBS)		
	LOADING CONDITION	FX	FY	FZ	MX	MY	MZ
CALCULATED USING [illegible]	MAX. THERMAL 1	35	-82	-1	2	-14	645
	DEADLOAD	88	2	0	1	-120	101
	OBET	6	44	103	543	76	45
	DBET	10	145	166	880	123	132
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	284	-400	-310	0	0	0
	DEADLOAD						
	OBET } INCLUDE DEADLOAD	284	900	310	0	0	0
	DBET } & THERMAL	284	900	310	0	0	0

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	SEE NEXT SHEET FOR MANUFACTURER'S ALLOWABLE LOADS (ALL LOADS WITHIN ALLOWABLE)					

MSK 11761-5 11764-5 11767-2 11763-5 11765-5 11768-5 PROB. 728

SYSTEM PCC 11590-FP- 20A ISSUE 9

DISPOSITION: ACCEPT E'ville REVIEWER R C Casella

FURTHER EVALUATION _____ (END) SUPERVISOR J H Kuhlaski

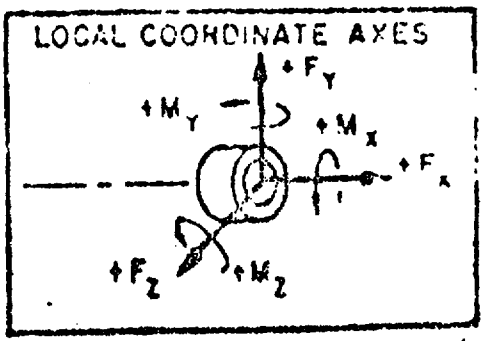
DATE 4/1/79

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 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



EQUIPMENT LOADING SUMMARY FROM NUPIPE RUN No. 174100T JOB 360 4-1-79.

POINT NO. COMBINED SUCTION AND DISCHARGE EQUIPMENT NO. P-9B

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK	MAX. THERMAL 1	25	-93	1	18	-31	587
	DEADLOAD	160	3	0	-4	9	156
	OBET	17	81	119	677	80	85
	DBET	16	176	133	742	96	162
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	284	-400	-310	0	0	0
	DEADLOAD						
	OBET (INCLUDE DEADLOAD & THERMAL)	284	900	310	0	0	0
	DBET (INCLUDE DEADLOAD & THERMAL)	284	900	310	0	0	0

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	SEE NEXT SHEET FOR MANUFACTURER'S ALLOWABLE LOADS (ALL LOADS WITHIN ALLOWABLE)					

TABLE C-2 (Cont)

CLIENT MAINE YANKEE CHARGE 12555.06

MSK 1181G1 TO G10 FOR REV 2A PROB. 795

SYSTEM RHR 11550-FP- 17A ISSUE 10; 17B ISSUE 9; 16A ISSUE 8; 17C ISSUE

DISPOSITION: ACCEPT HBR 4.1.79 REVIEWER J.L. Cook 4/1/79

FURTHER EVALUATION _____ SUPERVISOR J.H. Kuckarski

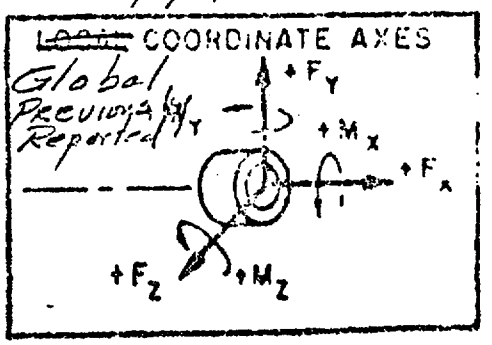
(END) DATE 4/4/79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A9-153 EQUIPMENT NO. PUMP 12A (SUCTION)

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1	-1120	-11	-2271	-1758	-12425	2
	DEADLOAD	-4	799	197	-504	1391	-112
	OBET	781	1600	4274	8473	14392	3066
	DBET	1091	2719	5421*	15017	23203	3745
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	-1784	493	-2930	-7294	-22532	12456
	DEADLOAD						
	OBET	1035	4171	4404	2521	6056	13580
	DBET	1173	4308	5203	3038	6600	14085

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL	4000	4000	4000	40000	40000	40000

* SLIGHTLY HIGHER THAN THE ORIGINAL; HOWEVER, SINCE THE NEW RESULTANT IS LOWER THAN THE PREVIOUSLY CALCULATED RESULTANT, THIS VALUE IS CONSIDERED ACCEPTABLE.

CLIENT PIPING STRESS

MSK 1186I TO G10 FOR RH SEE SH-1 PROB. 795

SYSTEM RHR 11550-FP- 17A ISSUE 10; 17B ISSUE 9; 17C ISSUE 10; 16A ISSUE 8

DISPOSITION: ACCEPT HBJ 4-1-79 REVIEWER J.L. Goh 4/1/79

FURTHER EVALUATION ~~V~~ (END) SUPERVISOR J.M. Kuchanski

DATE 4/1/79

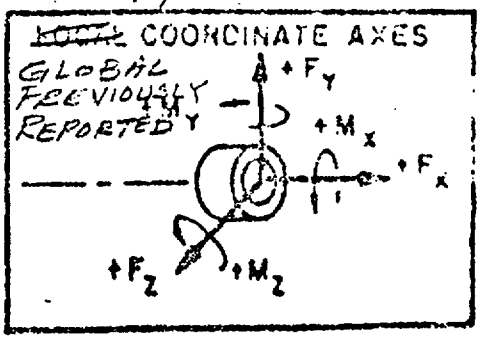
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

(+ X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

~~LOCAL~~ COORDINATE AXES



EQUIPMENT LOADING SUMMARY

POINT NO. A7-181 EQUIPMENT NO. PUMP 12B (SUCTION)

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SHOCK III	MAX. THERMAL 1	-1090	189	2663	2985	15619	-26
	DEADLOAD	-29	807	-203	503	-1605	-113
	OBET	3334	2187	4371	7596	11535	2004
	DBET	3973	3184	5592	14718	21391	2497
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	-1234	-520	5174	12942	32620	21469
	DEADLOAD						
	OBET	3571	4737	4778	1638	7662	12494
	DBET	4123	5048	5554	2004	8094	12818

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL	4000	4000	4000	40000	40000	40000

CLIENT MAINE YANKEE CHARGE 12365.08

PSK 118 G1 TO G10 FOR REF. SEE SHT PROB. 795

SYSTEM CONT. SPRAY 1100 -FP- 17A ISSUE 10 ; 17B ISSUE 9 ; 16A ISSUE 8 , 17C-10

DISPOSITION: ACCEPT ADT REVIEWER

FURTHER EVALUATION SUPERVISOR

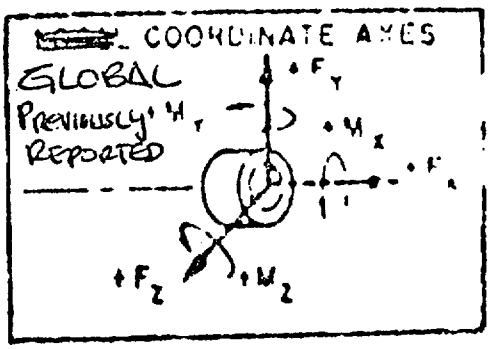
DATE 3-25-97

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A8-1711 EQUIPMENT NO. PUMP P-61A SUCTION

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED LOADS	MAX. THERMAL 1	489	1050	1437	-7228	-4563	-4503
	DEADLOAD	-31	17	-84	-94	-575	-203
	OBET	1129	1411	277	447	1205	7170
	DBET	2161	2782	480	846	2053	13933
	RESULTANT 3555 LB DBET				14109 FT LBS DBET		
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	-122	980	1831	-10198	-7451	-3481
	DEADLOAD						
	OBET	827	1126	626	400	2262	4332
	DBET	845	1151	623	377	2234	4458

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL		RESULTANT = 4000 LBS			RESULTANT = 18 000	#-FT

CLIENT MAINE YANKEE CHARGE 12303.06

LOCK 118 G1 TO G10 FOR REV. P/OB. SEE SH.1 795

SYSTEM CONT. SPRAY 1" -FP- 17A ISSUE 10 ; 17B ISSUE 9 ; 16A ISSUE 8 ; 17C-10

DISPOSITION: ACCEPT 1997 REVIEWER Marcombe/Orbek

FURTHER EVALUATION _____ SUPERVISOR [illegible]

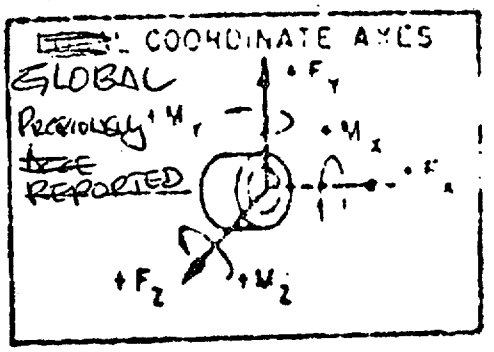
DATE 3-25-79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. R6-139 EQUIPMENT NO. PUMP P-61B SUCTION

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED PIPING STRESS	MAX. THERMAL 1	1274	706	-1047	7508	7358	-1750
	DEADLOAD	-56	-99	64	150	598	-287
	OBET	640	1510	410	1361	966	7822
	DBET	1259	3230	791	2725	1741	16700
		3556 LB. DBET			17010 FT-LB DBET		
TELEVISION ACCEPTABLE	MAX. THERMAL 1	1204	716	-1425	10721	10892	-566
	DEADLOAD						
	OBET	1162	616	301	492	909	1745
	DBET	869	527	208	222	780	1697

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL	RESULTANT = 4000 LBS			RESULTANT = 18 000 LB-FT		

CLIENT MAINE YANKEE

RISK 118 G1 TO G10 FOR REV. SEE SH.1 PROB. 795

SYSTEM CONT. SPRAY 115 -FP- 17A ISSUE 10 ; 17B ISSUE 9 ; 16A ISSUE 8 , 17C-10

DISPOSITION: ACCEPT DG Hessom REVIEWER JMarcotte DSlade

FURTHER EVALUATION _____ SUPERVISOR Stan Eldrum

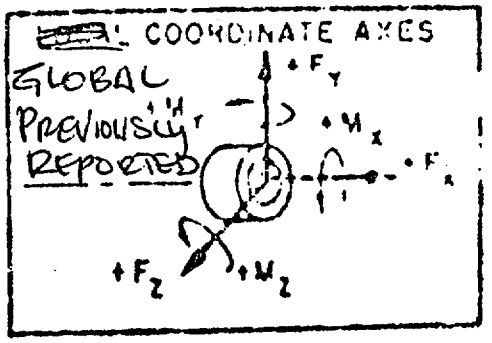
DATE 3-25-99

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. R3-90 EQUIPMENT NO. PUMP P-61S SUCTION

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED LOADS SHEET 11					11556 THERMAL		
	MAX. THERMAL 1	1562	3012	97	-39	421	-11549
	DEADLOAD	-215	101	17	-24	48	-583
	OBET	537	1178	1138	908	4263	5170
	DBET	910	2400	2339	1813	8753	10536
	RESULTANT	3473 LB. DBET			2288 FT-LB DBET		
PREVIOUSLY ACCEPTED	MAX. THERMAL 1	1466	4033	112	-15	560	-15803
	DEADLOAD						
	OBET	539	689	86	99	168	2335
	DBET	564	704	147	165	372	2379

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
ALL						
		RESULTANT			RESULTANT	
		= 4000	LBS		= 18 000	LB-FT

CLIENT MAINE YANKEE CHARGE 12565.00

PROB. 795

SYSTEM CONT. SPRAY [illegible] -FP- 17A ISSUE 10 ; 17B ISSUE 9 ; 16A ISSUE 8), 17C-10

DISPOSITION: ACCEPT [signature] REVIEWER [signature]

FURTHER EVALUATION _____ SUPERVISOR [signature]

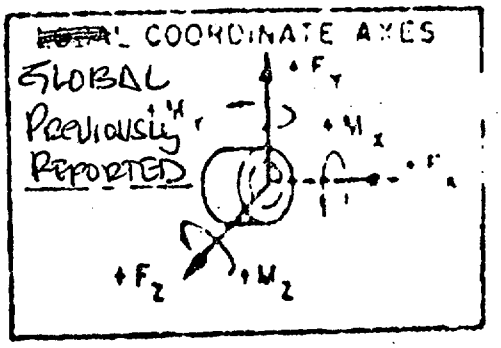
DATE 3-25-79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A2-48 EQUIPMENT NO. PENT

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING CODE CASE	MAX. THERMAL 1	711	-806	182	149	-6470	-3697
	DEADLOAD	44	-1640	-19	-252	450	-6016
	OBET	892	2568	747	5632	5295	20881
	DBET	1718	5063	1399	11064	9651	41122
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1	1257	-1473	360	-3	-10571	-7402
	DEADLOAD						
	OBET	314	825	678	963	7502	11496
	DBET	324	738	695	992	7390	10566

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	NOT APPLICABLE					

CLIENT MAINE YANKEE CHARGE 12565.00

RISK 118 G1 TO G10 PROB. 795

SYSTEM CONT. SPRAY [illegible]-FP-17A ISSUE 10; 17B ISSUE 9; 16A ISSUE 8, 17C10

DISPOSITION: ACCEPT [signature] REVIEWER [signature]

FURTHER EVALUATION _____ SUPERVISOR [signature]

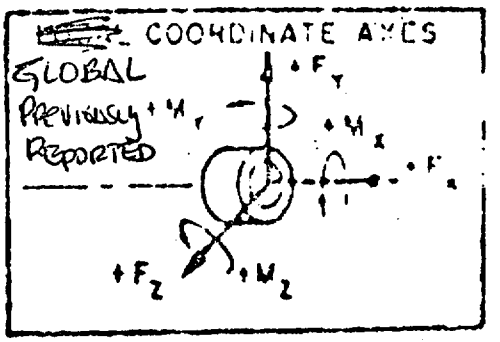
DATE 3-25-99

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A1-1 EQUIPMENT NO. PENT.

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED USING SRSS	MAX. THERMAL 1	-509	136	-858	495	11369	1445
	DEADLOAD	-157	7680	-62	-480	539	-5855
	OBET	583	442	327	724	2200	3309
	DBET	1024	857	511	1527	3662	6760
REVISION ACCEPTABLE	MAX. THERMAL 1	-527	199	-868	245	11496	1967
	DEADLOAD						
	OBET	384	310	449	4	2658	1682
	DBET	431	343	504	11	2983	1797

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	NOT APPLICABLE					

MSK 146A-A4, ISSUE 1 PROB. # 70

SYSTEM S.V. RELIEF LINE 11[illegible]-FP- 13A-10, 16D-11

DISPOSITION: ACCEPT SRSS REVIEWER H. T. Bodenheimer

FURTHER EVALUATION _____ SUPERVISOR A. E. Fiorelli

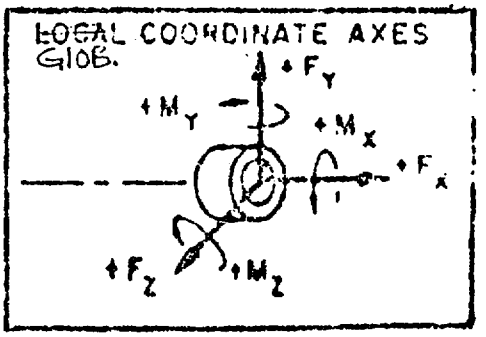
(END) DATE 28 MAR 79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. A1-1 EQUIPMENT NO. NOZZLE CONNECTION LINE 14"-RH-1-302 R2

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED LOADS	MAX. THERMAL 1						
	DEADLOAD						
	OBET	50	49	130	433	129	136
	DBET	74	97	185	709	189	198
INTIALS ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	6	43	7	301	6	77
	DBET	9	41	14	309	17	76

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	THESE REACTIONS ARE LOW AND HAVE AN INSIGNIFICANT EFFECT ON THE RHR LINE (14"-RH-1-302-R2)					

NSK 146A1-A4, ISSUE 1 PROB. #70

SYSTEM S.V. RELIEF LINE [illegible]-FP- 13A-10, 16D-11

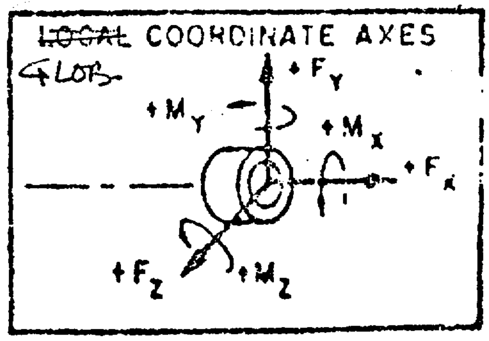
DISPOSITION: ACCEPT [signature] REVIEWER [signature]

FURTHER EVALUATION ____________ SUPERVISOR [signature]

(END) DATE 29 MAR 79

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 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



EQUIPMENT LOADING SUMMARY

POINT NO. 23 EQUIPMENT NO. NOZZLE CONNECTION LINE 14"-RH-1-302R2

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES (LB) FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED	MAX. THERMAL 1						
	DEADLOAD						
	OBET	18	40	162	554	146	64
	DBET	26	77	237	962	204	100
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	19	66	66	195	8	66
	DBET	30	70	105	95	21	50

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ

THESE REACTIONS ARE LOW AND HAVE AN INSIGNIFICANT EFFECT ON THE RHR LINE 14"-RH-1-302-R2

DSK 146A1-A4, ISSUE 1 PROB. # 70

SYSTEM S.V. RELIEF LINE 11990-FP- 13A-10, 16D-11

DISPOSITION: ACCEPT SEE

FURTHER EVALUATION _____ (END)

REVIEWER Eric T. Bulaong

SUPERVISOR S. D. Tan

DATE 28 MAR 79

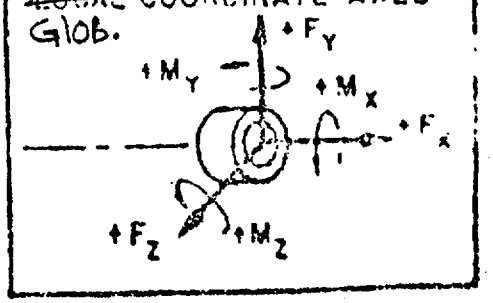
THE LOCAL SYSTEM IS DEFINED AS FOLLOWS:

. X) IS ALONG THE AXIS OF THE PIPE, OUTWARD FROM EQUIPMENT

(+ Y) IN THE PLANE OF THE LOCAL X-AXIS AND THE 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

~~LOCAL~~ COORDINATE AXES GLOB.



EQUIPMENT LOADING SUMMARY

POINT NO. A3-57 EQUIPMENT NO. 10"-RC-28-302-R2

(Fill in Rows as Applicable)

	LOADING CONDITION	CALCULATED FORCES - LB. FX	FY	FZ	CALCULATED MOMENTS (FT. LBS) MX	MY	MZ
CALCULATED LOADS (B31.1 -)	MAX. THERMAL 1						
	DEADLOAD						
	OBET	15	31	27	146	181	145
	DBET	21	60	39	286	257	275
PREVIOUSLY ACCEPTABLE	MAX. THERMAL 1						
	DEADLOAD						
	OBET	42	42	34	167	43	297
	DBET	63	47	53	183	76	322

ALLOWABLE LOADS

CONDITION	FX	FY	FZ	MX	MY	MZ
	THESE REACTIONS ARE LOW AND HAVE AN INSIGNIFICANT EFFECT ON THE 10"-RC-28-302-R2 LINE.					

TABLE C-3

MAINE YANKEE
J.O. 12565.08

PIPE SUPPORT REVIEW
SHOCK I/II VS. SHOCK III/NUPIPE

STRESS PROBLEM NO. 16A
SYSTEM NAME CHEMICAL VOLUME CONTROL PIPING P. NO 14

HANGER NO.	MSK PRINT NO.	FB I.O.	LOAD CASE	SHOCK I/II F_x (LB.)	SHOCK I/II F_y (LB.)	SHOCK I/II F_z (LB.)	SHOCK I/II M_x (FT-LB.)	SHOCK I/II M_y (FT-LB.)	SHOCK I/II M_z (FT-LB.)	SHOCK III/ F_x (LB.)	SHOCK III/ F_y (LB.)	SHOCK III/ F_z (LB.)	SHOCK III/ M_x (FT-LB.)	SHOCK III/ M_y (FT-LB.)	SHOCK III/ M_z (FT-LB.)	* ACCEPTABLE	RECALC. REQUIRED	DISPOSITION
H1	125AH3 C1-24	14D	TH													D.T. Kong 3-30-79		
			DL															
			OBET	—	1420	—	—	—	—	—	309	—	—	—	—			
			DBET	—	3140	—	—	—	—	—	818	—	—	—	—			
H2	C3-52	14C	TH													D.T. Kong 3-30-79		
			DL															
			OBET	—	867	827	—	—	—	—	41	49	—	—	—			
			DBET	—	1941	1915	—	—	—	—	75	102	—	—	—			
PENT. (TERMINAL)	A1-1	14D	TH															DBE LOADS ESSENTIALLY SAME AS DBE BEFORE THEREFORE SUPPORT IS OK [illegible] 3-30-79
			DL															
			OBET	597	84	820	2061	2324	1219	188	279	113	156	242	276			
			DBET	1306	119	1897	4760	5363	2845	494	738	285	322	542	698			
* H4	A3-53 (SHOCK III A2-72)	14H	TH													D.T. Kong 3-30-79		
			DL															
			OBET	1489	282	652	527	4352	1043	73	50	24	169	72	593			
			DBET	1984	373	930	619	5765	1387	139	97	46	301	165	1097			
			TH															
			DL															
			OBET															
			DBET															
			TH	* A3-53 (H-4) SHOCK II LOADINGS ARE REPORTED FOR PROB. 16A ONLY. FOR TOTAL LOADS AT ANCHOR SEE MSK 125 A H-3														
			DL															
			OBET															
			DBET															

* MARGINAL LOADS REQUIRE ENGINEER'S SIGNED APPROVAL

1 of 16

FORM 7 (R...)

TABLE C-3 (Cont)

Problem No. 70
RHR System

No Pipe Restraints

MAINE YANKEE

MYPC 79-77

April 2, 1979

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

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

Reference: (a) License No. DPR-36 (Docket No. 50-309)
(b) USNRC Order to Show Cause for MYAPC dated March 13, 1979

Dear Sir:

Subject: Maine Yankee Answer to USNRC Order to Show Cause

In accordance with the requirements set forth in 10 CFR Part 50, we hereby submit thirty-four (34) additional copies of Maine Yankee's answer to the USNRC order to show cause, (Reference b). 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 Atomic 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 Yankee. Should you have any questions, please contact us at once.

Very truly yours,

MAINE YANKEE ATOMIC POWER COMPANY

W. P. Johnson
Vice President

Enclosures:
1) Original and 5 copies of Licensee's answer to show cause order (provided separately).
2) Thirty-four (34) additional copies of Licensee's answer to show cause order.
3) Interim Report by Stone & Webster dated April 1, 1979 (provided separately).
4) Containment Spray Piping Analysis of Pipe Supports H-51 and H-53 (provided separately).

7904040102

MAINE YANKEE ATOMIC POWER COMPANY •
ENGINEERING OFFICE
TURNPIKE ROAD (RT 9)
WESTBORO 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

A001 S1 3/3
A001: C STEPHENS w/ENCL B RUSSELL w/ENCL

7904180227

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 base-plate 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

Robert H. Groce
Licensing Engineer

RHG/cs

SUBJECT SEISMIC STRESS DISTRIBUTION COMPARISON SHOCKI/NUPIPE

PREPARED BY AVR DATE 4/13 REVIEWED BY _____ DATE _____ WORK ORDER NO. 5103

COMPARISON OF SEISMIC STRESSES AS COMPUTED BY S&W SHOCK-I VERSUS NUPIPE.

THE FOLLOWING PACKAGE CONSISTS OF PIPE CONFIGURATION ISOMETRIC, EXCERPTS OF MAINE YANKEE PIPING DRAWINGS AND A GRAPHICAL REPRESENTATION OF THE SEISMIC STRESS MAGNITUDES OBTAINED FROM DYNAMIC ANALYSIS USING SHOCKI AND (CURRENT VERSION) NUPIPE. THE SHOCKI/NUPIPE SEISMIC STRESS VERSUS NODE LOCATION GRAPHS SHOW THE STRESS DISTRIBUTIONS GIVEN BY EACH PROGRAM AND ALLOWS A COMPARISON OF THE TWO DISTRIBUTIONS.

IT CAN BE SEEN THAT IN MOST CASES, THE STRESS DISTRIBUTION IS IDENTICAL AND AT NEARLY ALL POINTS, SEISMIC STRESSES COMPUTED BY SHOCKI ARE MUCH GREATER THAN THOSE FROM NUPIPE.

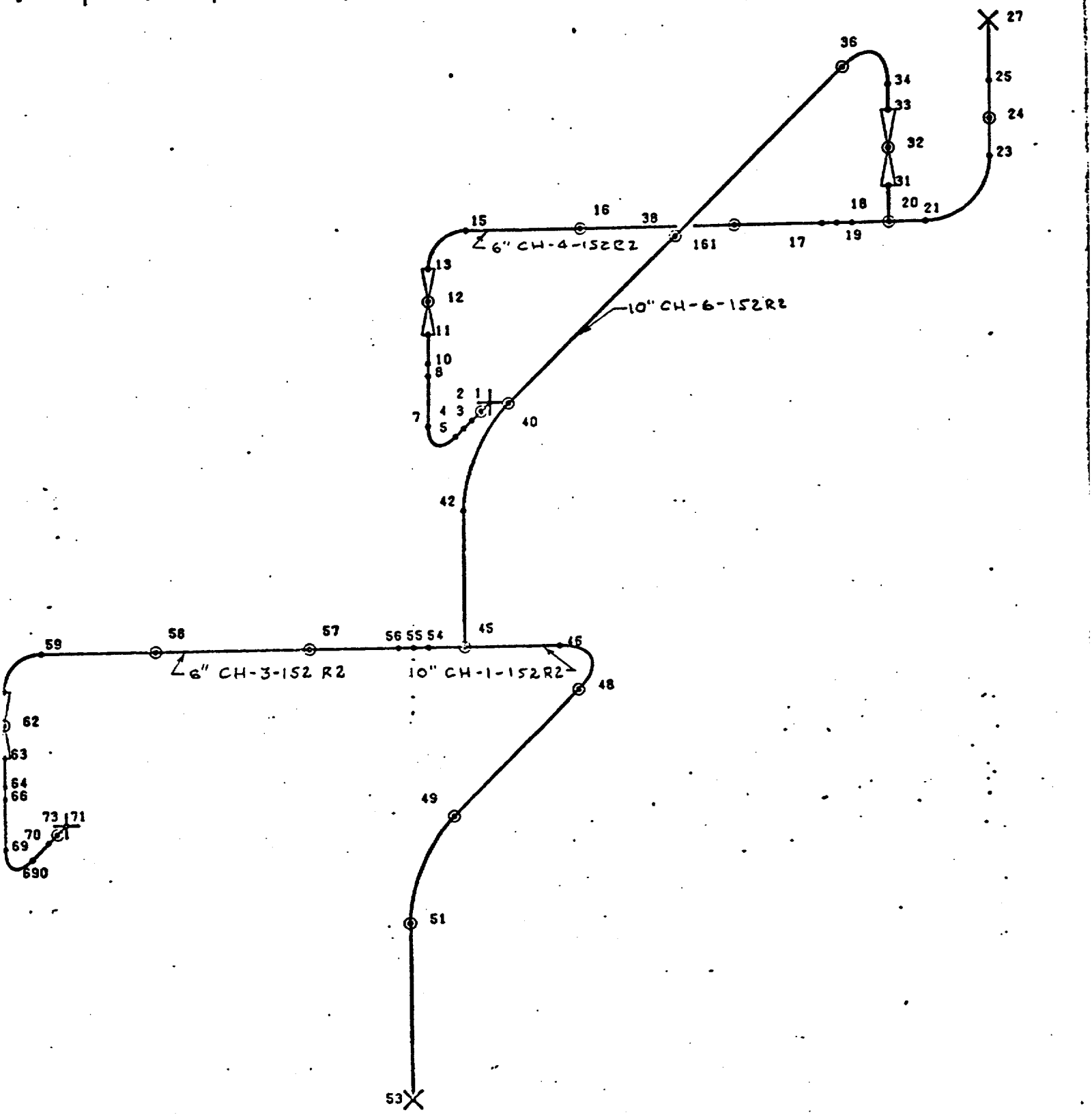
ENCLOSURE 1

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

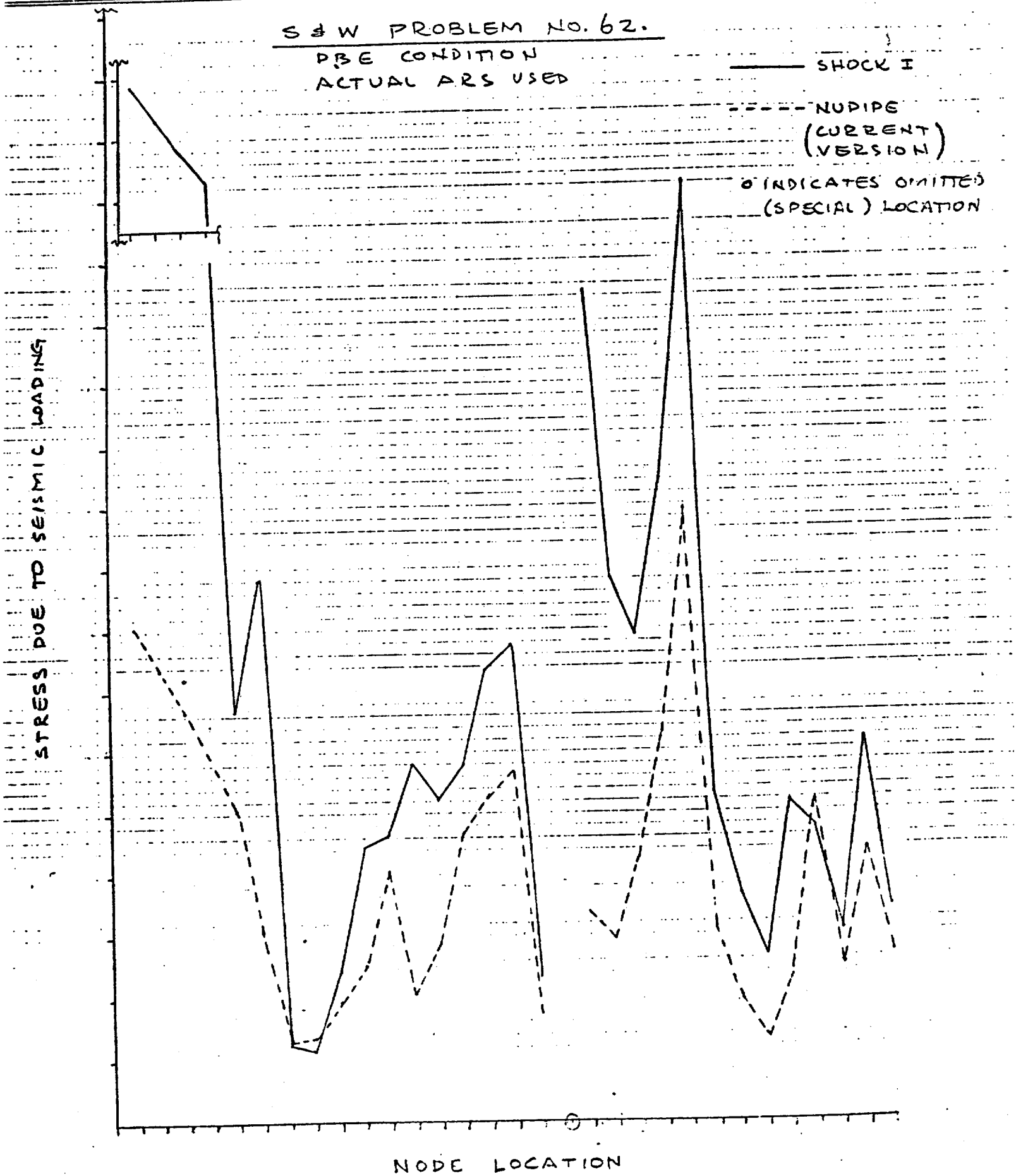
NKEE ATOMIC ELECTRIC COMPANY CALCULATION NO _____ PAGE 6 OF 9

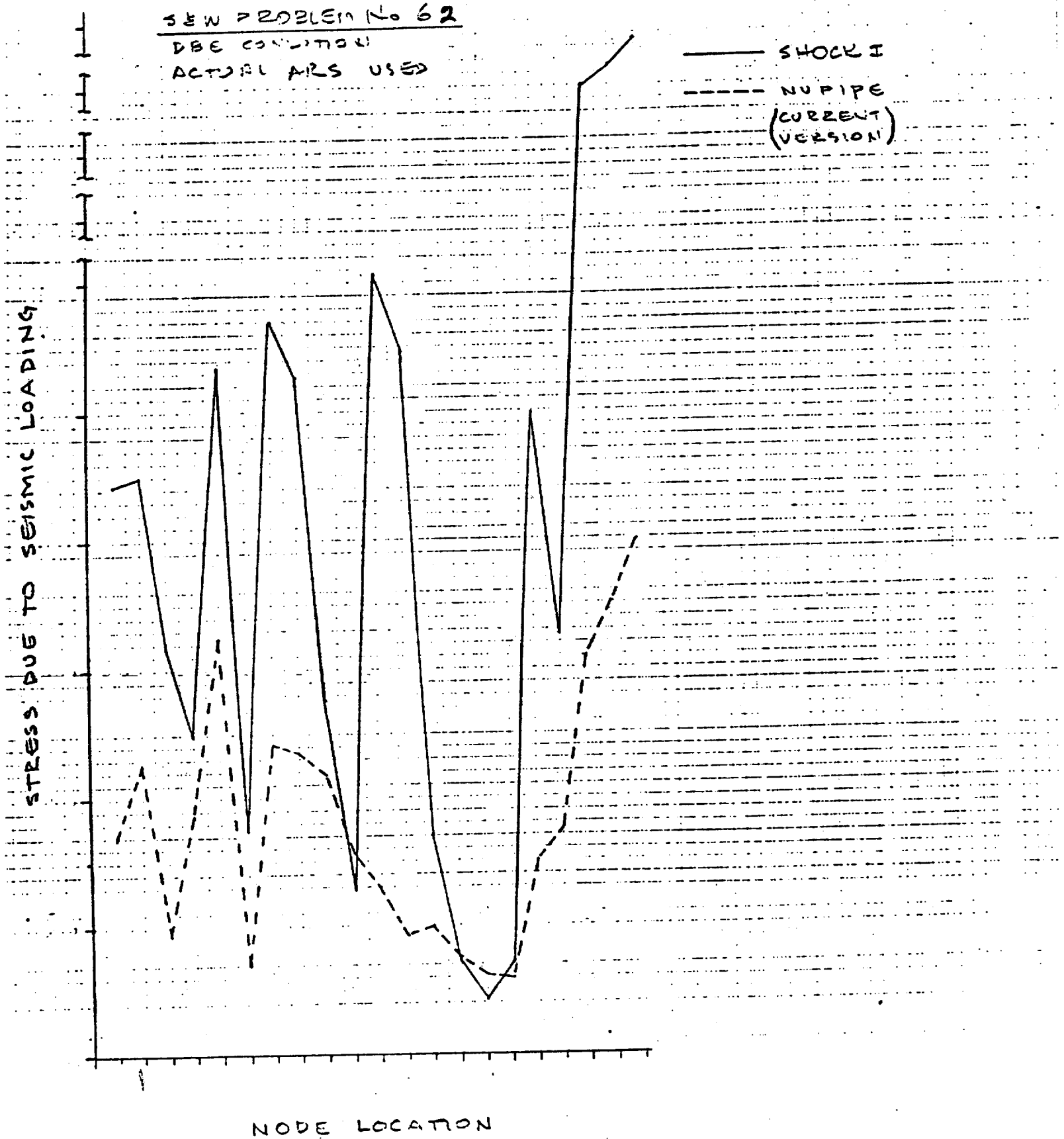
JBJECT SEISMIC STRESS DISTRIBUTION SHOCK I/N-DIDE

REPARED BY AVR DATE 4/12 REVIEWED BY _____ DATE _____ WORK ORDER NO. 5103



	BY	DATE	ISSUE	DESCRIPTION	BY	DATE	ISSUE	DESCRIPTION	BY	DATE	ISSUE	DESCRIPTION
			3				2				1	ORIGINAL ISSUE


S & W PROBLEM NO. 62.
PBE CONDITION
ACTUAL ARS USED
SHOCK I
NUPIPE (CURRENT VERSION)
O INDICATES OMITTED (SPECIAL) LOCATION
STRESS DUE TO SEISMIC LOADING
NODE LOCATION

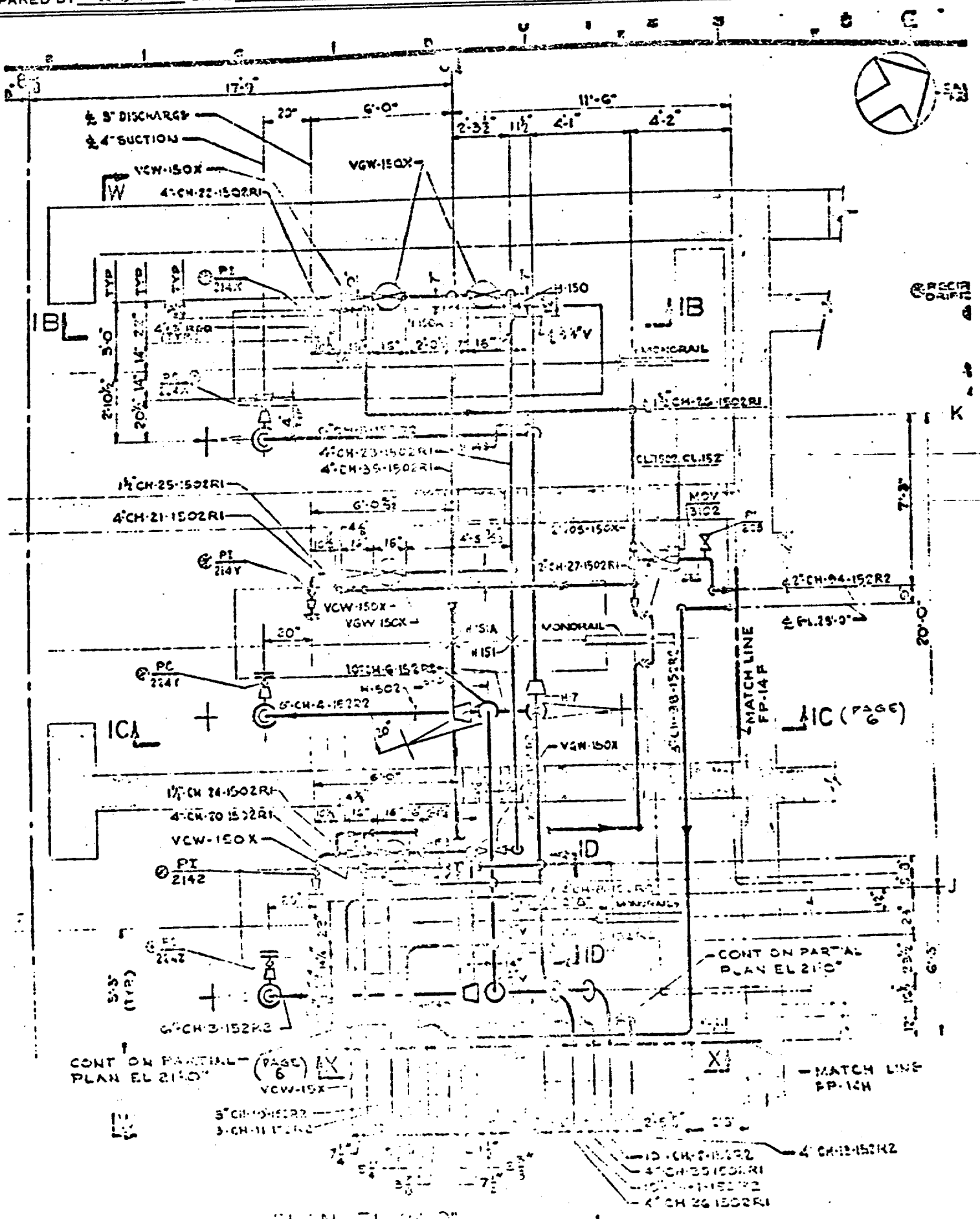

NEW PROBLEM No 62
DBE CONDITION
ACTUAL ARS USED
SHOCK I
NUPIPE
(CURRENT VERSION)
STRESS DUE TO SEISMIC LOADING
NODE LOCATION

YANKEE ATOMIC ELECTRIC COMPANY

CALCULATION NO. _____ PAGE 2 OF 6

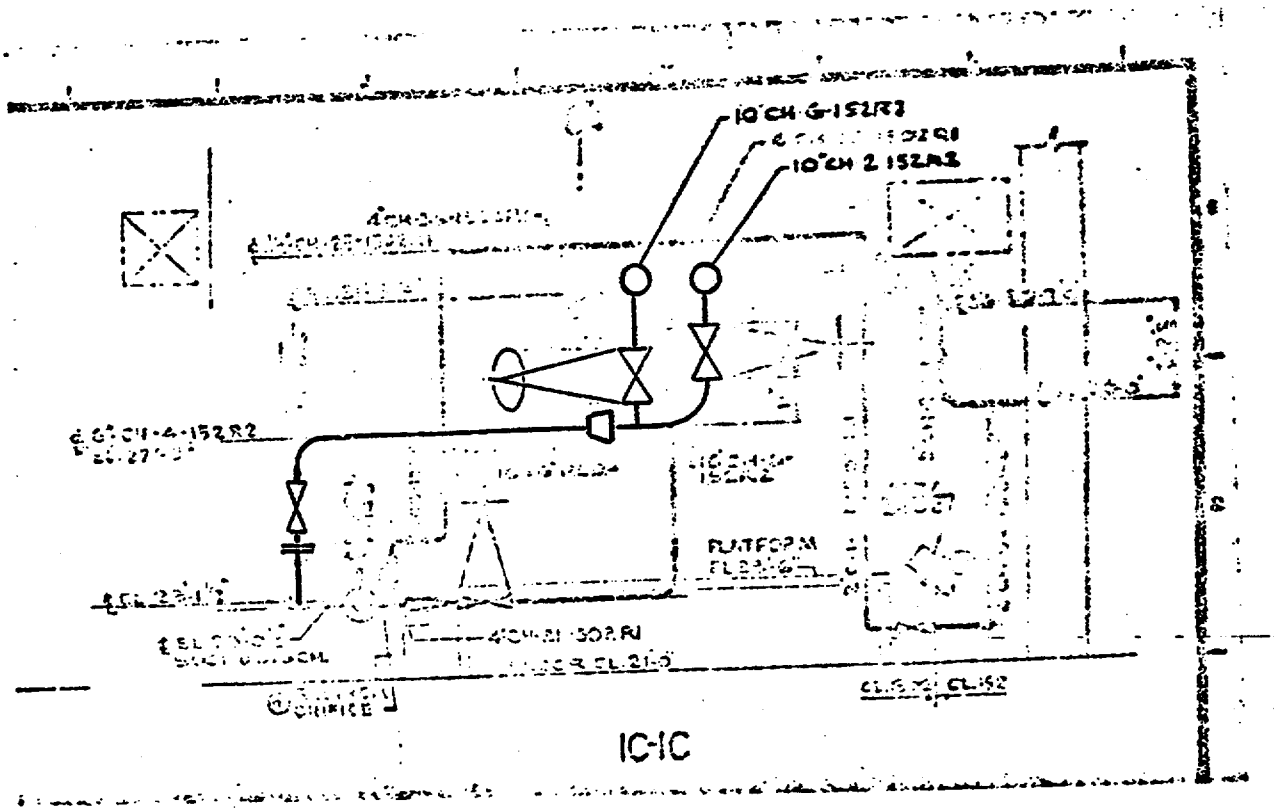
SUBJECT SEISMIC STRESS DISTRIBUTION COMPARISON SHOCKE / NUDIS

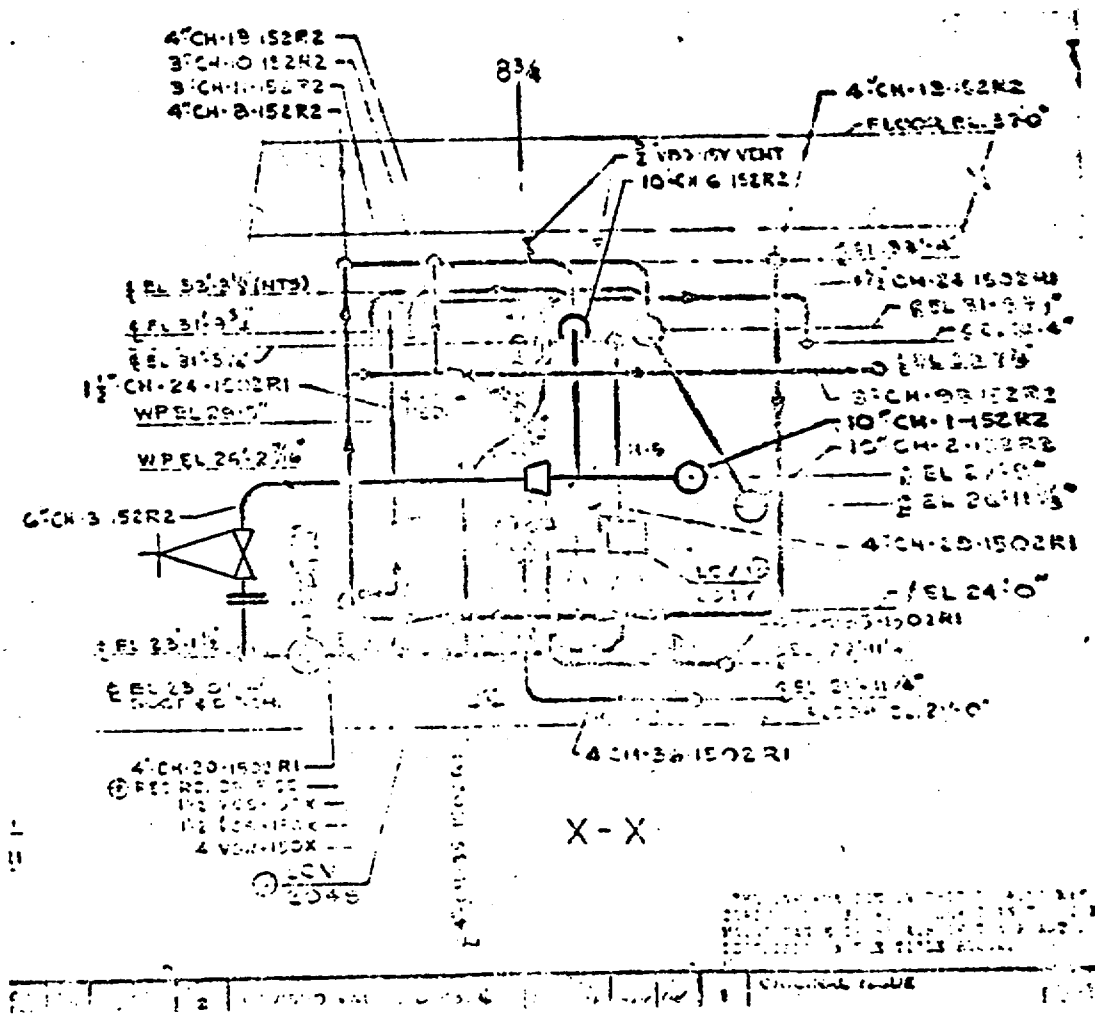
PREPARED BY AVR DATE 4/12 REVIEWED BY _____ DATE _____ WORK ORDER NO. 5107



UBJECT SEISMIC STRESS DISTRIBUTION COMPARISON SHOCK I / NUPIPE

REPARED BY AVR DATE 4/13 REVIEWED BY _____ DATE _____ WORK ORDER NO. 5102





MAINE YANKEE ATOMIC POWER COMPANY •
ENGINEERING OFFICE
TURNPIKE ROAD (RT. 9)
WESTBORO, MASSACHUSETTS 01581
617-366-9011

B.3.2.1

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.

A001 S 1/1 ADD: C STEPHENS w/ENCL

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 "SHOCK0" are not available, conclusions about their adequacy can be drawn from existing information. The use of SHOCK0 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 <u>as a minimum</u> all SHOCK0 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 SHOCK0, 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".

Based on the results of these studies, Maine Yankee concludes that "SHOCK0" 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 SHOCK0 and SHOCK1 and a listing of support loads for ten (10) SHOCK0 problems covering the three versions of SHOCK0 used in the design of Maine Yankee.

In addition, Maine Yankee will submit a comparison of PSTRESS/SHOCK0 and NUPIPE-SW for one (1) problem from each of the three versions of SHOCK0.

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

W. P. Johnson
Vice President

JRH/slw

ATTACHMENT 1

Amplified Response Spectrum Curves
for Problems 39, 62 and 63

PROB #39

OPERATIONAL

0.010	0.091	**********
0.030	0.086	**********
0.050	0.102	**********
0.070	0.117	**********
0.090	0.132	**********
0.110	0.181	**********
0.130	0.252	**********
0.150	0.420	**********
0.170	0.908	**********
0.190	0.429	**********
0.210	0.249	**********
0.230	0.178	**********
0.250	0.132	**********
0.270	0.112	**********
0.290	0.094	**********
0.310	0.078	**********
0.330	0.064	********
0.350	0.058	******
0.370	0.054	******
0.390	0.051	******
0.410	0.048	******
0.430	0.045	*****
0.450	0.042	*****
0.470	0.039	*****
0.490	0.037	*****
0.510	0.035	***
0.530	0.033	***
0.550	0.031	***
0.570	0.030	***
0.590	0.028	***
0.610	0.027	**
0.630	0.025	**
0.650	0.024	**
0.670	0.023	**
0.690	0.022	**
0.710	0.021	**
0.730	0.020	**
0.750	0.019	**
0.770	0.018	*
0.790	0.017	*
0.810	0.017	*
0.830	0.016	*
0.850	0.015	*
0.870	0.015	*
0.890	0.015	*
0.910	0.015	*
0.930	0.014	*
0.950	0.014	*
0.970	0.014	*
0.990	0.014	*

PROB #39

HE.YANK.CONT.VES.EL.27.5 DES. EQ.

DESIGN

X	Y	
0.010	0.143	**********
0.030	0.139	**********
0.050	0.168	**********
0.070	0.191	**********
0.090	0.205	**********
0.110	0.278	**********
0.130	0.367	**********
0.150	0.507	**********
0.170	0.681	**********
0.190	0.493	**********
0.210	0.339	**********
0.230	0.254	**********
0.250	0.201	**********
0.270	0.172	**********
0.290	0.144	**********
0.310	0.121	**********
0.330	0.102	**********
0.350	0.095	**********
0.370	0.089	**********
0.390	0.083	**********
0.410	0.078	**********
0.430	0.073	**********
0.450	0.069	**********
0.470	0.065	**********
0.490	0.061	**********
0.510	0.058	**********
0.530	0.054	**********
0.550	0.052	**********
0.570	0.049	**********
0.590	0.046	**********
0.610	0.044	**********
0.630	0.042	**********
0.650	0.040	**********
0.670	0.038	**********
0.690	0.036	**********
0.710	0.034	**********
0.730	0.033	**********
0.750	0.031	**********
0.770	0.030	**********
0.790	0.029	**********
0.810	0.028	**********
0.830	0.006	**********
0.850	0.025	**********
0.870	0.024	**********
0.890	0.024	**********
0.910	0.024	**********
0.930	0.024	**********
0.950	0.023	**********
0.970	0.023	**********
0.990	0.023	**********

WEIGHT MATRIX

PROB : 64

ME.YANK.PRIM.AUX.BLD.EL.45 OP.EQ.

X	Y	
0.010	-0.074	**********
0.030	0.301	**********
0.050	0.055	**********
0.070	0.020	*******
0.090	0.013	****
0.110	0.018	*****
0.130	0.014	****
0.150	0.011	***
0.170	0.010	***
0.190	0.009	**
0.210	0.008	**
0.230	0.007	**
0.250	0.007	**
0.270	0.006	*
0.290	0.006	*
0.310	0.005	*
0.330	0.005	*
0.350	0.004	*
0.370	0.004	*
0.390	0.004	*
0.410	0.004	*
0.430	0.004	*
0.450	0.004	*
0.470	0.003	*
0.490	0.003	*
0.510	0.003	*
0.530	0.003	*
0.550	0.003	*
0.570	0.003	*
0.590	0.003	*
0.610	0.003	*
0.630	0.002	*
0.650	0.002	*
0.670	0.002	*
0.690	0.002	*
0.710	0.002	*
0.730	0.002	*
0.750	0.002	*
0.770	0.002	*
0.790	0.002	*
0.810	0.002	*
0.830	0.002	*
0.850	0.002	*
0.870	0.002	*
0.890	0.002	*
0.910	0.002	*
0.930	0.002	*
0.950	0.002	*
0.970	0.002	*
0.990	0.002	*

WEIGHT MATRIX

PROB # 62

HE.YANK.PRIM.AUX.BLD.EL.45 DES.EQ.

X	Y	
0.010	0.130	**********
0.030	0.352	**********
0.050	0.097	**********
0.070	0.038	**********
0.090	0.026	*******
0.110	0.034	*********
0.130	0.027	*******
0.150	0.022	******
0.170	0.018	*****
0.190	0.017	****
0.210	0.015	****
0.230	0.014	***
0.250	0.013	***
0.270	0.012	***
0.290	0.010	**
0.310	0.010	**
0.330	0.009	**
0.350	0.009	**
0.370	0.008	**
0.390	0.008	**
0.410	0.007	*
0.430	0.007	*
0.450	0.007	*
0.470	0.006	*
0.490	0.006	*
0.510	0.006	*
0.530	0.006	*
0.550	0.005	*
0.570	0.005	*
0.590	0.005	*
0.610	0.005	*
0.630	0.005	*
0.650	0.004	*
0.670	0.004	*
0.690	0.004	*
0.710	0.004	*
0.730	0.004	*
0.750	0.004	*
0.770	0.004	*
0.790	0.004	*
0.810	0.004	*
0.830	0.003	*
0.850	0.003	*
0.870	0.003	*
0.890	0.003	*
0.910	0.003	*
0.930	0.003	*
0.950	0.003	*
0.970	0.003	*
0.990	0.003	*

PROB #63

HE.YANK.PRIM.AUX.BLD.EL.45 DP.60

X	Y	
0.010	0.074	**********
0.030	0.301	**********
0.050	0.055	**********
0.070	0.020	*******
0.090	0.013	****
0.110	0.010	****
0.130	0.014	****
0.150	0.011	***
0.170	0.010	***
0.190	0.009	**
0.210	0.008	**
0.230	0.007	**
0.250	0.007	**
0.270	0.006	*
0.290	0.006	*
0.310	0.005	*
0.330	0.005	*
0.350	0.004	*
0.370	0.004	*
0.390	0.004	*
0.410	0.004	*
0.430	0.004	*
0.450	0.004	*
0.470	0.003	*
0.490	0.003	*
0.510	0.003	*
0.530	0.003	*
0.550	0.003	*
0.570	0.003	*
0.590	0.003	*
0.610	0.003	*
0.630	0.002	*
0.650	0.002	*
0.670	0.002	*
0.690	0.002	*
0.710	0.002	*
0.730	0.002	*
0.750	0.002	*
0.770	0.002	*
0.790	0.002	*
0.810	0.002	*
0.830	0.002	*
0.850	0.002	*
0.870	0.002	*
0.890	0.002	*
0.910	0.002	*
0.930	0.002	*
0.950	0.002	*
0.970	0.002	*
0.990	0.002	*

HEIGHT MATRIX

PROB #63

ME.YANK.PRIM.AUX.BLO.EL.45 DES.EQ.

X	Y	
0.010	0.130	**********
0.030	0.352	**********
0.050	0.097	**********
0.070	0.038	**********
0.090	0.026	*******
0.110	0.021	*******
0.130	0.027	*******
0.150	0.022	******
0.170	0.018	*****
0.190	0.017	****
0.210	0.015	****
0.230	0.014	***
0.250	0.013	***
0.270	0.012	***
0.290	0.010	**
0.310	0.010	**
0.330	0.009	**
0.350	0.009	**
0.370	0.008	**
0.390	0.008	**
0.410	0.007	*
0.430	0.007	*
0.450	0.007	*
0.470	0.006	*
0.490	0.006	*
0.510	0.006	*
0.530	0.006	*
0.550	0.005	*
0.570	0.005	*
0.590	0.005	*
0.610	0.005	*
0.630	0.005	*
0.650	0.004	*
0.670	0.004	*
0.690	0.004	*
0.710	0.004	*
0.730	0.004	*
0.750	0.004	*
0.770	0.004	*
0.790	0.004	*
0.810	0.004	*
0.830	0.003	*
0.850	0.003	*
0.870	0.003	*
0.890	0.003	*
0.910	0.003	*
0.930	0.003	*
0.950	0.003	*
0.970	0.003	*
0.990	0.003	*

ATTACHMENT 2

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

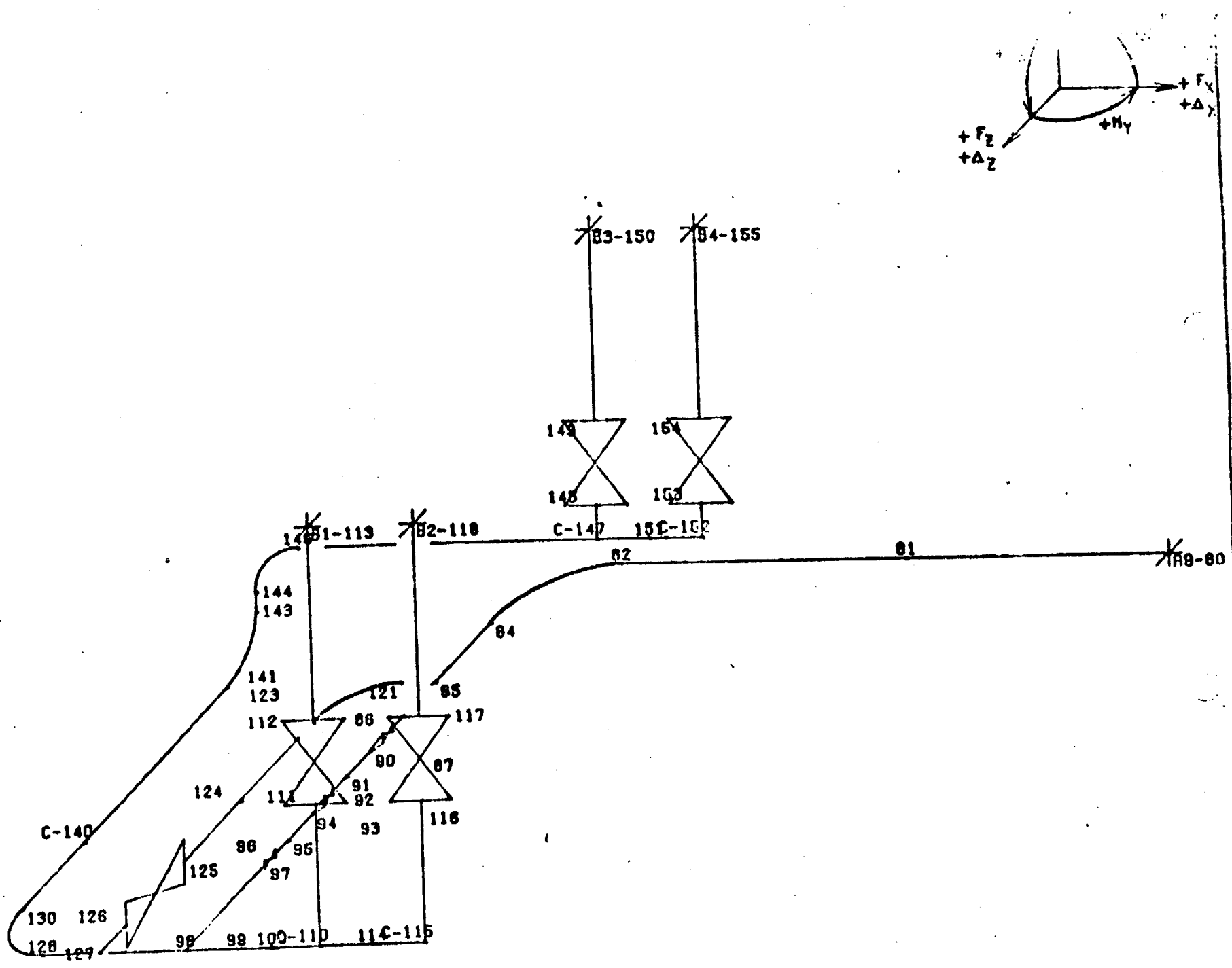
Anchor & Restraint Stiffnesses (lb/in.)

		PT. NO.	NUPIPE	SHOCK I
PROB #39	Anchor①	1	1×10^{16}	1×10^{15}
		40	1×10^{16}	1×10^{15}
	Restraints	11 (y)	1	-
		(y)	1	-
		(y)	1	-
PROB #62	Anchor①	1	1×10^{16}	1×10^{15}
		27	1×10^{16}	1×10^{15}
		53	1×10^{16}	1×10^{15}
		73	1×10^{16}	1×10^{15}
	Restraints	45 (y&z)	1×10^{16}	1×10^{15}
		161 (y)	1×10^{16}	1×10^{15}
PROB #63	Anchor①	1	1×10^{16}	1×10^{15}
		27	1×10^{16}	1×10^{15}
	Restraint	17 (y&z)	1×10^{16}	1×10^{15}

① 6 Way Restraint

ATTACHMENT 3

A Comparison of Pipe Stress Results from SHOCK0 and SHOCK1 for Identical Piping Geometries


+ F_X
+ Δ_X
+ M_Y
+ F_Z
+ Δ_Z
83-150
84-155
149
154
148
153
151-113
82-118
C-147
151-152
82
81
79-80
144
143
84
141
123
121
85
112
86
117
90
87
124
111
91
92
94
93
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C-140
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95
97
125
130
126
128
129
98
99
100-110
114-115

PROB # 834 C

CALCULATION SHEET

J.O./W.O./CALCULATION NO.	REVISION	PAGE
PR-E34C		

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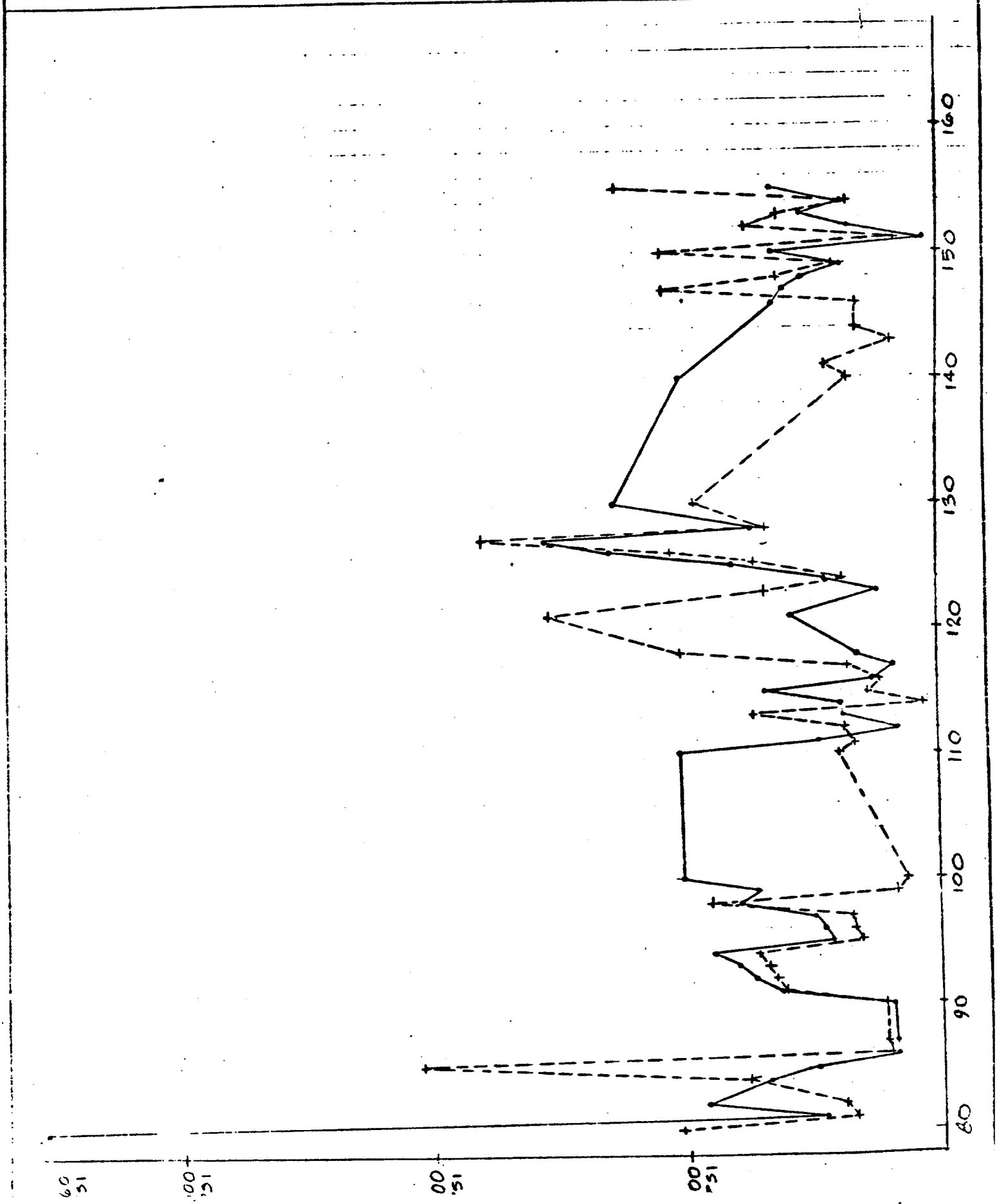

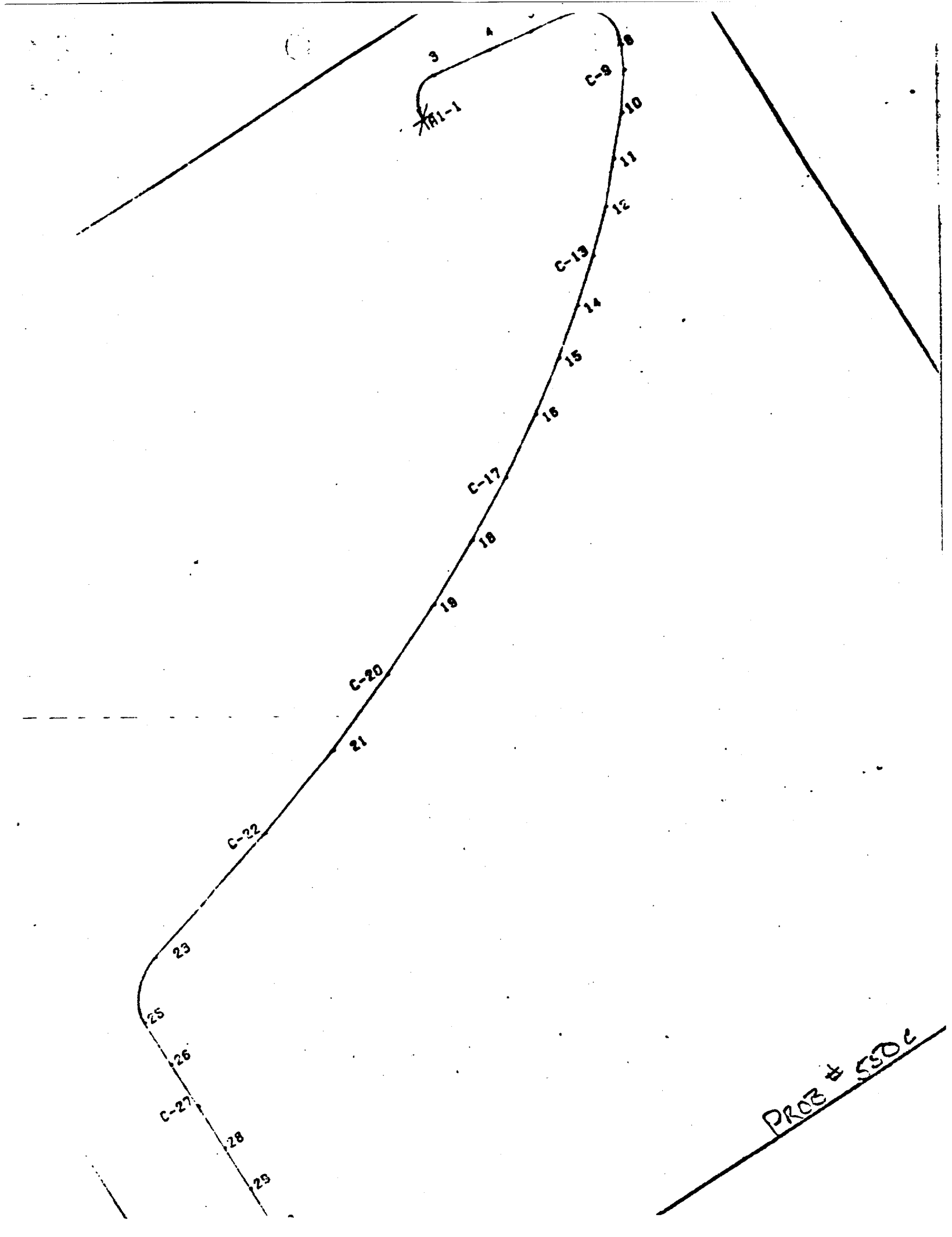
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C-13
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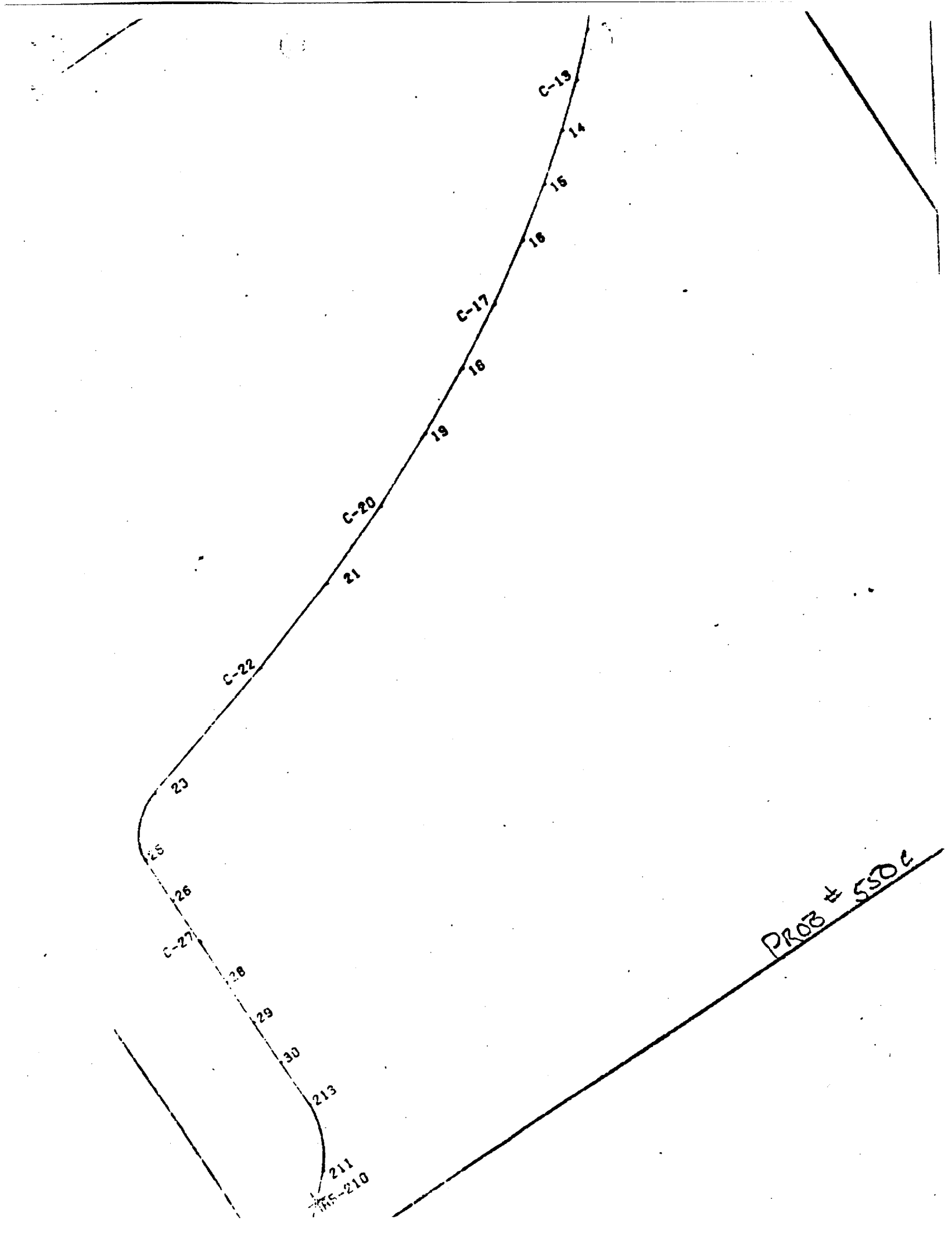
28
29
PROP & SDC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16
C-17
18
19
C-20
21
C-22
23
25
26
C-27
28
29
30
213
211
RS-210
PROP ± 550'

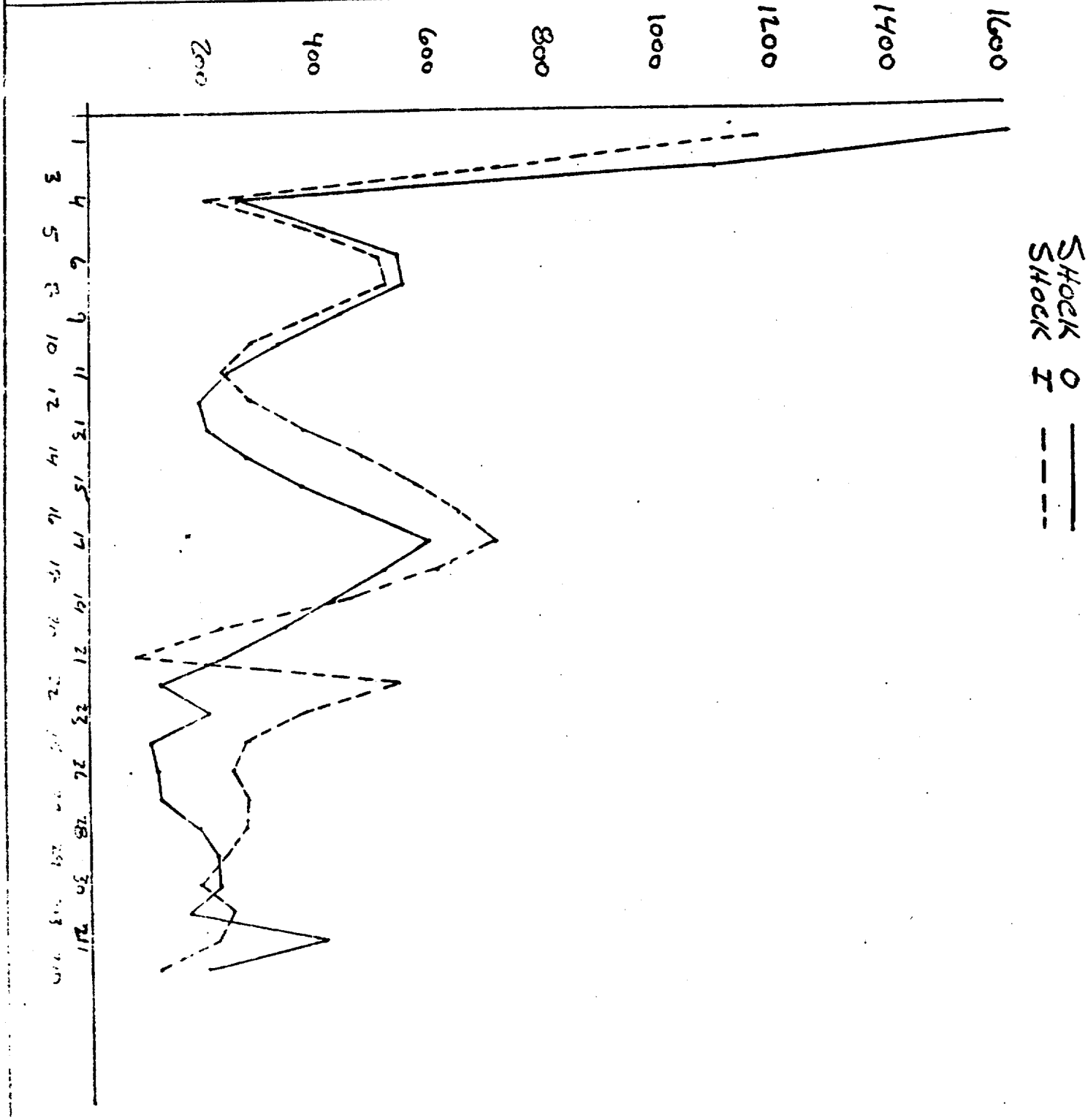
PREPARER/DATE 4/26/79

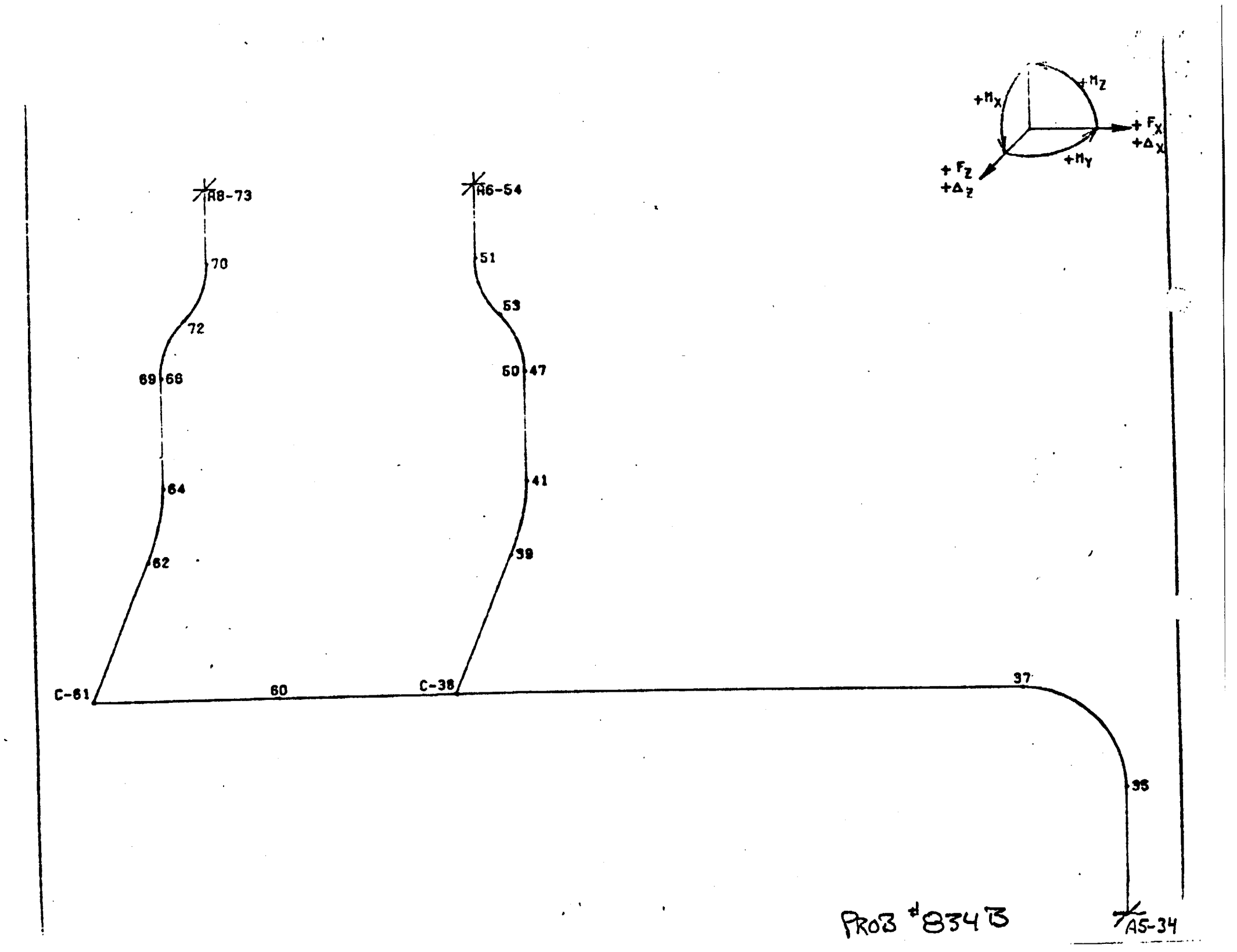
REVIEWER/CHECKER/DATE

INDEPENDENT REVIEWER/DATE

SUBJECT/TITLE

QA CATEGORY/CODE CLASS




+Mz
+Mx
+Fx
+Δx
+My
+Fz
+Δz
A8-73
A6-54
70
72
69
68
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51
53
50
47
41
39
C-61
60
C-38
37
35
A5-34
Prob #8343

CALCULATION SHEET

J.O./W.O./CALCULATION NO.	REVISION	PAGE
12365 PROB# 4B		

PREPARER/DATE	REVIEWER/CHECKER/DATE	INDEPENDENT REVIEWER/DATE
ROBERT C. McCLUNG 4/25/79	12365 PROB# 834B	

SUBJECT/TITLE: STRESS COMPARISON SHOCK 0 VS. SHOCK 1

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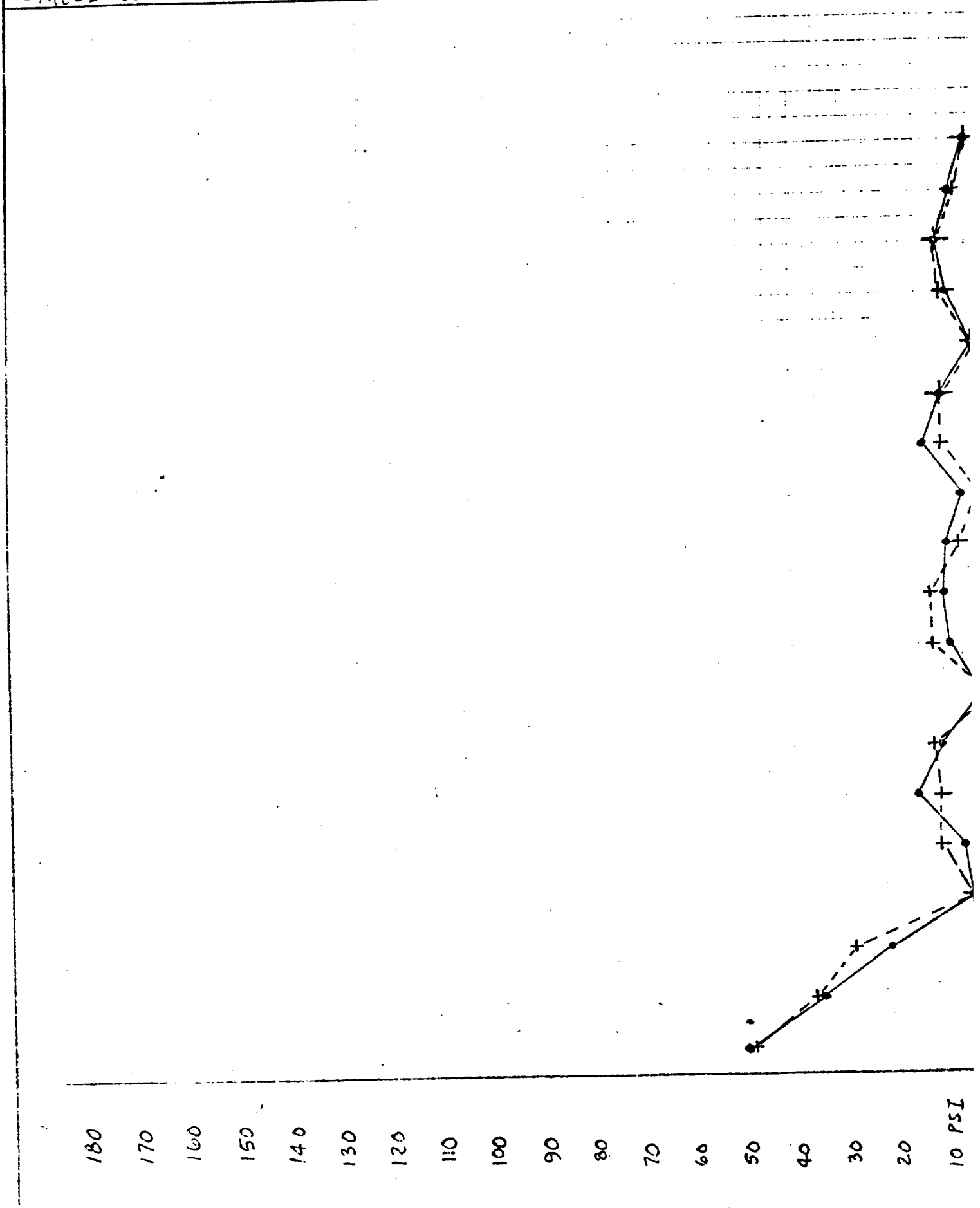

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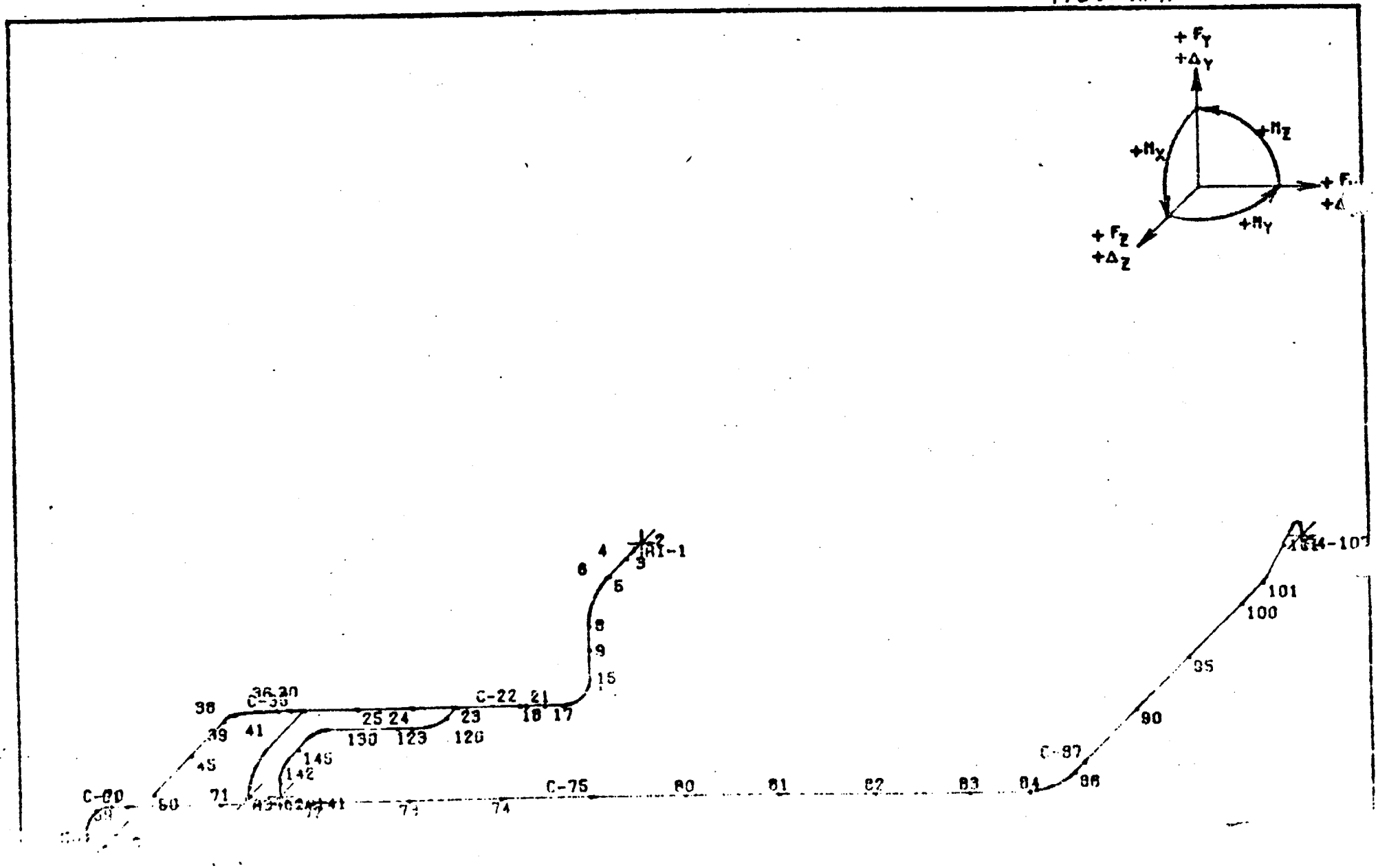
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+ Δ_Y
+ M_Z
+ M_X
+ F_X
+ Δ_X
+ M_Y
+ F_Z
+ Δ_Z
C-00
C-22
C-75
C-87
60
71
74
80
81
82
83
84
86
90
95
100
101
15
25 24
23
18 17
130 123
120
145
142
41
39
45

STONE & WEBSTER ENGINEERING CORPORATION

CALCULATION SHEET

J.O./W.O./CALCULATION NO.	REVISION	PAGE
F-ROR 35		

4501061

PREPARER/DATE	REVIEWER/CHECKER/DATE	INDEPENDENT REVIEWER/DATE
4/26/79		

SUBJECT/TITLE

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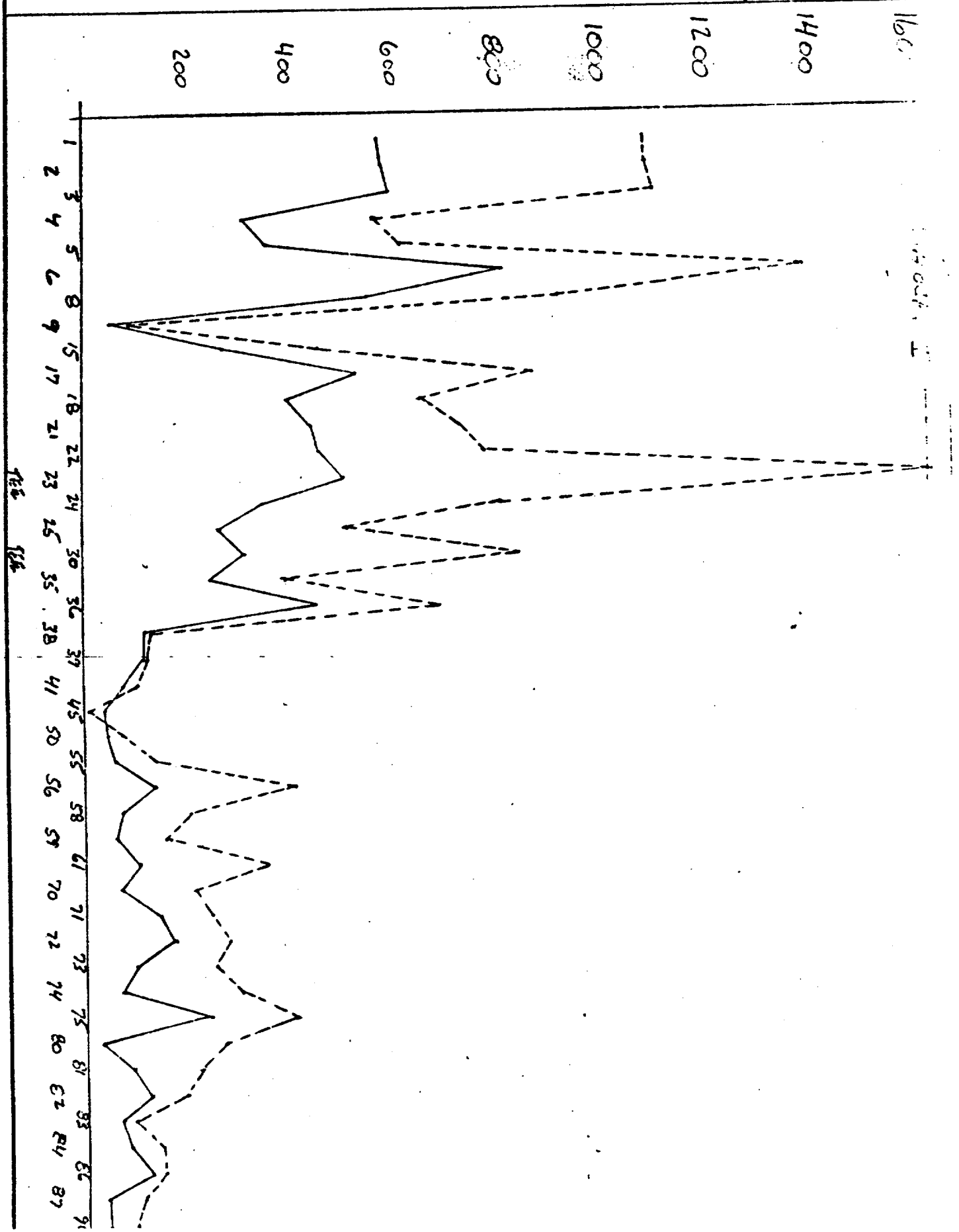

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4/26/99		

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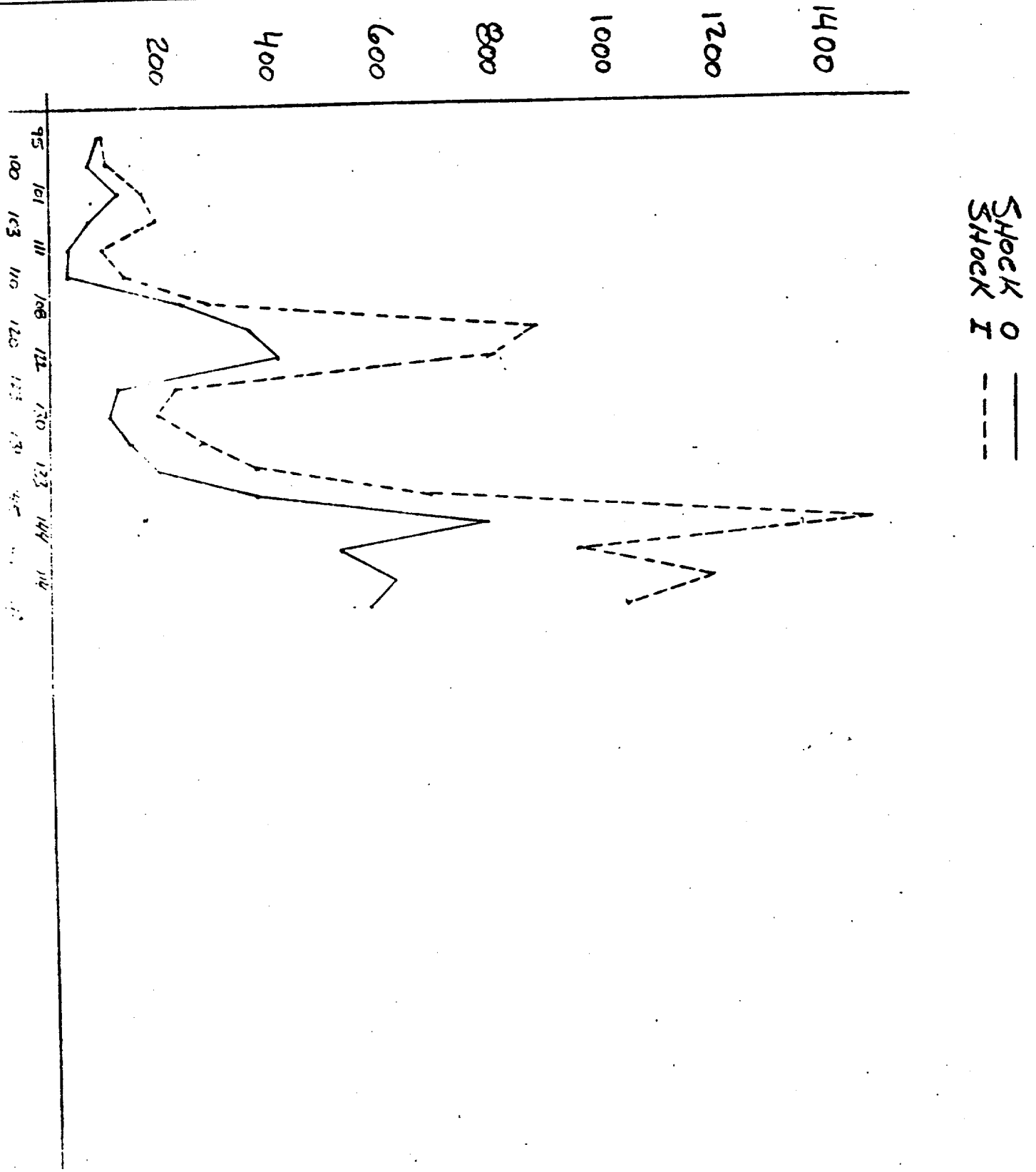

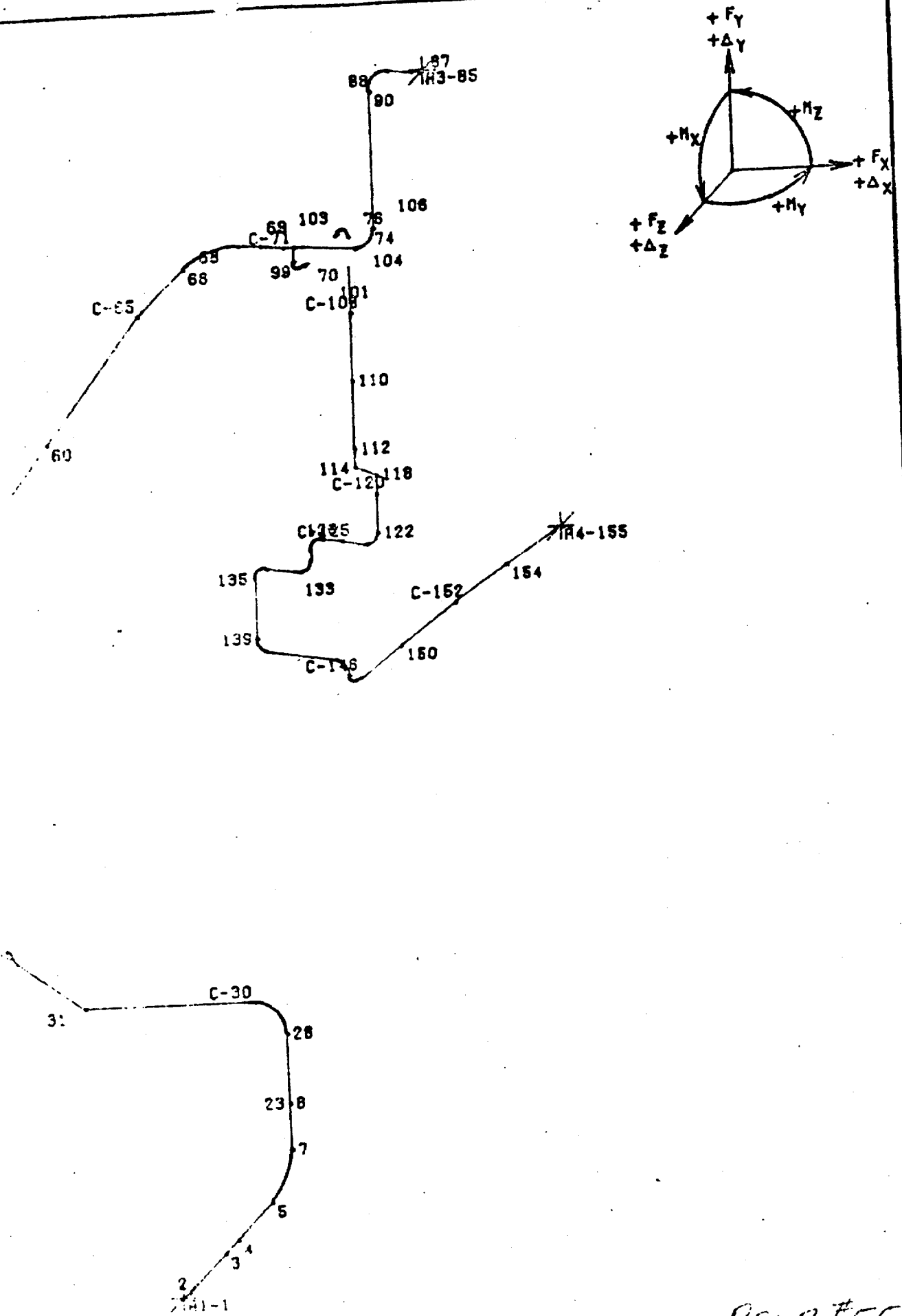
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+ Δ_Y
+ M_Z
+ M_X
+ F_X
+ Δ_X
+ M_Y
+ F_Z
+ Δ_Z
87
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90
106
103
76
69
C-71
74
104
99
70
68
101
C-65
C-109
110
60
112
114
118
C-120
122
135
133
C-152
154
IH4-155
139
C-146
150
C-30
31
28
23
8
7
5
3
4
2
IH1-1

PAT. P. #552

CALCULATION SHEET

J.O./W.O./CALCULATION NO. 4552		REVISION	PAGE
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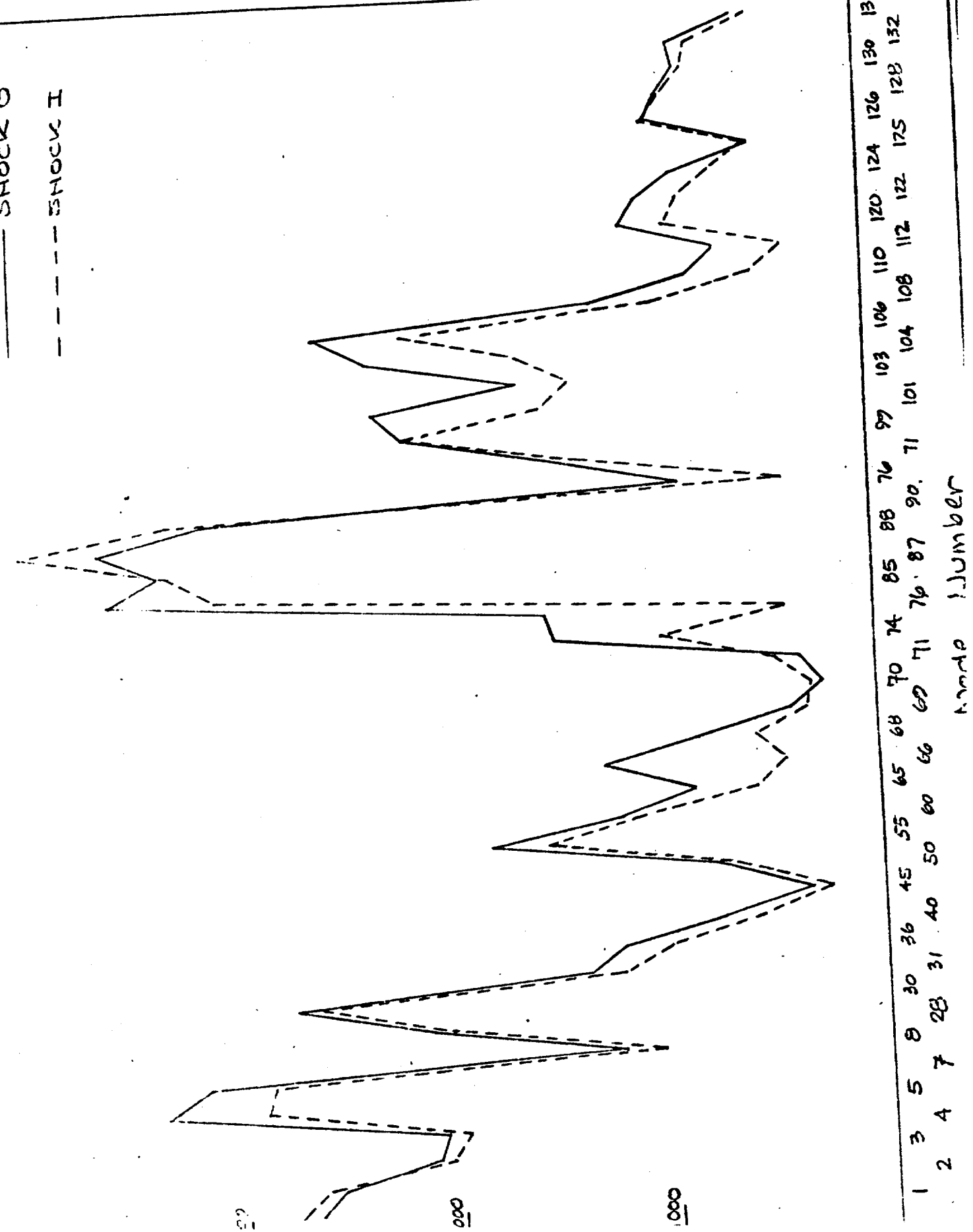

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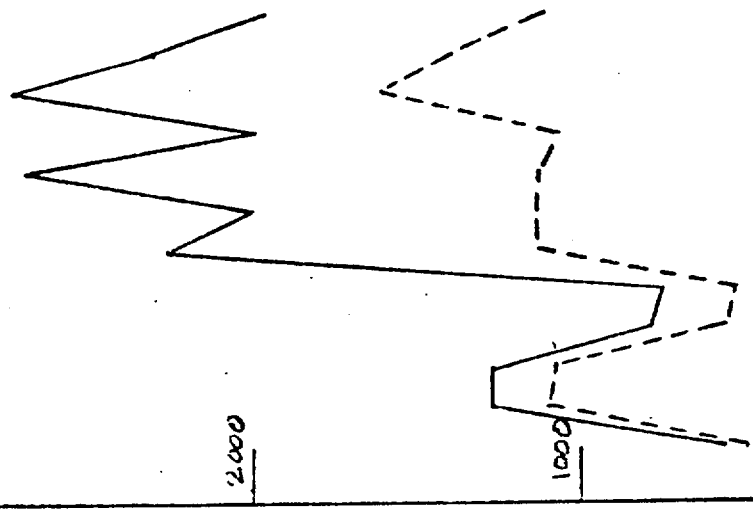

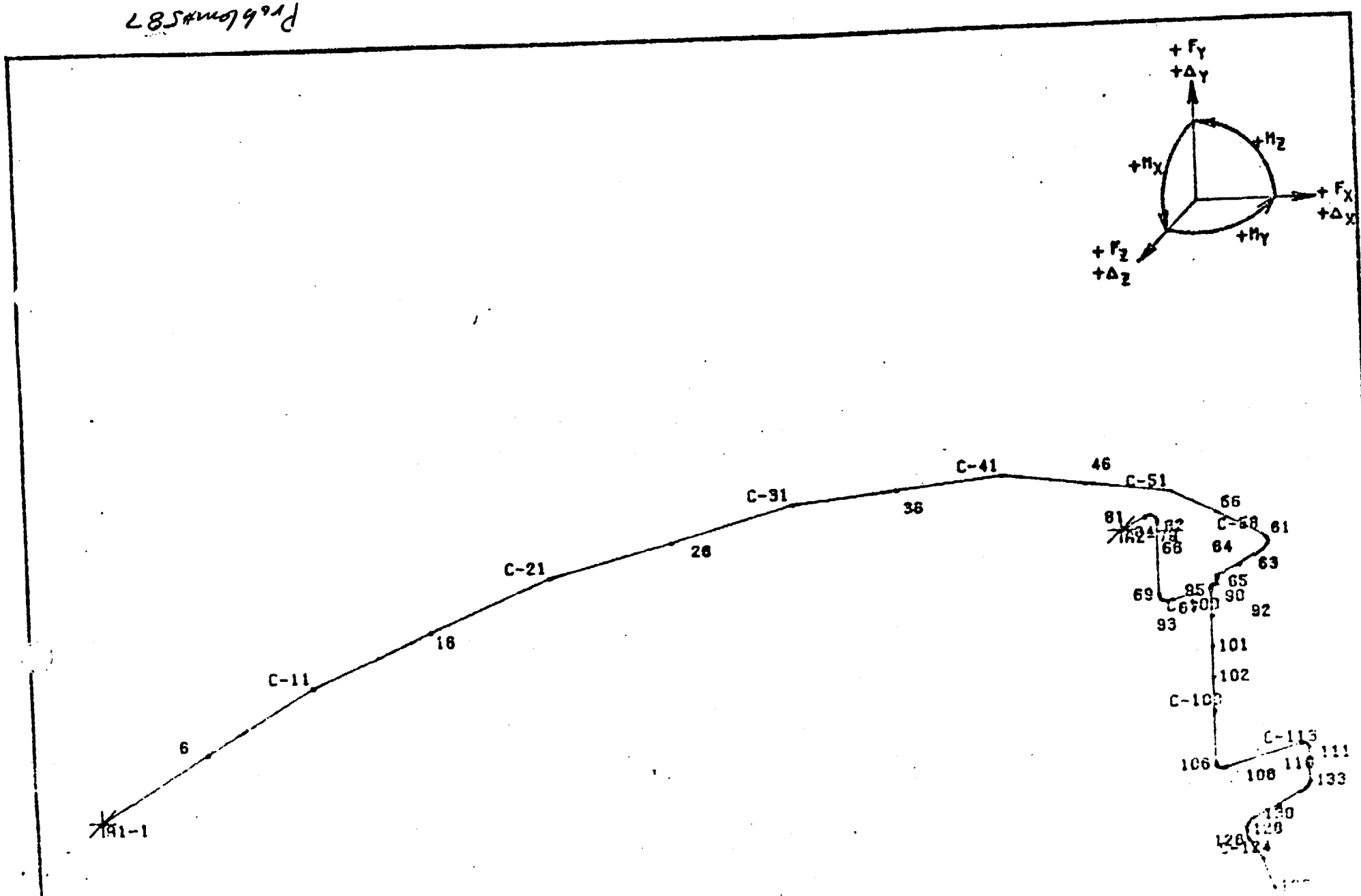
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+Δ_Y
+M_Z
+M_X
+ F_X
+Δ_X
+M_Y
+ F_Z
+Δ_Z
C-41
46
C-51
C-31
36
56
C-58
61
81
68
64
63
C-21
26
65
69
85
90
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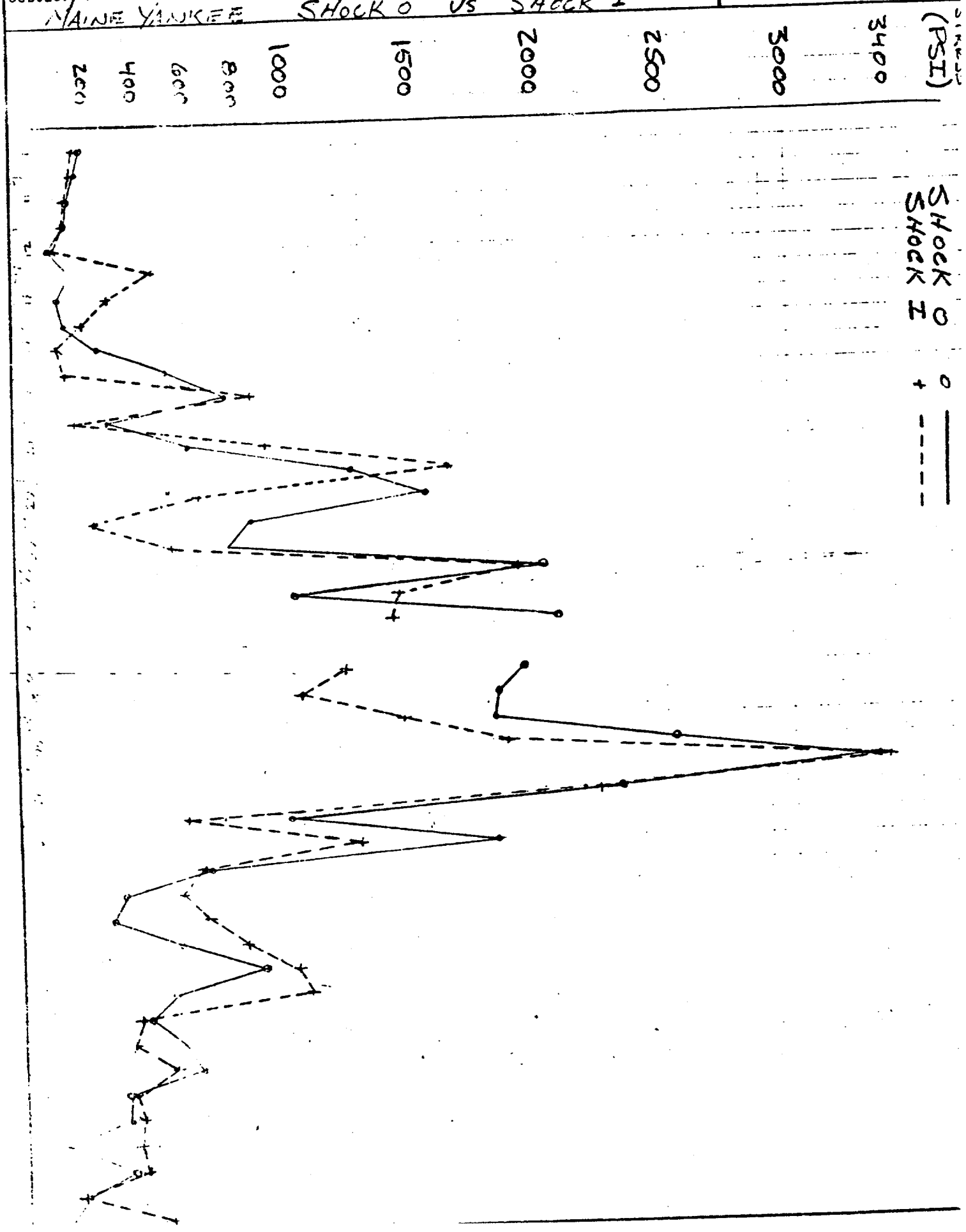

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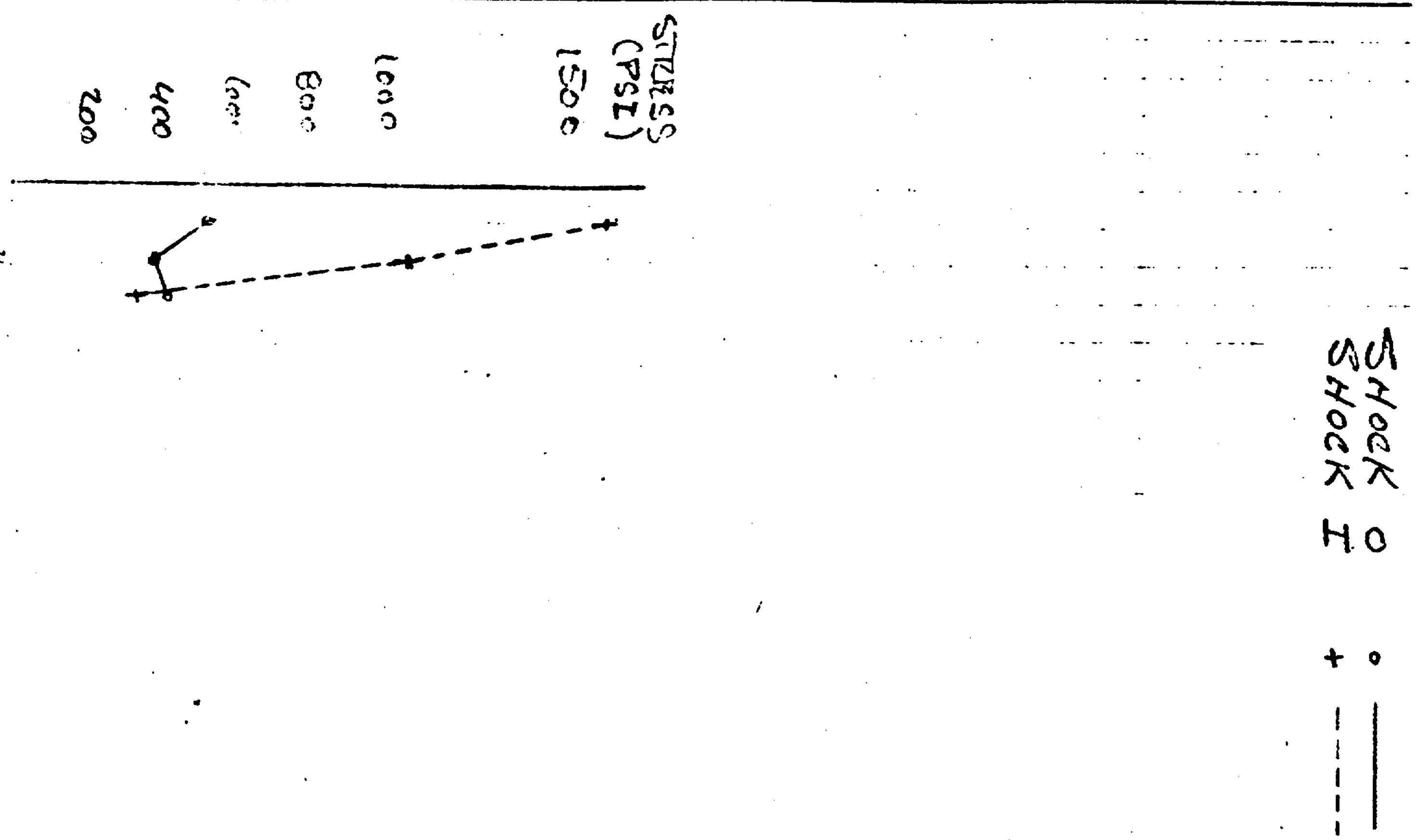

CALCULATION SHEET

J.O./W.O./CALCULATION NO.	REVISION	PAGE
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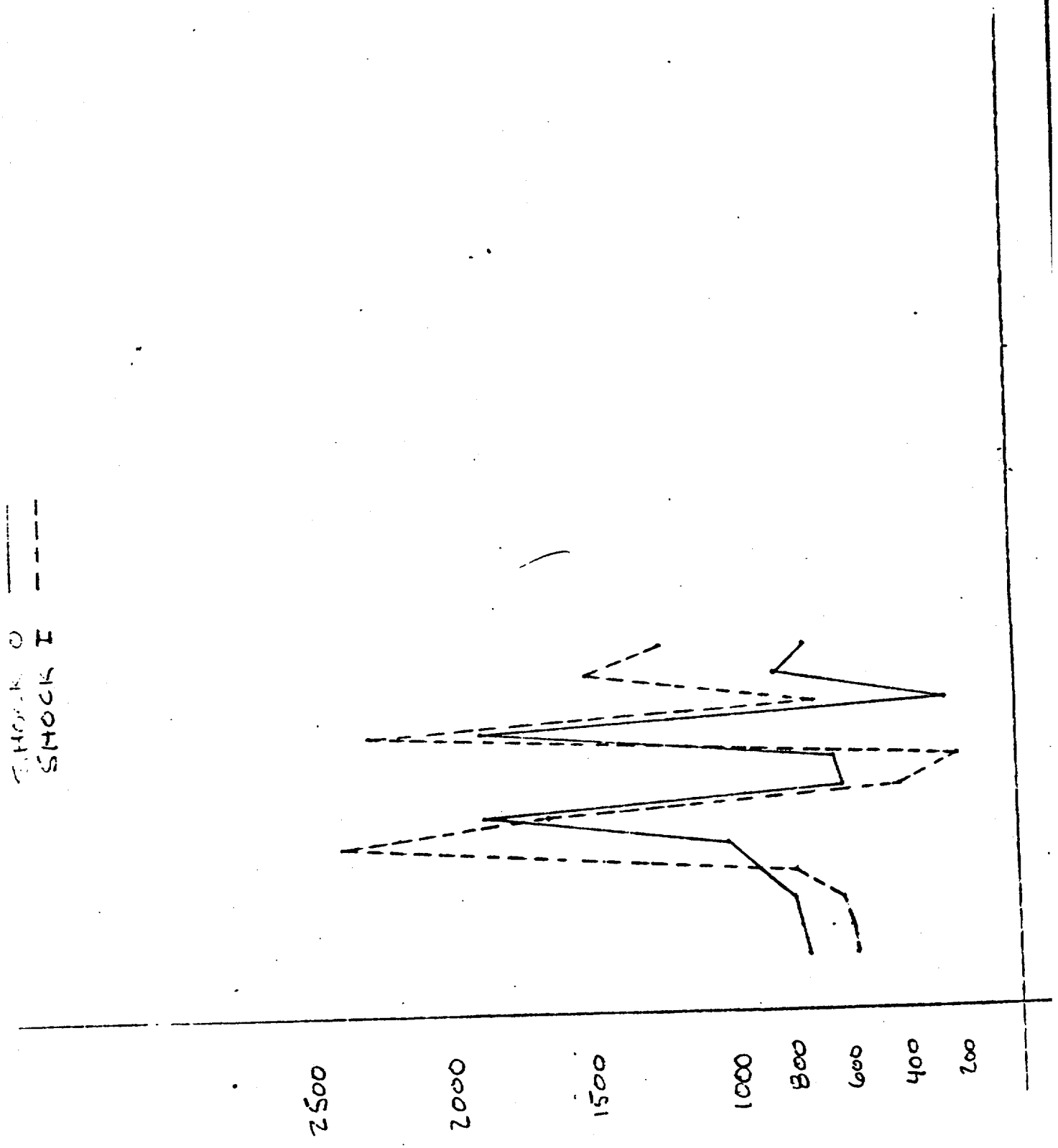

From: David Kern
To: DXC1@OWFN_DO.OWF4_PO,
Date: Thu, Apr 1, 1999 5:37 PM
Subject: DRAFT Meeting Minutes for Small Bore Piping Support Meeting -Reply

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

From: David Kern
To: 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