



CHARLES CENTER • P. O. BOX 1475 • BALTIMORE, MARYLAND 21203

W. JAMES LIPPOLD
MANAGER
NUCLEAR ENGINEERING SERVICES DEPARTMENT

May 4, 1988

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Main Steam Thin Wall

- REFERENCES:
- (a) Teleconference between Mr. W. C. Holston and staff (BG&E) and Mr. S. A. McNeil and staff (NRC), on February 11, 1988, same subject
 - (b) Letter from Mr. J. A. Tiernan (BG&E) to Document Control Desk (NRC), dated September 30, 1987, Main Steam Piping Flaw at Calvert Cliffs Unit 1

Gentlemen:

This letter is in response to Reference (a), in which you requested the attached information. We understand that with this information you will be able to complete the review requested in Reference (b). We hope that with this information you will conclude that no further actions need to be taken on our part.

Attachment (1) provides force and moment loadings for all load cases at every data point from the steam generator nozzle up to the first anchor (containment penetration) for 34" EB-1-1005. Also included is the math model sketch ME-123 Revision A showing all node points.

Attachment (2) is a report entitled "Supporting Information for the Stress Analysis of the Thin Pipe Region in No. 12 Steam Generator Main Steam Line." This report was done for BG&E by Southwest Research Institute as a result of an NRC request in Reference (a). A microfiche of the thin pipe region analysis stress output is also included.

In support of Reference (b) and in response to your suggestions, we are providing a recommendation from our Principal Metallurgist which states that pad welding of the flaw may actually compromise the integrity of the pipe. Please see Attachment (3).

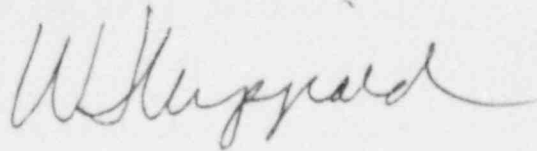
8805160112 880504
PDR ADOCK 05000317
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1/1

Document Control Desk
May 4, 1988
Page 2

Should you have any further questions this subject, we will be pleased to discuss them with you.

Very truly yours,

A handwritten signature in cursive script, appearing to read "W. T. Russell".

WJL/SRC/dlm

Attachments

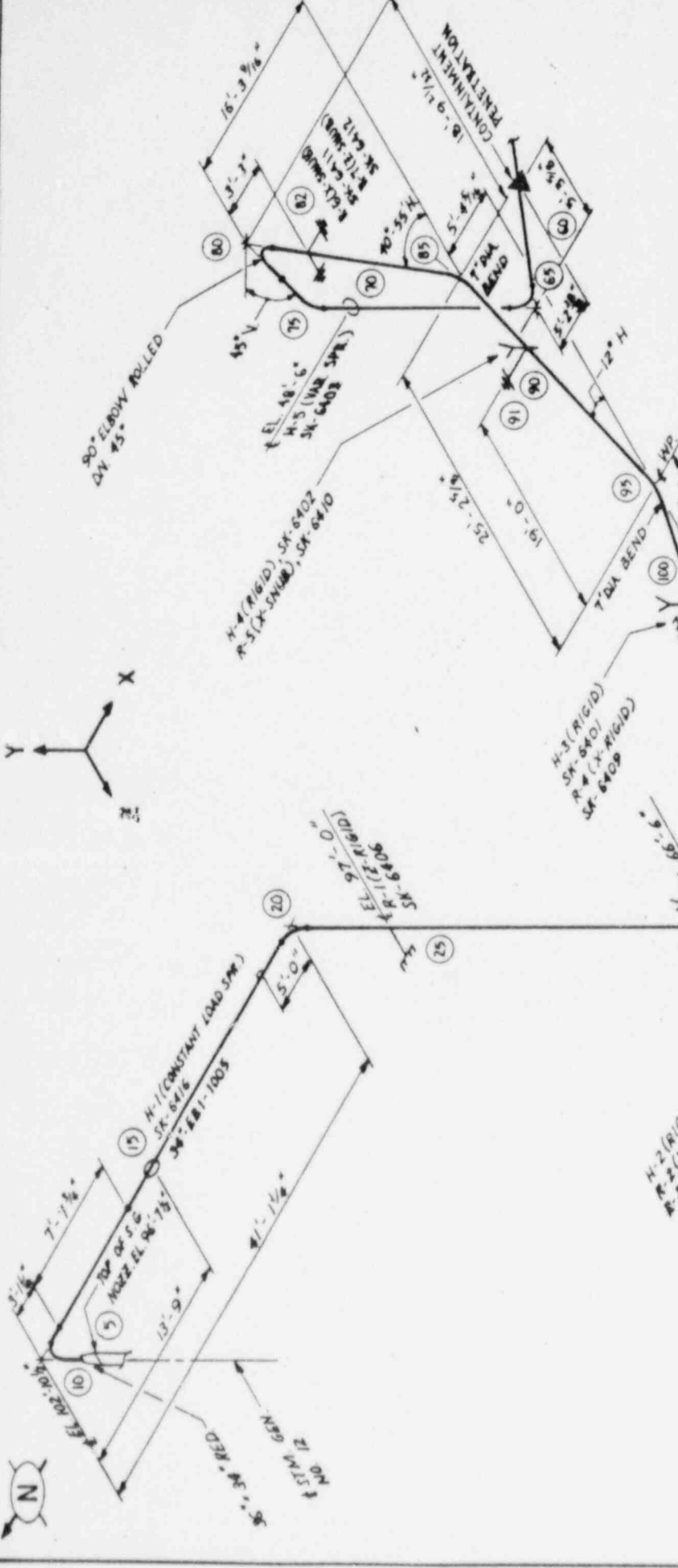
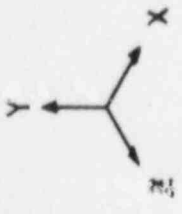
cc: D. A. Brune, Esquire
J. E. Silberg, Esquire
R. A. Capra, NRC
S. A. McNeil, NRC
W. T. Russell, NRC
D. C. Trimble, NRC

ATTACHMENT (1)

MATH MODEL AND MOMENT LOADING FOR
MAIN STEAM PIPING INSIDE CONTAINMENT

CALVERT CLIFFS NUCLEAR POWER PLANT
UNIT NO. 1

by: Bechtel Eastern Power Co.



| REV | DATE | DESCRIPTION | BY | CHK'D | DATE |
|-----|------|----------------|----|-------|------|
| A | 3/11 | ISSUED FOR USE | GD | ML | |

| SCALE | DESIGNED | DRAWN | TEST | LOG |
|-------|----------|-------|------|-----|
| | | | | |

| | |
|--|--------|
| BALTIMORE GAS & ELECTRIC CO. | |
| CALVERT CLIFFS | |
| BECHTEL POWER CORPORATION | |
| MAIN STEAM PIPING INSIDE CONTAINMENT, STM. GEN. NO. 12 | |
| 11865 | ME-123 |
| A | |

TITLE : C.C.UNIT#1 MAINSTEAM PIPING IN CTMT.
 PROJECT NUMBER : 11865
 PROBLEM NUMBER : 31
 USER : AJ
 LOAD CASE : THRM1

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------|--------------------|-------|-------|------------------------|---------|---------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 5 | TNGT | 1538 | 2578 | 9759 | 164489 | -281255 | 111692 |
| 8 | | -1538 | -2578 | -9759 | -154730 | 281255 | -113231 |
| 8 | TNGT | 1538 | 2578 | 9759 | 154730 | -281255 | 113231 |
| 10 | B | -1538 | -2578 | -9759 | -144971 | 281255 | -114769 |
| 10 | B BEND | 1538 | 2578 | 9759 | 144971 | -281255 | 114769 |
| 10 | M | -1538 | -2578 | -9759 | -115642 | 269106 | -116182 |
| 10 | M BEND | 1538 | 2578 | 9759 | 115642 | -269106 | 116182 |
| 10 | F | -1538 | -2578 | -9759 | -103494 | 239778 | -110351 |
| 10 | E TNGT | 1538 | 2578 | 9759 | 103494 | -239778 | 110351 |
| 10A | | -1538 | -2578 | -9759 | -103494 | 178783 | -94242 |
| 10A | TNGT | 1538 | 2578 | 9759 | 103494 | -178783 | 94242 |
| 15 | | -1538 | -2578 | -9759 | -103494 | 117788 | -78132 |
| 15 | TNGT | 1538 | 2578 | 9759 | 103494 | -117788 | 78132 |
| 15A | | -1538 | -2578 | -9759 | -103494 | 54827 | -61504 |
| 15A | TNGT | 1538 | 2578 | 9759 | 103494 | -54827 | 61504 |
| 15B | | -1538 | -2578 | -9759 | -103494 | -8133 | -44875 |
| 15B | TNGT | 1538 | 2578 | 9759 | 103494 | 8133 | 44875 |
| 18 | | -1538 | -2578 | -9759 | -103494 | -71094 | -28247 |
| 18 | TNGT | 1538 | 2578 | 9759 | 103494 | 71094 | 28247 |
| 20 | B | -1538 | -2578 | -9759 | -103494 | -78413 | -26314 |
| 20 | B BEND | 1538 | 2578 | 9759 | 103494 | 78413 | 26314 |
| 20 | M | -1538 | -2578 | -9759 | -115642 | -107742 | -16653 |
| 20 | M BEND | 1538 | 2578 | 9759 | 115642 | 107742 | 16653 |
| 20 | F | -1538 | -2578 | -9759 | -144971 | -119890 | -8822 |
| 20 | E TNGT | 1538 | 2578 | 9759 | 144971 | 119890 | 8822 |
| 25 | | -1538 | -2578 | -9759 | -160830 | -119890 | -6323 |
| 25 | TNGT | 1538 | 2578 | 14716 | 160830 | 119890 | 6323 |
| 25A | | -1538 | -2578 | 14716 | -48623 | -119890 | 5405 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|--------|--------|------------------------|---------|---------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 25A | TNGT | 1538 | 2578 | -14716 | 48623 | 119890 | -5405 |
| 25B | | -1538 | -2578 | 14716 | 63583 | -119890 | 17133 |
| 25B | TNGT | 1538 | 2578 | -14716 | -63583 | 119890 | -17133 |
| 25C | | -1538 | -2578 | 14716 | 175790 | -119890 | 28861 |
| 25C | TNGT | 1538 | 2578 | -14716 | -175790 | 119890 | -28861 |
| 30 | | -1538 | -2578 | 14716 | 287996 | -119890 | 40589 |
| 30 | TNGT | 4801 | -27018 | -14716 | -287996 | 119890 | -40589 |
| 45 B | | -4801 | 27018 | 14716 | 306391 | -119890 | 46591 |
| 45 B | BEND | 4801 | -27018 | -14716 | -306391 | 119890 | -46591 |
| 45 M | | -4801 | 27018 | 14716 | 318210 | -120742 | 52011 |
| 45 M | BEND | 4801 | -27018 | -14716 | -318210 | 120742 | -52011 |
| 45 E | | -4801 | 27018 | 14716 | 258299 | -122799 | 36240 |
| 45 E | TNGT | 4801 | -27018 | -14716 | -258299 | 122799 | -36240 |
| 45A | | -4801 | 27018 | 14716 | 101968 | -126909 | -7221 |
| 45A | TNGT | 4801 | -27018 | -14716 | -101968 | 126909 | 7221 |
| 45B | | -4801 | 27018 | 14716 | -54362 | -131020 | -50680 |
| 45B | TNGT | 4801 | -27018 | -14716 | 54362 | 131020 | 50680 |
| 100 | | -4801 | 27018 | 14716 | -210693 | -135129 | -94141 |
| 100 | TNGT | 4801 | 10690 | -14716 | 210693 | 135129 | 94141 |
| A | | -4801 | -10690 | 14716 | -189697 | -136524 | -88304 |
| A | TNGT | . 12751 | 0 | 0 | 0 | -7967 | 0 |
| 99 | | .-12751 | 0 | 0 | 0 | 3129 | 0 |
| 99 | CMPT | . 12751 | 0 | 0 | 0 | -3129 | 0 |
| 98 | | .-12751 | 0 | 0 | 0 | 0 | 0 |
| A | TNGT | -7950 | 10690 | -14716 | 189697 | 144492 | 88304 |
| 95 A | | 7950 | -10690 | 14716 | -147992 | -97518 | -76711 |
| 95 B | BEND | -7950 | 10690 | -14716 | 147992 | 97518 | 76711 |
| 95 M | | 7950 | -10690 | 14716 | -97746 | -49628 | -69066 |
| 95 M | BEND | -7950 | 10690 | -14716 | 97746 | 49628 | 69066 |
| 95 E | | . 7950 | -10690 | 14716 | -47124 | -18222 | -73599 |
| 95 E | TNGT | . -7950 | 10690 | -14716 | 47124 | 18222 | 73599 |
| 95A | | . 7950 | -10690 | 14716 | 29026 | 16127 | -89785 |
| 95A | TNGT | . -7950 | 10690 | -14716 | -29026 | -16127 | 89785 |
| 90 | | . 7950 | -10690 | 14716 | 105176 | 50477 | -105971 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------|--------------------|--------|--------|------------------------|--------|---------|
| | | FX | FY | FZ | MX | MY | MZ |
| FROM | TO | | | | | | |
| 90 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | CMPT | 0 | 0 | 0 | 0 | 0 | 0 |
| 92 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 90 | TNGT | -7950 | -11824 | -14716 | -105176 | -50477 | 105971 |
| 85 | R | 7950 | 11824 | 14716 | 90805 | 56341 | -102918 |
| 85 | B BEND | -7950 | -11824 | -14716 | -90805 | -56341 | 102918 |
| 85 | M | 7950 | 11824 | 14716 | 35062 | 69632 | -83483 |
| 85 | M BEND | -7950 | -11824 | -14716 | -35062 | -69632 | 83483 |
| 85 | F | 7950 | 11824 | 14716 | -14062 | 61915 | -50744 |
| 85 | F TNGT | -7950 | -11824 | -14716 | 14062 | -61915 | 50744 |
| 85A | | 7950 | 11824 | 14716 | -58163 | 44000 | -12524 |
| 85A | TNGT | -7950 | -11824 | -14716 | 58163 | -44000 | 12524 |
| 85B | | 7950 | 11824 | 14716 | -102265 | 26086 | 25696 |
| 85B | TNGT | -7950 | -11824 | -14716 | 102265 | -26086 | -25696 |
| 82 | | 7950 | 11824 | 14716 | -146367 | 8171 | 63917 |
| 82 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 81 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 81 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 83 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 82 | TNGT | -7950 | -11824 | -14716 | 146367 | -8171 | -63917 |
| 80 | B | 7950 | 11824 | 14716 | -152731 | 5586 | 69432 |
| 80 | B BEND | -7950 | -11824 | -14716 | 152731 | -5586 | -69432 |
| 80 | M | 7950 | 11824 | 14716 | -159815 | -19694 | 93572 |
| 80 | M BEND | -7950 | -11824 | -14716 | 159815 | 19694 | -93572 |
| 75 | B | 7950 | 11824 | 14716 | -123210 | -58908 | 105306 |
| 75 | B BEND | -7950 | -11824 | -14716 | 123210 | 58908 | -105306 |
| 75 | M | 7950 | 11824 | 14716 | -95786 | -73949 | 102576 |
| 75 | M BEND | -7950 | -11824 | -14716 | 95786 | 73949 | -102576 |
| 75 | F | 7950 | 11824 | 14716 | -69348 | -79231 | 92537 |
| 75 | F TNGT | -7950 | -11824 | -14716 | 69348 | 79231 | -92537 |
| 70 | | 7950 | 11824 | 14716 | 26152 | -79231 | 40944 |
| 70 | TNGT | -7950 | -11824 | -14716 | -26152 | 79231 | -40944 |
| 65 | R | 7950 | 11824 | 14716 | 118124 | -79231 | -8743 |

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------------------|--------|--------|------------------------|--------|---------|
| | FX | FY | FZ | MX | MY | MZ |
| FROM | | | | | | |
| TO | | | | | | |
| 65 B BEND | -7950 | -11824 | -14716 | -118124 | 79231 | 8743 |
| 65 M | 7950 | 11824 | 14716 | 151409 | -59619 | -42484 |
| 65 M BEND | -7950 | -11824 | -14716 | -151409 | 59619 | 42484 |
| 63 | 7950 | 11824 | 14716 | 143320 | -12273 | -76157 |
| 63 TNGT | -7950 | -11824 | -14716 | -143320 | 12273 | 76157 |
| 60 | 7950 | 11824 | 14716 | 111814 | 44204 | -104517 |

TITLE : C.C.UNIT#1 MAINSTEAM PIPING IN CTMT.
 PROJECT NUMBER : 11865
 PROBLEM NUMBER : 31
 USER : AJ
 LOAD CASE : WT1

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|-------|-----|------------------------|------|--------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 5 | TNGT | 30 | 3683 | 14 | -87 | -134 | 2306 |
| 8 | | -30 | -3281 | -14 | 101 | 134 | -2335 |
| 8 | TNGT | 30 | 3281 | 14 | -101 | -134 | 2335 |
| 10 B | | -30 | -2902 | -14 | 116 | 134 | -2365 |
| 10 B | BEND | 30 | 2902 | 14 | -116 | -134 | 2365 |
| 10 M | | -30 | -1636 | -14 | 159 | 116 | 118 |
| 10 M | BEND | 30 | 1636 | 14 | -159 | -116 | -118 |
| 10 F | | -30 | -371 | -14 | 176 | 73 | 2993 |
| 10 F | TNGT | 30 | 371 | 14 | -176 | -73 | -2993 |
| 10A | | -30 | 1999 | -14 | 176 | -16 | -2094 |
| 10A | TNGT | 30 | -1999 | 14 | -176 | 16 | 2094 |
| 15 | | -30 | 4368 | -14 | 176 | -106 | -21990 |
| 15 | TNGT | 30 | 5304 | 14 | -176 | 106 | 21990 |
| 15A | | -30 | -2858 | -14 | 176 | -198 | 4338 |
| 15A | TNGT | 30 | 2858 | 14 | -176 | 198 | -4338 |
| 15B | | -30 | -412 | -14 | 176 | -290 | 14886 |
| 15B | TNGT | 30 | 412 | 14 | -176 | 290 | -14886 |
| 18 | | -30 | 2034 | -14 | 176 | -383 | 9655 |
| 18 | TNGT | 30 | -2034 | 14 | -176 | 383 | -9655 |
| 20 B | | -30 | 2318 | -14 | 176 | -393 | 8023 |
| 20 B | BEND | 30 | -2318 | 14 | -176 | 393 | -8023 |
| 20 M | | -30 | 3584 | -14 | 159 | -436 | -704 |
| 20 M | BEND | 30 | -3584 | 14 | -159 | 436 | 704 |
| 20 F | | -30 | 4849 | -14 | 116 | -454 | -5611 |
| 20 F | TNGT | 30 | -4849 | 14 | -116 | 454 | 5611 |
| 25 | | -30 | 5465 | -14 | 92 | -454 | -5562 |
| 25 | TNGT | 30 | -5465 | 14 | -92 | 454 | 5562 |
| 25A | | -30 | 8356 | -14 | -508 | -454 | -5334 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|--------|-----|------------------------|-------|-------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 25A | TNGT | 30 | -8356 | 91 | 598 | 454 | 5334 |
| 25B | | -30 | 11247 | -91 | -1289 | -454 | -5107 |
| 25B | TNGT | 30 | -11247 | 91 | 1289 | 454 | 5107 |
| 25C | | -30 | 14138 | -91 | -1979 | -454 | -4879 |
| 25C | TNGT | 30 | -14138 | 91 | 1979 | 454 | 4879 |
| 30 | | -30 | 17028 | -91 | -2669 | -454 | -4651 |
| 30 | TNGT | 175 | 4099 | 91 | 2669 | 454 | 4651 |
| 45 B | | -175 | -4099 | -91 | -2783 | -454 | -4432 |
| 45 B | BEND | 175 | 4099 | 91 | 2783 | 454 | 4432 |
| 45 M | | -175 | -2833 | -91 | 860 | -694 | -2818 |
| 45 M | BEND | 175 | 2833 | 91 | -860 | 694 | 2818 |
| 45 E | | -175 | -1568 | -91 | 7019 | -1274 | -857 |
| 45 E | TNGT | 175 | 1568 | 91 | -7019 | 1274 | 857 |
| 45A | | -175 | 709 | -91 | 9503 | -2432 | -166 |
| 45A | TNGT | 175 | -709 | 91 | -9503 | 2432 | 166 |
| 45B | | -175 | 2986 | -91 | -1186 | -3590 | -3138 |
| 45B | TNGT | 175 | -2986 | 91 | 1186 | 3590 | 3138 |
| 100 | | -175 | 5263 | -91 | -25049 | -4748 | -9772 |
| 100 | TNGT | 175 | 4897 | 91 | 25049 | 4748 | 9772 |
| A | | -175 | -4124 | -91 | -16190 | -5141 | -7309 |
| A | TNGT | 286 | 0 | 0 | 0 | -179 | 0 |
| 99 | | -286 | 0 | 0 | 0 | 70 | 0 |
| 99 | CMPT | 286 | 0 | 0 | 0 | -70 | 0 |
| 98 | | -286 | 0 | 0 | 0 | 0 | 0 |
| A | TNGT | -111 | 4124 | 91 | 16190 | 5320 | 7309 |
| 95 B | | 111 | -2589 | -91 | -3095 | -4984 | -3669 |
| 95 B | BEND | -111 | 2589 | 91 | 3095 | 4984 | 3669 |
| 95 M | | 111 | -782 | -91 | 4802 | -4526 | -2293 |
| 95 M | BEND | -111 | 782 | 91 | -4802 | 4526 | 2293 |
| 95 F | | 111 | 1025 | -91 | 4244 | -3961 | -2070 |
| 95 F | TNGT | -111 | -1025 | 91 | -4244 | 3961 | 2070 |
| 95A | | 111 | 3785 | -91 | -12888 | -3032 | 1571 |
| 95A | TNGT | -111 | -3785 | 91 | 12888 | 3032 | -1571 |
| 95 | | 111 | 6546 | -91 | -49686 | -2103 | 9393 |

| FLPMENT TYPE/TITLE | | GLOBAL FORCES (Lb) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|-------|-----|------------------------|-------|--------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 90 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | CMPT | 0 | 0 | 0 | 0 | 0 | 0 |
| 92 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 90 | TNGT | -111 | 7300 | 91 | 49686 | 2103 | -9393 |
| 85 B | | 111 | -6828 | -91 | -41101 | -1944 | 7569 |
| 85 B | BEND | -111 | 6828 | 91 | 41101 | 1944 | -7569 |
| 85 M | | 111 | -4931 | -91 | -13317 | -1271 | -1906 |
| 85 M | BEND | -111 | 4931 | 91 | 13317 | 1271 | 1906 |
| 85 E | | 111 | -3033 | -91 | 3335 | -558 | -12765 |
| 85 E | TNGT | -111 | 3033 | 91 | -3335 | 558 | 12765 |
| 85A | | 111 | -1162 | -91 | 11157 | 149 | -19544 |
| 85A | TNGT | -111 | 1162 | 91 | -11157 | -149 | 19544 |
| 85B | | 111 | 710 | -91 | 12000 | 857 | -20274 |
| 85B | TNGT | -111 | -710 | 91 | -12000 | -857 | 20274 |
| 82 | | 111 | 2581 | -91 | 5863 | 1564 | -14956 |
| 82 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 81 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 81 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 83 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 82 | TNGT | -111 | -2581 | 91 | -5863 | -1564 | 14956 |
| 80 B | | 111 | 2851 | -91 | 4402 | 1666 | -13689 |
| 80 P | BEND | -111 | -2851 | 91 | -4402 | -1666 | 13689 |
| 80 M | | 111 | 4116 | -91 | -1386 | 2093 | -4548 |
| 80 M | BEND | -111 | -4116 | 91 | 1386 | -2093 | 4548 |
| 75 R | | 111 | 5382 | -91 | 802 | 2262 | 6605 |
| 75 R | BEND | -111 | -5382 | 91 | -802 | -2262 | -6605 |
| 75 M | | 111 | 6015 | -91 | 4097 | 2258 | 10397 |
| 75 M | BEND | -111 | -6015 | 91 | -4097 | -2258 | -10397 |
| 75 E | | 111 | 6647 | -91 | 5269 | 2257 | 11738 |
| 75 E | TNGT | -111 | -6647 | 91 | -5269 | -2257 | -11738 |
| 70 | | 111 | 9108 | -91 | 4682 | 2257 | 11016 |
| 70 | TNGT | -111 | 1426 | 91 | -4682 | -2257 | -11016 |
| 65 B | | 111 | 943 | -91 | 4116 | 2257 | 10321 |

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------------------|-------|-----|------------------------|-------|--------|
| | FX | FY | FZ | MX | MY | MZ |
| FROM | | | | | | |
| TO | | | | | | |
| 65 B BEND | -111 | -943 | 91 | -4116 | -2257 | -10321 |
| 65 M | 111 | 2209 | -91 | 2198 | 2284 | 8506 |
| 65 M BEND | -111 | -2209 | 91 | -2198 | -2284 | -8506 |
| 63 | 111 | 3474 | -91 | 4338 | 2350 | 2583 |
| 63 TNGT | -111 | -3474 | 91 | 4338 | -2350 | -2583 |
| 60 | 111 | 4834 | -91 | -15407 | 2429 | -7380 |

TITLE : C.C.UNIT#1 MAINSTEAM PIPING IN CTMT.
 PROJECT NUMBER : 11865
 PROBLEM NUMBER : 3J
 USER : AJ
 LOAD CASE : WT2

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | |
|--------------------|--------------------|-----|--------|------------------------|-------|------|--------|
| | FROM TO | FX | FY | FZ | MX | MY | MZ |
| 5 TNGT | 8 | 58 | 7115 | 28 | -167 | -257 | 4439 |
| 8 | 5 | -58 | -6317 | -28 | 195 | 257 | -4496 |
| 8 TNGT | 10 B | 58 | 6317 | 28 | -195 | -257 | 4496 |
| 10 B | 8 | -58 | -5587 | -28 | 222 | 257 | -4554 |
| 10 B BEND | 10 M | 58 | 5587 | 28 | -222 | -257 | 4554 |
| 10 M | 10 B | -58 | -3150 | -28 | 305 | 223 | 227 |
| 10 M BEND | 10 F | 58 | 3150 | 28 | -305 | -223 | -227 |
| 10 F | 10 M | -58 | -714 | -28 | 339 | 140 | 5762 |
| 10 E TNGT | 10A | 58 | 714 | 28 | -339 | -140 | -5762 |
| 10A | 10 E | -58 | 3848 | -28 | 339 | -32 | -4031 |
| 10A TNGT | 15 | 58 | -3848 | 28 | -339 | 32 | 4031 |
| 15 | 10A | -58 | 8410 | -28 | 339 | -204 | -42335 |
| 15 TNGT | 15A | 58 | 10211 | 28 | -339 | 204 | 42335 |
| 15A | 15 | -58 | -5502 | -28 | 339 | -381 | 8351 |
| 15A TNGT | 15B | 58 | 5502 | 28 | -339 | 381 | -8351 |
| 15B | 15A | -58 | -793 | -28 | 339 | -559 | 28659 |
| 15B TNGT | 18 | 58 | 793 | 28 | -339 | 559 | -28659 |
| 18 | 15B | -58 | 3915 | -28 | 339 | -737 | 18588 |
| 18 TNGT | 20 B | 58 | -3915 | 28 | -339 | 737 | -18588 |
| 20 B | 18 | -58 | 4463 | -28 | 339 | -757 | 15446 |
| 20 B BEND | 20 M | 58 | -4463 | 28 | -339 | 757 | -15446 |
| 20 M | 20 B | -58 | 6899 | -28 | 305 | -840 | -1355 |
| 20 M BEND | 20 F | 58 | -6899 | 28 | -305 | 840 | 1355 |
| 20 F | 20 M | -58 | 9336 | -28 | 222 | -874 | -10802 |
| 20 E TNGT | 25 | 58 | -9336 | 28 | -222 | 874 | 10802 |
| 25 | 20 E | -58 | 10522 | -28 | 178 | -874 | -10708 |
| 25 TNGT | 25A | 58 | -10522 | 174 | -178 | 874 | 10708 |
| 25A | 25 | -58 | 16087 | -174 | -1152 | -874 | -10270 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|--------|------|------------------------|-------|--------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 25A | TNGT | 58 | -16087 | 174 | 1152 | 874 | 10270 |
| 25B | | -58 | 21653 | -174 | -2481 | -874 | -9831 |
| 25B | TNGT | 58 | -21653 | 174 | 2481 | 874 | 9831 |
| 25C | | -58 | 27218 | -174 | -3810 | -874 | -9393 |
| 25C | TNGT | 58 | -27218 | 174 | 3810 | 874 | 9393 |
| 30 | | -58 | 32783 | -174 | -5139 | -874 | -8954 |
| 30 | TNGT | 337 | 8804 | 174 | 5139 | 874 | 8954 |
| 45 B | | -337 | -7891 | -174 | -5357 | -874 | -8533 |
| 45 B | BEND | 337 | 7891 | 174 | 5357 | 874 | 8533 |
| 45 M | | -337 | -5455 | -174 | 1656 | -1336 | -5426 |
| 45 M | BEND | 337 | 5455 | 174 | -1656 | 1336 | 5426 |
| 45 E | | -337 | -3018 | -174 | 13512 | -2452 | -1650 |
| 45 E | TNGT | 337 | 3018 | 174 | -13512 | 2452 | 1650 |
| 45A | | -337 | 1365 | -174 | 18296 | -4682 | -320 |
| 45A | TNGT | 337 | -1365 | 174 | -18296 | 4682 | 320 |
| 45B | | -337 | 5748 | -174 | -2283 | -6911 | -6041 |
| 45B | TNGT | 337 | -5748 | 174 | 2283 | 6911 | 6041 |
| 100 | | -337 | 10132 | -174 | -48224 | -9141 | -18813 |
| 100 | TNGT | 337 | 9428 | 174 | 48224 | 9141 | 18813 |
| A | | -337 | -7940 | -174 | -51169 | -9898 | -14071 |
| A | TNGT | 551 | 0 | 0 | 0 | -344 | 0 |
| 99 | | -551 | 0 | 0 | 0 | 135 | 0 |
| 99 | CMPT | 551 | 0 | 0 | 0 | -135 | 0 |
| 98 | | -551 | 0 | 0 | 0 | 0 | 0 |
| A | TNGT | -214 | 7940 | 174 | 51169 | 10242 | 14071 |
| 95 B | | 214 | -4984 | -174 | -5958 | -9596 | -7063 |
| 95 B | BEND | -214 | 4984 | 174 | 5958 | 9596 | 7063 |
| 95 M | | 214 | -1506 | -174 | 9245 | -8714 | -4415 |
| 95 M | BEND | -214 | 1506 | 174 | -9245 | 8714 | 4415 |
| 95 E | | 214 | 1972 | -174 | 8170 | -7626 | -3986 |
| 95 E | TNGT | -214 | -1972 | 174 | -8170 | 7626 | 3986 |
| 95A | | 214 | 7288 | -174 | -24811 | -5837 | 3025 |
| 95A | TNGT | -214 | -7288 | 174 | 24811 | 5837 | -3025 |
| 95 | | 214 | 12603 | -174 | -95657 | -4048 | 18083 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|--------|------|------------------------|-------|--------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 90 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | CMPT | 0 | 0 | 0 | 0 | 0 | 0 |
| 92 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 90 | TNGT | -214 | 14053 | 174 | 95657 | 4048 | -18083 |
| 85 B | | 214 | -13146 | -174 | -79128 | -3743 | 14572 |
| 85 B | BEND | -214 | 13146 | 174 | 79128 | 3743 | -14572 |
| 85 M | | 214 | -9492 | -174 | -25639 | -2447 | -3670 |
| 85 M | BEND | -214 | 9492 | 174 | 25639 | 2447 | 3670 |
| 85 E | | 214 | -5839 | -174 | 6420 | -1075 | -24575 |
| 85 E | TNGT | -214 | 5839 | 174 | -6420 | 1075 | 24575 |
| 85A | | 214 | -2236 | -174 | 21479 | 287 | -37626 |
| 85A | TNGT | -214 | 2236 | 174 | -21479 | -287 | 37626 |
| 85B | | 214 | 1366 | -174 | 23102 | 1649 | -39032 |
| 85B | TNGT | -214 | -1366 | 174 | -23102 | -1649 | 39032 |
| 82 | | 214 | 4969 | -174 | 11288 | 3011 | -28794 |
| 82 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 81 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 81 | TNGT | 0 | 0 | 0 | 0 | 0 | 0 |
| 83 | | 0 | 0 | 0 | 0 | 0 | 0 |
| 82 | TNGT | -214 | -4969 | 174 | -11288 | -3011 | 28794 |
| 80 B | | 214 | 5488 | -174 | 8474 | 3208 | -26355 |
| 80 B | BEND | -214 | -5488 | 174 | -8474 | -3208 | 26355 |
| 80 M | | 214 | 7925 | -174 | -2668 | 4030 | -8755 |
| 80 M | BEND | -214 | -7925 | 174 | 2668 | -4030 | 8755 |
| 75 B | | 214 | 10361 | -174 | 1544 | 4355 | 12716 |
| 75 B | BEND | -214 | -10361 | 174 | -1544 | -4355 | -12716 |
| 75 M | | 214 | 11579 | -174 | 7688 | 4347 | 20016 |
| 75 M | BEND | -214 | -11579 | 174 | -7688 | -4347 | -20016 |
| 75 E | | 214 | 12747 | -174 | 10144 | 4344 | 22598 |
| 75 E | TNGT | -214 | -12747 | 174 | -10144 | -4344 | -22598 |
| 70 | | 214 | 17534 | -174 | 9013 | 4344 | 21209 |
| 70 | TNGT | -214 | 2745 | 174 | -9013 | -4344 | -21209 |
| 65 B | | 214 | 1816 | -174 | 7923 | 4344 | 19871 |

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------------------|-------|------|------------------------|-------|--------|
| | FX | FY | FZ | MX | MY | MZ |
| FROM | | | | | | |
| TO | | | | | | |
| 65 B BEND | -214 | -1816 | 174 | -7923 | -4344 | -19871 |
| 65 M | 214 | 4253 | -174 | 4232 | 4397 | 16376 |
| 65 M BEND | -214 | -4253 | 174 | -4232 | -4397 | -16376 |
| 67 | 214 | 6689 | -174 | -8352 | 4525 | 4973 |
| 63 TNGT | -214 | -6689 | 174 | 8352 | -4525 | -4973 |
| 60 | 214 | 9306 | -174 | -29661 | 4677 | -14208 |

TITLE : C.C. UNIT#1 MAINSTEAM PIPING IN CTMT.
 PROJECT NUMBER : 11845
 PROBLEM NUMBER : 31
 USER : AJ
 LOAD CASE : SAM1

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------------------|------|------|------------------------|--------|-------|
| | FX | FY | FZ | MX | MY | MZ |
| FROM TO | | | | | | |
| 5 TNGT | 2608 | 1476 | 4223 | 10189 | 121560 | 23175 |
| 8 | 2608 | 1476 | 4223 | 7596 | 121560 | 20784 |
| 8 TNGT | 2608 | 1476 | 4223 | 7596 | 121560 | 20784 |
| 10 R | 2608 | 1476 | 4223 | 5016 | 121560 | 18450 |
| 10 R BEND | 2608 | 1476 | 4223 | 5016 | 121560 | 18450 |
| 10 M | 2608 | 1476 | 4223 | 12372 | 116306 | 10664 |
| 10 M BEND | 2608 | 1476 | 4223 | 12372 | 116306 | 10664 |
| 10 F | 2608 | 1476 | 4223 | 17625 | 103623 | 7522 |
| 10 F TNGT | 2608 | 1476 | 4223 | 17625 | 103623 | 7522 |
| 10A | 2608 | 1476 | 4223 | 17625 | 77254 | 11455 |
| 10A TNGT | 2608 | 1476 | 4223 | 17625 | 77254 | 11455 |
| 15 | 2608 | 1476 | 4223 | 17625 | 50909 | 19394 |
| 15 TNGT | 2608 | 1476 | 4223 | 17625 | 50909 | 19394 |
| 15A | 2608 | 1476 | 4223 | 17625 | 23824 | 28416 |
| 15A TNGT | 2608 | 1476 | 4223 | 17625 | 23824 | 28416 |
| 15R | 2608 | 1476 | 4223 | 17625 | 5265 | 37687 |
| 15R TNGT | 2608 | 1476 | 4223 | 17625 | 5265 | 37687 |
| 18 | 2608 | 1476 | 4223 | 17625 | 31180 | 47058 |
| 18 TNGT | 2608 | 1476 | 4223 | 17625 | 31180 | 47058 |
| 20 R | 2608 | 1476 | 4223 | 17625 | 34326 | 48152 |
| 20 R BEND | 2608 | 1476 | 4223 | 17625 | 34326 | 48152 |
| 20 M | 2608 | 1476 | 4223 | 12372 | 46961 | 49300 |
| 20 M BEND | 2608 | 1476 | 4223 | 12372 | 46961 | 49300 |
| 20 F | 2608 | 1476 | 4223 | 5016 | 52203 | 43308 |
| 20 F TNGT | 2608 | 1476 | 4223 | 5016 | 52203 | 43308 |
| 25 | 2608 | 1476 | 4223 | 9216 | 52203 | 39088 |
| 25 TNGT | 2608 | 1476 | 890 | 9216 | 52203 | 39088 |
| 25A | 2608 | 1476 | 890 | 4664 | 52203 | 19385 |

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | |
|--------------------|--------------------|------|------|------------------------|-------|-------|-------|
| | FROM TO | FX | FY | FZ | MX | MY | MZ |
| 25A TNGT | | 2608 | 1476 | 890 | 4664 | 52203 | 19385 |
| 25B | | 2608 | 1476 | 890 | 7457 | 52203 | 3917 |
| 25B TNGY | | 2608 | 1476 | 890 | 7457 | 52203 | 3917 |
| 25C | | 2608 | 1476 | 890 | 13211 | 52203 | 21063 |
| 25C TNGT | | 2608 | 1476 | 890 | 13211 | 52203 | 21063 |
| 30 | | 2608 | 1476 | 890 | 19617 | 52203 | 40788 |
| 30 TNGT | | 3065 | 1576 | 3213 | 19617 | 52203 | 40788 |
| 45 B | | 3065 | 1576 | 3213 | 20413 | 52203 | 37598 |
| 45 B BEND | | 3065 | 1576 | 3213 | 20413 | 52203 | 37598 |
| 45 M | | 3065 | 1576 | 3213 | 23277 | 49216 | 30243 |
| 45 M BEND | | 3065 | 1576 | 3213 | 23277 | 49216 | 30243 |
| 45 E | | 3065 | 1576 | 3213 | 22893 | 42438 | 27307 |
| 45 E TNGT | | 3065 | 1576 | 3213 | 22893 | 42438 | 27307 |
| 45A | | 3065 | 1576 | 3213 | 18056 | 32030 | 26656 |
| 45A TNGT | | 3065 | 1576 | 3213 | 18056 | 32030 | 26656 |
| 45b | | 3065 | 1576 | 3213 | 16592 | 29541 | 26205 |
| 45B TNGT | | 3065 | 1576 | 3213 | 16592 | 29541 | 26205 |
| 100 | | 3065 | 1576 | 3213 | 19284 | 36626 | 25968 |
| 100 TNGT | | 3065 | 555 | 3213 | 19284 | 36626 | 25968 |
| A | | 3065 | 555 | 3213 | 18220 | 40516 | 26260 |
| A TNGT | | 4781 | 0 | 0 | 0 | 2987 | 0 |
| 99 | | 4781 | 0 | 0 | 0 | 1173 | 0 |
| 99 CMPT | | 4781 | 0 | 0 | 0 | 1173 | 0 |
| 98 | | 4781 | 0 | 0 | 0 | 0 | 0 |
| A TNGT | | 1928 | 555 | 3213 | 18220 | 43392 | 26260 |
| 95 B | | 1928 | 555 | 3213 | 16116 | 33976 | 26840 |
| 95 B BEND | | 1928 | 555 | 3213 | 16116 | 33976 | 26840 |
| 95 M | | 1928 | 555 | 3213 | 13651 | 24223 | 27223 |
| 95 M BEND | | 1928 | 555 | 3213 | 13651 | 24223 | 27223 |
| 95 E | | 1928 | 555 | 3213 | 11315 | 16373 | 26996 |
| 95 E TNGT | | 1928 | 555 | 3213 | 11315 | 16373 | 26996 |
| 95A | | 1928 | 555 | 3213 | 8077 | 5881 | 26186 |
| 95A TNGT | | 1928 | 555 | 3213 | 8077 | 5881 | 26186 |
| 95 | | 1928 | 555 | 3213 | 5699 | 6303 | 25377 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|------|------|------------------------|-------|-------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 90 | TNGT | 1497 | 0 | 0 | 0 | 726 | 0 |
| 91 | | 1497 | 0 | 0 | 0 | 285 | 0 |
| 91 | CMPT | 1497 | 0 | 0 | 0 | 285 | 0 |
| 92 | | 1497 | 0 | 0 | 0 | 0 | 0 |
| 90 | TNGT | 2086 | 1238 | 3213 | 5699 | 6225 | 25377 |
| 85 R | | 2086 | 1238 | 3213 | 6517 | 7761 | 25122 |
| 85 B | BEND | 2086 | 1238 | 3213 | 6517 | 7761 | 25122 |
| 85 M | | 2086 | 1238 | 3213 | 10819 | 12131 | 23535 |
| 85 M | BEND | 2086 | 1238 | 3213 | 10819 | 12131 | 23535 |
| 85 E | | 2086 | 1238 | 3213 | 15172 | 12044 | 21038 |
| 85 E | TNGT | 2086 | 1238 | 3213 | 15172 | 12044 | 21038 |
| 85A | | 2086 | 1238 | 3213 | 19377 | 9821 | 18504 |
| 85A | TNGT | 2086 | 1238 | 3213 | 19377 | 9821 | 18504 |
| 85B | | 2086 | 1238 | 3213 | 23898 | 7857 | 16560 |
| 85B | TNGT | 2086 | 1238 | 3213 | 23898 | 7857 | 16560 |
| 82 | | 2086 | 1238 | 3213 | 28450 | 6448 | 15582 |
| 82 | TNGT | 3115 | 2746 | 3594 | 1 | 0 | 1 |
| 81 | | 3115 | 2746 | 3594 | 0 | 0 | 0 |
| 81 | TNGT | 3115 | 2746 | 3594 | 0 | 0 | 0 |
| 83 | | 3115 | 2746 | 3594 | 0 | 0 | 0 |
| 82 | TNGT | 2958 | 2819 | 3108 | 28450 | 6448 | 15581 |
| 80 R | | 2958 | 2819 | 3108 | 29011 | 5545 | 16785 |
| 80 R | BEND | 2958 | 2819 | 3108 | 29011 | 5545 | 16785 |
| 80 M | | 2958 | 2819 | 3108 | 28720 | 8482 | 21079 |
| 80 M | BEND | 2958 | 2819 | 3108 | 28720 | 8482 | 21079 |
| 75 R | | 2958 | 2819 | 3108 | 21442 | 16794 | 21196 |
| 75 R | BEND | 2958 | 2819 | 3108 | 21442 | 16794 | 21196 |
| 75 M | | 2958 | 2819 | 3108 | 16692 | 20086 | 18966 |
| 75 M | BEND | 2958 | 2819 | 3108 | 16692 | 20086 | 18966 |
| 75 E | | 2958 | 2819 | 3108 | 11992 | 21255 | 14812 |
| 75 E | TNGT | 2958 | 2819 | 3108 | 11992 | 21255 | 14812 |
| 70 | | 2958 | 2819 | 3108 | 11477 | 21255 | 5211 |
| 70 | TNGT | 2958 | 2819 | 3108 | 11477 | 21255 | 5211 |
| 65 R | | 2958 | 2819 | 3108 | 29570 | 21255 | 23401 |

| ELEMENT TYPE/TITLE FROM TO | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|----------------------------------|--------------------|------|------|------------------------|-------|-------|
| | FX | FY | FZ | MX | MY | MZ |
| 65 B BEND | 2958 | 2819 | 3108 | 29570 | 21255 | 23401 |
| 65 M | 2958 | 2819 | 3108 | 36959 | 16928 | 34521 |
| 65 M BEND | 2958 | 2819 | 3108 | 36959 | 16928 | 34521 |
| 63 | 2958 | 2819 | 3108 | 36750 | 8446 | 43811 |
| 63 TNGT | 2958 | 2819 | 3108 | 36750 | 8446 | 43811 |
| 60 | 2958 | 2819 | 3108 | 32990 | 12125 | 50558 |

TITLE : C.C.UNIT#1 MAINSTEAM PIPING IN CTMT.
 PROJECT NUMBER : 11865
 PROBLEM NUMBER : 31
 USER : AJ
 LOAD CASE : SAM2

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | |
|--------------------|--------------------|------|------|------------------------|-------|--------|-------|
| | FROM TO | FX | FY | FZ | MX | MY | MZ |
| 5 TNGT | | 4561 | 2616 | 7426 | 17438 | 213814 | 41838 |
| 8 | | 4561 | 2616 | 7426 | 13269 | 213814 | 37741 |
| 8 TNGT | | 4561 | 2616 | 7426 | 13269 | 213814 | 37741 |
| 10 B | | 4561 | 2616 | 7426 | 9120 | 213814 | 33763 |
| 10 B BEND | | 4561 | 2616 | 7426 | 9120 | 213814 | 33763 |
| 10 M | | 4561 | 2616 | 7426 | 22569 | 204575 | 20583 |
| 10 M BEND | | 4561 | 2616 | 7426 | 22569 | 204575 | 20583 |
| 10 F | | 4561 | 2616 | 7426 | 31808 | 182272 | 14951 |
| 10 F TNGT | | 4561 | 2616 | 7426 | 31808 | 182272 | 14951 |
| 10A | | 4561 | 2616 | 7426 | 31808 | 135901 | 20500 |
| 10A TNGT | | 4561 | 2616 | 7426 | 31808 | 135901 | 20500 |
| 15 | | 4561 | 2616 | 7426 | 31808 | 89570 | 33937 |
| 15 TNGT | | 4561 | 2616 | 7426 | 31808 | 89570 | 33937 |
| 15A | | 4561 | 2616 | 7426 | 31808 | 41932 | 49676 |
| 15A TNGT | | 4561 | 2616 | 7426 | 31808 | 41932 | 49676 |
| 15B | | 4561 | 2616 | 7426 | 31808 | 9150 | 65981 |
| 15B TNGT | | 4561 | 2616 | 7426 | 31808 | 9150 | 65981 |
| 18 | | 4561 | 2616 | 7426 | 31808 | 54764 | 82518 |
| 18 TNGT | | 4561 | 2616 | 7426 | 31808 | 54764 | 82518 |
| 20 B | | 4561 | 2616 | 7426 | 31808 | 60297 | 84449 |
| 20 B BEND | | 4561 | 2616 | 7426 | 31808 | 60297 | 84449 |
| 20 M | | 4561 | 2616 | 7426 | 22569 | 82519 | 86539 |
| 20 M BEND | | 4561 | 2616 | 7426 | 22569 | 82519 | 86539 |
| 20 F | | 4561 | 2616 | 7426 | 9120 | 91737 | 76106 |
| 20 F TNGT | | 4561 | 2616 | 7426 | 9120 | 91737 | 76106 |
| 25 | | 4561 | 2616 | 7426 | 15873 | 91737 | 68733 |
| 25 TNGT | | 4561 | 2616 | 1521 | 15873 | 91737 | 68733 |
| 25A | | 4561 | 2616 | 1521 | 6185 | 91737 | 34361 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|------|------|------------------------|-------|-------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 25A | TNGT | 4561 | 2616 | 1521 | 8185 | 91737 | 34361 |
| 25B | | 4561 | 2616 | 1521 | 12938 | 91737 | 7686 |
| 25B | TNGT | 4561 | 2616 | 1521 | 12938 | 91737 | 7686 |
| 25C | | 4561 | 2616 | 1521 | 22659 | 91737 | 36734 |
| 25C | TNGT | 4561 | 2616 | 1521 | 22659 | 91737 | 36734 |
| 30 | | 4561 | 2616 | 1521 | 33553 | 91737 | 71145 |
| 30 | TNGT | 5356 | 2722 | 5559 | 33553 | 91737 | 71145 |
| 45 B | | 5356 | 2722 | 5559 | 34778 | 91737 | 65602 |
| 45 B | BEND | 5356 | 2722 | 5559 | 34778 | 91737 | 65602 |
| 45 M | | 5356 | 2722 | 5559 | 39499 | 86492 | 52829 |
| 45 M | BEND | 5356 | 2722 | 5559 | 39499 | 86492 | 52829 |
| 45 E | | 5356 | 2722 | 5559 | 38948 | 74574 | 47724 |
| 45 E | TNGT | 5356 | 2722 | 5559 | 38948 | 74574 | 47724 |
| 45A | | 5356 | 2722 | 5559 | 30982 | 56150 | 46522 |
| 45A | TNGT | 5356 | 2722 | 5559 | 30982 | 56150 | 46522 |
| 45B | | 5356 | 2722 | 5559 | 28887 | 51456 | 45655 |
| 45B | TNGT | 5356 | 2722 | 5559 | 28887 | 51456 | 45655 |
| 100 | | 5356 | 2722 | 5559 | 33774 | 63614 | 45142 |
| 100 | TNGT | 5356 | 954 | 5559 | 33774 | 63614 | 45142 |
| A | | 5356 | 954 | 5559 | 31941 | 70378 | 45644 |
| A | TNGT | 8323 | 0 | 0 | 0 | 5200 | 0 |
| 99 | | 8323 | 0 | 0 | 0 | 2042 | 0 |
| 99 | CMPT | 8323 | 0 | 0 | 0 | 2042 | 0 |
| 98 | | 8323 | 0 | 0 | 0 | 0 | 0 |
| A | TNGT | 3347 | 954 | 5559 | 31941 | 75377 | 45644 |
| 95 B | | 3347 | 954 | 5559 | 28317 | 59042 | 46643 |
| 95 B | BEND | 3347 | 954 | 5559 | 28317 | 59042 | 46643 |
| 95 M | | 3347 | 954 | 5559 | 24067 | 42115 | 47302 |
| 95 M | BEND | 3347 | 954 | 5559 | 24067 | 42115 | 47302 |
| 95 E | | 3347 | 954 | 5559 | 20049 | 28489 | 46911 |
| 95 E | TNGT | 3347 | 954 | 5559 | 20049 | 28489 | 46911 |
| 95A | | 3347 | 954 | 5559 | 14447 | 10282 | 45517 |
| 95A | TNGT | 3347 | 954 | 5559 | 14447 | 10282 | 45517 |
| 95 | | 3347 | 954 | 5559 | 10180 | 10873 | 44126 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|------|------|------------------------|-------|-------|
| FROM | | FX | FY | FZ | MX | MY | MZ |
| TO | | | | | | | |
| 90 | TNGT | 2588 | 0 | 0 | 0 | 1256 | 0 |
| 91 | | 2588 | 0 | 0 | 0 | 494 | 0 |
| 91 | CMPT | 2588 | 0 | 0 | 0 | 494 | 0 |
| 92 | | 2588 | 0 | 0 | 0 | 0 | 0 |
| 90 | TNGT | 3603 | 2141 | 5559 | 10180 | 10738 | 44126 |
| 85 B | | 3603 | 2141 | 5559 | 11439 | 13395 | 43680 |
| 85 B | BEND | 3603 | 2141 | 5559 | 11439 | 13395 | 43680 |
| 85 M | | 3603 | 2141 | 5559 | 18458 | 20932 | 40903 |
| 85 M | BEND | 3603 | 2141 | 5559 | 18458 | 20932 | 40903 |
| 85 P | | 3603 | 2141 | 5559 | 25760 | 20745 | 36516 |
| 85 E | TNGT | 3603 | 2141 | 5559 | 25760 | 20745 | 36516 |
| 85A | | 3603 | 2141 | 5559 | 32916 | 16855 | 32028 |
| 85A | TNGT | 3603 | 2141 | 5559 | 32916 | 16855 | 32028 |
| 85B | | 3603 | 2141 | 5559 | 40706 | 13409 | 28532 |
| 85B | TNGT | 3603 | 2141 | 5559 | 40706 | 13409 | 28532 |
| 82 | | 3603 | 2141 | 5559 | 48560 | 10943 | 26730 |
| 82 | TNGT | 5332 | 4701 | 6152 | 1 | 1 | 2 |
| 81 | | 5332 | 4701 | 6152 | 0 | 1 | 0 |
| 81 | TNGT | 5332 | 4701 | 6152 | 0 | 1 | 0 |
| 83 | | 5332 | 4701 | 6152 | 0 | 0 | 0 |
| 82 | TNGT | 5022 | 4794 | 5288 | 48560 | 10943 | 26728 |
| 80 B | | 5022 | 4794 | 5288 | 49482 | 9431 | 28765 |
| 80 B | BEND | 5022 | 4794 | 5288 | 49482 | 9431 | 28765 |
| 80 M | | 5022 | 4794 | 5288 | 48950 | 14483 | 35997 |
| 80 M | BEND | 5022 | 4794 | 5288 | 48950 | 14483 | 35997 |
| 75 B | | 5022 | 4794 | 5288 | 36562 | 28622 | 36133 |
| 75 B | BEND | 5022 | 4794 | 5288 | 36562 | 28622 | 36133 |
| 75 M | | 5022 | 4794 | 5288 | 28548 | 34221 | 32330 |
| 75 M | BEND | 5022 | 4794 | 5288 | 28548 | 34221 | 32330 |
| 75 F | | 5022 | 4794 | 5288 | 20601 | 36209 | 25273 |
| 75 F | BEND | 5022 | 4794 | 5288 | 20601 | 36209 | 25273 |
| 75 E | TNGT | 5022 | 4794 | 5288 | 20601 | 36209 | 25273 |
| 70 | | 5022 | 4794 | 5288 | 19545 | 36209 | 8939 |
| 70 | TNGT | 5022 | 4794 | 5288 | 19545 | 36209 | 8939 |
| 75 P | | 5022 | 4794 | 5288 | 50171 | 36209 | 39740 |

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------------------|------|------|------------------------|-------|-------|
| | FX | FY | FZ | MX | MY | MZ |
| FROM | | | | | | |
| TO | | | | | | |
| 65 B BEND | 5022 | 4794 | 5288 | 50171 | 36209 | 39740 |
| 65 M | 5022 | 4794 | 5288 | 62756 | 28850 | 58593 |
| 65 M BEND | 5022 | 4794 | 5288 | 62756 | 28850 | 58593 |
| 63 | 5022 | 4794 | 5288 | 62448 | 14468 | 74370 |
| 63 TNGT | 5022 | 4794 | 5288 | 62448 | 14468 | 74370 |
| 60 | 5022 | 4794 | 5288 | 56137 | 20643 | 85848 |

TITLE : C.C.UNIT#1 MAINSTEAM PIPING IN CTMT.
 PROJECT NUMBER : 11865
 PROBLEM NUMBER : 31
 USER : AJ
 LOAD CASE : SEIS1

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|------|------|------------------------|-------|-------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 5 | TNGT | 6912 | 1393 | 3886 | 25466 | 18917 | 31903 |
| 8 | | 6791 | 1393 | 3886 | 21585 | 18917 | 25098 |
| 8 | TNGT | 6791 | 1393 | 3885 | 21585 | 18917 | 25098 |
| 10 B | | 4317 | 2338 | 3885 | 17707 | 18917 | 19027 |
| 10 B | BEND | 4301 | 2338 | 3877 | 17707 | 18917 | 19027 |
| 10 M | | 4301 | 2338 | 3877 | 6128 | 14096 | 4576 |
| 10 M | BEND | 4301 | 2338 | 3877 | 6128 | 14096 | 4576 |
| 10 E | | 5918 | 1393 | 3877 | 1665 | 2541 | 8449 |
| 10 E | TNGT | 5918 | 1174 | 3336 | 1665 | 2541 | 8449 |
| 10A | | 3934 | 1990 | 3336 | 1665 | 18432 | 19291 |
| 10A | TNGT | 575 | 1224 | 2291 | 1665 | 18432 | 19291 |
| 15 | | 3575 | 1224 | 2291 | 1665 | 32731 | 26628 |
| 15 | TNGT | 3209 | 243 | 821 | 1665 | 32731 | 26628 |
| 15A | | 3209 | 243 | 821 | 1665 | 37966 | 27418 |
| 15A | TNGT | 2838 | 1025 | 914 | 1665 | 37966 | 27418 |
| 15B | | 2838 | 1025 | 914 | 1665 | 32144 | 20944 |
| 15B | TNGT | 2475 | 1946 | 2581 | 1665 | 32144 | 20944 |
| 18 | | 2475 | 1946 | 2581 | 1665 | 15545 | 8803 |
| 18 | TNGT | 2277 | 2234 | 3372 | 1665 | 15545 | 8803 |
| 20 B | | 2277 | 2234 | 3372 | 1665 | 13028 | 7276 |
| 20 B | BEND | 2080 | 2505 | 4168 | 1665 | 13028 | 7276 |
| 20 M | | 2080 | 2505 | 4168 | 4153 | 1300 | 3242 |
| 20 M | BEND | 2080 | 2505 | 4168 | 4153 | 1300 | 3242 |
| 20 E | | 2080 | 2505 | 4168 | 16557 | 4901 | 10882 |
| 20 E | TNGT | 1666 | 2597 | 4581 | 16557 | 4901 | 10882 |
| 25 | | 1666 | 2597 | 4581 | 23987 | 4901 | 13256 |
| 25 | TNGT | 1163 | 2708 | 1357 | 23987 | 4901 | 13256 |
| 25A | | 1163 | 2708 | 1357 | 18082 | 4901 | 21280 |

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (F1-LB) | | |
|--------------------|--------------------|------|------|------------------------|-------|-------|
| | FX | FY | FZ | MX | MY | MZ |
| FROM TO | | | | | | |
| 25A TNGT | 279 | 2907 | 963 | 18082 | 4901 | 21280 |
| 25B | 279 | 2907 | 963 | 15905 | 4901 | 20982 |
| 25B TNGT | 1176 | 3119 | 1136 | 15905 | 4901 | 20982 |
| 25C | 1176 | 3119 | 1136 | 16187 | 4901 | 12773 |
| 25C TNGT | 1863 | 3338 | 1759 | 16187 | 4901 | 12773 |
| 30 | 1863 | 3338 | 1759 | 24225 | 4901 | 6625 |
| 30 TNGT | 1523 | 817 | 8273 | 24225 | 4901 | 6625 |
| 45 B | 1523 | 817 | 8273 | 13907 | 4901 | 4936 |
| 45 B BEND | 1477 | 772 | 7765 | 13907 | 4901 | 4936 |
| 45 M | 1477 | 772 | 7765 | 8754 | 4696 | 2871 |
| 45 M BEND | 1477 | 772 | 7765 | 8754 | 4696 | 2871 |
| 45 E | 1477 | 772 | 7765 | 16476 | 5251 | 4006 |
| 45 E TNGT | 1410 | 869 | 6680 | 16476 | 5251 | 4006 |
| 45A | 1410 | 869 | 6680 | 11759 | 8399 | 3062 |
| 45A TNGT | 1443 | 1028 | 5639 | 11759 | 8399 | 3062 |
| 45B | 1443 | 1028 | 5639 | 6216 | 7784 | 2798 |
| 45B TNGT | 1545 | 1227 | 4590 | 6216 | 7784 | 2798 |
| 100 | 1545 | 1227 | 4590 | 4438 | 4877 | 2716 |
| 100 TNGT | 1620 | 1289 | 3887 | 4438 | 4877 | 2716 |
| A | 1620 | 1289 | 3887 | 3016 | 4523 | 2461 |
| A TNGT | 3012 | 0 | 0 | 0 | 1882 | 0 |
| 99 | 3012 | 0 | 0 | 0 | 739 | 0 |
| 99 CMPT | 3012 | 0 | 0 | 0 | 739 | 0 |
| 98 | 2506 | 0 | 0 | 0 | 0 | 0 |
| A TNGT | 1554 | 1092 | 3356 | 2656 | 7008 | 2218 |
| 95 B | 1490 | 1092 | 3356 | 4725 | 5186 | 2434 |
| 95 B BEND | 891 | 578 | 2178 | 4725 | 5186 | 2434 |
| 95 M | 891 | 578 | 2178 | 7257 | 6757 | 2646 |
| 95 M BEND | 891 | 578 | 2178 | 7257 | 6757 | 2646 |
| 95 E | 891 | 578 | 2178 | 9908 | 10209 | 2481 |
| 95 E TNGT | 472 | 557 | 785 | 9908 | 10209 | 2481 |
| 95A | 472 | 557 | 785 | 10348 | 8560 | 2521 |
| 95A TNGT | 1113 | 1054 | 837 | 10348 | 8560 | 2521 |
| 90 | 1113 | 1054 | 837 | 12833 | 7059 | 3221 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|------|------|------------------------|-------|-------|
| FROM | TO | FX | FY | FZ | MX | MY | MZ |
| 90 | TNGT | 3064 | 0 | 0 | 0 | 1487 | 0 |
| 91 | | 3064 | 0 | 0 | 0 | 584 | 0 |
| 91 | CMPT | 3064 | 0 | 0 | 0 | 584 | 0 |
| 92 | | 2294 | 0 | 0 | 0 | 0 | 0 |
| 90 | TNGT | 2374 | 1892 | 1487 | 12833 | 6578 | 3221 |
| 85 B | | 2374 | 1892 | 1487 | 10623 | 7892 | 3212 |
| 85 B | BEND | 2160 | 1636 | 2485 | 10623 | 7892 | 3212 |
| 85 M | | 2160 | 1636 | 2485 | 3767 | 13950 | 4718 |
| 85 M | BEND | 2160 | 1636 | 2485 | 3767 | 13950 | 4718 |
| 85 E | | 2160 | 1636 | 2485 | 5090 | 16183 | 8793 |
| 85 E | TNGT | 1944 | 1055 | 3786 | 5090 | 16183 | 8793 |
| 85A | | 1944 | 1055 | 3786 | 8221 | 11358 | 11935 |
| 85A | TNGT | 1901 | 760 | 4580 | 8221 | 11358 | 11935 |
| 85B | | 1901 | 760 | 4580 | 10181 | 7367 | 13830 |
| 85B | TNGT | 1965 | 709 | 5291 | 10181 | 7367 | 13830 |
| 82 | | 1965 | 709 | 5291 | 10963 | 7286 | 14573 |
| 82 | TNGT | 4336 | 3822 | 5003 | 1 | 1 | 1 |
| 81 | | 4336 | 3822 | 5003 | 0 | 1 | 0 |
| 81 | TNGT | 4336 | 3822 | 5003 | 0 | 1 | 0 |
| 83 | | 4336 | 3822 | 5003 | 0 | 0 | 0 |
| 82 | TNGT | 1764 | 3703 | 1659 | 10964 | 7287 | 14575 |
| 80 B | | 1764 | 3703 | 1659 | 8978 | 6882 | 12850 |
| 80 B | BEND | 1218 | 3990 | 1427 | 8978 | 6882 | 12850 |
| 80 M | | 1218 | 3990 | 1427 | 2866 | 5327 | 2613 |
| 80 M | BEND | 1218 | 3990 | 1427 | 2866 | 5327 | 2613 |
| 75 B | | 1218 | 3990 | 1427 | 6051 | 3700 | 7059 |
| 75 B | BEND | 537 | 4169 | 754 | 6051 | 3700 | 7059 |
| 75 M | | 537 | 4169 | 754 | 8648 | 3659 | 9827 |
| 75 M | BEND | 537 | 4169 | 754 | 8648 | 3659 | 9827 |
| 75 E | | 537 | 4169 | 754 | 9701 | 3745 | 10729 |
| 75 E | TNGT | 251 | 4324 | 439 | 9701 | 3745 | 10729 |
| 70 | | 251 | 4324 | 439 | 6992 | 3745 | 9968 |
| 70 | TNGT | 658 | 4524 | 898 | 6992 | 3745 | 9968 |
| 65 B | | 658 | 4524 | 898 | 2837 | 3745 | 8626 |

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------------------|------|------|------------------------|------|-------|
| | FX | FY | FZ | MX | MY | MZ |
| FROM | | | | | | |
| TU | | | | | | |
| 65 B BEND | 883 | 4724 | 1113 | 2837 | 3745 | 8626 |
| 65 M | 883 | 4724 | 1113 | 6176 | 4012 | 5103 |
| 65 M BEND | 883 | 4724 | 1113 | 6176 | 4012 | 5103 |
| 63 | 883 | 4724 | 1113 | 17891 | 5548 | 6296 |
| 63 TNGT | 895 | 4751 | 1117 | 17891 | 5548 | 6296 |
| 60 | 895 | 4751 | 1117 | 30493 | 8241 | 17522 |

TITLE : C.C.UNIT#1 MAINSTEAM PIPING IN CTMT.
 PROJECT NUMBER : 11865
 PROBLEM NUMBER : 31
 USER : AJ
 LOAD CASE : SEIS2

| ELEMENT TYPE/TITLE | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | | |
|--------------------|--------------------|-------|------|------------------------|-------|-------|-------|
| | FROM TO | FX | FY | FZ | MX | MY | MZ |
| 5 TNGT | 8 | 12960 | 2613 | 7286 | 47749 | 35470 | 59818 |
| | | 12733 | 2613 | 7286 | 40472 | 35470 | 47058 |
| 8 TNGT | 10 R | 12733 | 2612 | 7285 | 40472 | 35470 | 47058 |
| | | 8095 | 4384 | 7285 | 33200 | 35470 | 35676 |
| 10 B BEND | 10 M | 8064 | 4383 | 7270 | 33200 | 35470 | 35676 |
| | | 8064 | 4383 | 7270 | 11489 | 26430 | 8581 |
| 10 M BEND | 10 F | 8064 | 4383 | 7270 | 11489 | 26430 | 8581 |
| | | 11097 | 2612 | 7270 | 3122 | 4764 | 15841 |
| 10 F TNGT | 10A | 11097 | 2202 | 6256 | 3122 | 4764 | 15841 |
| | | 7376 | 3732 | 6256 | 3122 | 34560 | 36171 |
| 10A TNGT | 15 | 6703 | 2296 | 4296 | 3122 | 34560 | 36171 |
| | | 6703 | 2296 | 4296 | 3122 | 61370 | 49927 |
| 15 TNGT | 15A | 6016 | 455 | 1540 | 3122 | 61370 | 49927 |
| | | 6016 | 455 | 1540 | 3122 | 71187 | 51409 |
| 15A TNGT | 15B | 5322 | 1922 | 1714 | 3122 | 71187 | 51409 |
| | | 5322 | 1922 | 1714 | 3122 | 60270 | 39271 |
| 15B TNGT | 18 | 4640 | 3648 | 4839 | 3122 | 60270 | 39271 |
| | | 4640 | 3648 | 4839 | 3122 | 29147 | 16505 |
| 18 TNGT | 20 R | 4269 | 4189 | 6323 | 3122 | 29147 | 16505 |
| | | 4269 | 4189 | 6323 | 3122 | 24427 | 13643 |
| 20 R BEND | 20 M | 3900 | 4697 | 7816 | 3122 | 24427 | 13643 |
| | | 3900 | 4697 | 7816 | 7787 | 2438 | 6078 |
| 20 M BEND | 20 F | 3900 | 4697 | 7816 | 7787 | 2438 | 6078 |
| | | 3900 | 4697 | 7816 | 31044 | 9189 | 20403 |
| 20 F TNGT | 25 | 3123 | 4869 | 8589 | 31044 | 9189 | 20403 |
| | | 3123 | 4869 | 8589 | 44976 | 9189 | 24855 |
| 25 TNGT | 25A | 2181 | 5078 | 2545 | 44976 | 9189 | 24855 |
| | | 2181 | 5078 | 2545 | 33904 | 9189 | 39900 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|--------|--------------------|------|-------|------------------------|-------|-------|
| | | FX | FY | FZ | MX | MY | MZ |
| FROM | TO | | | | | | |
| 25A | TNGT | 524 | 5450 | 1806 | 33904 | 9189 | 39900 |
| 25B | | 524 | 5450 | 1806 | 29822 | 9189 | 39342 |
| 25B | TNGT | 2204 | 5847 | 2129 | 29822 | 9189 | 39342 |
| 25C | | 2204 | 5847 | 2129 | 30351 | 9189 | 23950 |
| 25C | TNGT | 3493 | 6258 | 3298 | 30351 | 9189 | 23950 |
| 30 | | 3493 | 6258 | 3298 | 45422 | 9189 | 12421 |
| 30 | TNGT | 2856 | 1532 | 15511 | 45422 | 9189 | 12421 |
| 45 | B | 2856 | 1532 | 15511 | 26075 | 9189 | 9254 |
| 45 | B BEND | 2769 | 1447 | 14560 | 26075 | 9189 | 9254 |
| 45 | M | 2769 | 1447 | 14560 | 16414 | 8805 | 5383 |
| 45 | M BEND | 2769 | 1447 | 14560 | 16414 | 8805 | 5383 |
| 45 | E | 2769 | 1447 | 14560 | 30893 | 9845 | 7512 |
| 45 | E TNGT | 2644 | 1630 | 12526 | 30893 | 9845 | 7512 |
| 45A | | 2644 | 1630 | 12526 | 22047 | 15749 | 5741 |
| 45A | TNGT | 2705 | 1928 | 10573 | 22047 | 15749 | 5741 |
| 45B | | 2705 | 1928 | 10573 | 11655 | 14594 | 5245 |
| 45B | TNGT | 2898 | 2301 | 8607 | 11655 | 14594 | 5245 |
| 100 | | 2898 | 2301 | 8607 | 8321 | 9144 | 5093 |
| 100 | TNGT | 3038 | 2416 | 7288 | 8321 | 9144 | 5093 |
| A | | 3038 | 2416 | 7288 | 5656 | 8480 | 4615 |
| A | TNGT | 5647 | 0 | 0 | 0 | 3528 | 0 |
| 99 | | 5647 | 0 | 0 | 0 | 1386 | 0 |
| 99 | CPPT | 5647 | 0 | 0 | 0 | 1386 | 0 |
| 98 | | 4699 | 0 | 0 | 0 | 0 | 0 |
| A | TNGT | 2913 | 2047 | 6292 | 4980 | 13141 | 4159 |
| 95 | B | 2795 | 2047 | 6292 | 8860 | 9724 | 4564 |
| 95 | B BEND | 1671 | 1085 | 4084 | 8860 | 9724 | 4564 |
| 95 | M | 1671 | 1085 | 4084 | 13606 | 12670 | 4962 |
| 95 | M BEND | 1671 | 1085 | 4084 | 13606 | 12670 | 4962 |
| 95 | F | 1671 | 1085 | 4084 | 18577 | 19143 | 4652 |
| 95 | F TNGT | 884 | 1044 | 1472 | 18577 | 19143 | 4652 |
| 95A | | 884 | 1044 | 1472 | 19403 | 16051 | 4727 |
| 95A | TNGT | 2086 | 1976 | 1569 | 19403 | 16051 | 4727 |
| 90 | | 2086 | 1976 | 1569 | 24062 | 13236 | 6039 |

| ELEMENT TYPE/TITLE | | GLOBAL FORCES (LB) | | | GLOBAL MOMENTS (FT-LB) | | |
|--------------------|------|--------------------|------|------|------------------------|-------|-------|
| FROM | | FX | FY | FZ | MX | MY | MZ |
| TO | | | | | | | |
| 90 | TNGT | 5745 | 0 | 0 | 0 | 2787 | 0 |
| 91 | | 5745 | 0 | 0 | 0 | 1095 | 0 |
| 91 | CMPT | 5745 | 0 | 0 | 0 | 1095 | 0 |
| 92 | | 4302 | 0 | 0 | 0 | 0 | 0 |
| 90 | TNGT | 4451 | 3548 | 2789 | 24062 | 12334 | 6039 |
| 85 B | | 4451 | 3548 | 2789 | 19919 | 14798 | 6022 |
| 85 B | BFND | 4050 | 3068 | 4660 | 19919 | 14798 | 6022 |
| 85 M | | 4050 | 3068 | 4660 | 7064 | 26156 | 8846 |
| 85 M | BEND | 4050 | 3068 | 4660 | 7064 | 26156 | 8846 |
| 85 E | | 4050 | 3068 | 4660 | 9544 | 30344 | 16486 |
| 85 E | TNGT | 3644 | 1979 | 7098 | 9544 | 30344 | 16486 |
| 85A | | 3644 | 1979 | 7098 | 15415 | 21296 | 22378 |
| 85A | TNGT | 3564 | 1426 | 8588 | 15415 | 21296 | 22378 |
| 85B | | 3564 | 1426 | 8588 | 19089 | 13814 | 25931 |
| 85B | TNGT | 3685 | 1329 | 9921 | 19089 | 13814 | 25931 |
| 82 | | 3685 | 1329 | 9921 | 20555 | 13662 | 27325 |
| 82 | TNGT | 8130 | 7167 | 9380 | 2 | 1 | 3 |
| 81 | | 8130 | 7167 | 9380 | 0 | 1 | 0 |
| 81 | TNGT | 8130 | 7167 | 9380 | 0 | 1 | 0 |
| 83 | | 8130 | 7167 | 9380 | 0 | 0 | 0 |
| 82 | TNGT | 3308 | 6943 | 3110 | 20558 | 13663 | 27328 |
| 80 B | | 3308 | 6943 | 3110 | 16833 | 12904 | 24094 |
| 80 B | BEND | 2283 | 7482 | 2676 | 16833 | 12904 | 24094 |
| 80 M | | 2283 | 7482 | 2676 | 5373 | 9987 | 4899 |
| 80 M | BEND | 2283 | 7482 | 2676 | 5373 | 9987 | 4899 |
| 75 B | | 2283 | 7482 | 2676 | 11346 | 6938 | 13235 |
| 75 B | BEND | 1007 | 7817 | 1415 | 11346 | 6938 | 13235 |
| 75 M | | 1007 | 7817 | 1415 | 16215 | 6360 | 18425 |
| 75 M | BEND | 1007 | 7817 | 1415 | 16215 | 6360 | 18425 |
| 75 E | | 1007 | 7817 | 1415 | 18189 | 7021 | 20117 |
| 75 E | TNGT | 470 | 8108 | 824 | 18189 | 7021 | 20117 |
| 70 | | 470 | 8108 | 824 | 13110 | 7021 | 18690 |
| 70 | TNGT | 1233 | 8482 | 1684 | 13110 | 7021 | 18690 |
| 65 B | | 1233 | 8482 | 1684 | 5319 | 7021 | 16174 |

ELEMENT FORCES AND MOMENTS

TITLE : C.C. UNIT#1 MAINSTEAM PIPING IN CMT.
PROJECT NUMBER : 11865
PROBLEM NUMBER : 31
USER : AJ
LOAD CASE : TIME1

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFINE= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KURHO= .000)

| DATA PT | FORCE (LBS) | | | | MOMENT (FT-LB) | | | |
|------------|-------------|---------|-------------|---------|-----------------|---------|-------------|---------|
| | FX-MAX | TIME | FX-MIN | TIME | MX-MAX | TIME | MX-MIN | TIME |
| 5 TNGT | 25439.5710 | 1.02564 | -63729.8862 | .89580 | 47936.7832 | 1.16515 | -47284.4351 | 1.11836 |
| | 25439.5710 | 1.02564 | -63729.8862 | .89580 | 44129.9180 | 1.16515 | -43625.8838 | 1.11836 |
| 8 TNGT | 25439.5710 | 1.02564 | -63729.8862 | .89580 | 40323.0503 | 1.16515 | -39967.3320 | 1.11836 |
| 8 TNGT | 25432.2241 | 1.02564 | -63717.3799 | .89580 | 40323.0493 | 1.16515 | -39967.3320 | 1.11836 |
| | 25432.2241 | 1.02564 | -63717.3799 | .89580 | 36517.6416 | 1.16515 | -36310.0728 | 1.11836 |
| 10 B TNGT | 25432.2241 | 1.02564 | -63717.3799 | .89580 | 32712.2344 | 1.16515 | -32652.8145 | 1.11836 |
| 10 B BEND | 25363.3875 | 1.02564 | -63598.9888 | .89580 | 32712.2358 | 1.16515 | -32652.8152 | 1.11836 |
| 10 B BEND | 25363.3882 | 1.02564 | -63598.9902 | .89580 | 12927.6038 | 1.07063 | -11738.9827 | 1.03237 |
| 10 E BEND | 25363.3877 | 1.02564 | -63598.9897 | .89580 | 7283.4302 | 1.25366 | -7026.7636 | 1.30172 |
| 10 E TNGT | 24401.3057 | 1.02564 | -61739.7432 | .89580 | 7283.4743 | 1.25366 | -7026.7966 | 1.30172 |
| | 24401.3057 | 1.02564 | -61739.7432 | .89580 | 7283.4743 | 1.25366 | -7026.7966 | 1.30172 |
| 10A TNGT | 24401.3057 | 1.02564 | -61739.7432 | .89580 | 7283.4743 | 1.25366 | -7026.7966 | 1.30172 |
| 10A TNGT | 23436.1216 | 1.02564 | -59886.2573 | .89580 | 7283.4712 | 1.25366 | -7026.7947 | 1.30172 |
| | 23436.1216 | 1.02564 | -59886.2573 | .89580 | 7283.4712 | 1.25366 | -7026.7947 | 1.30172 |
| 15 TNGT | 23436.1216 | 1.02564 | -59886.2573 | .89580 | 7283.4712 | 1.25366 | -7026.7947 | 1.30172 |
| 15 TNGT | 22426.7805 | 1.02564 | -57958.8364 | .89580 | 7283.4720 | 1.25366 | -7026.7931 | 1.30172 |
| | 22426.7805 | 1.02564 | -57958.8364 | .89580 | 7283.4720 | 1.25366 | -7026.7931 | 1.30172 |
| 15A TNGT | 22426.7805 | 1.02564 | -57958.8364 | .89580 | 7283.4720 | 1.25366 | -7026.7931 | 1.30172 |
| 15A TNGT | 21384.8555 | 1.02691 | -55965.2671 | .89580 | 7283.4764 | 1.25366 | -7026.7986 | 1.30172 |
| | 21384.8555 | 1.02691 | -55965.2671 | .89580 | 7283.4764 | 1.25366 | -7026.7986 | 1.30172 |
| 15B TNGT | 21384.8555 | 1.02691 | -55965.2671 | .89580 | 7283.4764 | 1.25366 | -7026.7986 | 1.30172 |
| 15B TNGT | 20357.9326 | 1.02691 | -53943.5874 | .89580 | 7283.4753 | 1.25366 | -7026.7958 | 1.30172 |
| | 20357.9326 | 1.02691 | -53943.5874 | .89580 | 7283.4753 | 1.25366 | -7026.7958 | 1.30172 |
| 18 TNGT | 20357.9326 | 1.02691 | -53943.5874 | .89580 | 7283.4753 | 1.25366 | -7026.7958 | 1.30172 |
| 18 TNGT | 19778.3906 | 1.02691 | -52801.8149 | .89580 | 7283.4491 | 1.25366 | -7026.7838 | 1.30172 |
| | 19778.3906 | 1.02691 | -52801.8149 | .89580 | 7283.4491 | 1.25366 | -7026.7838 | 1.30172 |
| 20 B TNGT | 19778.3906 | 1.02691 | -52801.8149 | .89580 | 7283.4491 | 1.25366 | -7026.7838 | 1.30172 |
| 20 B BEND | 2858.7133 | 1.00455 | -2929.3360 | .89580 | 7283.4747 | 1.25366 | -7026.8066 | 1.30172 |
| 20 M BEND | 2858.7133 | 1.00455 | -2929.3360 | .89580 | 5589.3275 | 1.28108 | -6054.8034 | 1.23596 |
| 20 E BEND | 2858.7133 | 1.00455 | -2929.3361 | .89580 | 21399.9744 | 1.12215 | -22726.0000 | 1.16135 |
| 20 E TNGT | 2407.1114 | 1.00455 | -2332.7673 | 1.10768 | 21399.9856 | 1.12215 | -22726.0083 | 1.16135 |
| | 2407.1114 | 1.00455 | -2332.7673 | 1.10768 | 26552.4534 | 1.12342 | -27628.5962 | 1.16135 |
| T TNGT | 2407.1114 | 1.00455 | -2332.7673 | 1.16768 | 32233.0320 | 1.20435 | -32706.8066 | 1.16009 |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERU= .5000SEC; TFIN= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KUAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA PT | FX-MAX | TIME | FX-MIN | TIME | MX-MAX | TIME | MA-MIN | TIME |
|-----------|------------|---------|-------------|---------|-------------|---------|--------------|---------|
| 25 TNGT | 2608.1287 | .92741 | -1909.7028 | 1.16894 | 32233.0103 | 1.20435 | -32706.7876 | 1.16009 |
| | 2608.1287 | .92741 | -1909.7028 | 1.16894 | 22079.2961 | 1.03490 | -30843.7744 | .99191 |
| 25A TNGT | 2608.1287 | .92741 | -1909.7028 | 1.16894 | 30893.1270 | 1.36021 | -33435.5830 | .82878 |
| 25A TNGT | 1537.3369 | .92994 | -908.1315 | 1.35356 | 30893.0793 | 1.36021 | -33435.6074 | .82878 |
| | 1537.3369 | .92994 | -908.1315 | 1.35356 | 40795.4907 | 1.36021 | -47510.3247 | .82878 |
| 25R TNGT | 1537.3369 | .92994 | -908.1315 | 1.35356 | 50697.9082 | 1.36021 | -61585.0430 | .82878 |
| 25R TNGT | 2318.6617 | .94512 | -1152.2768 | 1.50025 | 50698.0063 | 1.36021 | -61584.8359 | .82878 |
| | 2318.6617 | .94512 | -1152.2768 | 1.50025 | 59760.4326 | 1.36494 | -76462.3779 | .83257 |
| 25C TNGT | 2318.6617 | .94512 | -1152.2768 | 1.50025 | 69516.4150 | 1.36368 | -93975.4863 | .83637 |
| 25C TNGT | 3154.0850 | .94385 | -2588.8814 | .92741 | 69516.3809 | 1.36368 | -93975.4258 | .83637 |
| | 3154.0850 | .94385 | -2588.8814 | .92741 | 83879.1172 | 1.35989 | -116523.8418 | .83763 |
| 30 TNGT | 3154.0850 | .94385 | -2588.8814 | .92741 | 109840.6074 | .89201 | -139967.1758 | .83890 |
| 30 TNGT | 8068.6345 | 1.35989 | -10922.5713 | .83257 | 109840.2754 | .89201 | -139966.8711 | .83890 |
| | 8068.6345 | 1.35989 | -10922.5713 | .83257 | 85990.8447 | .89201 | -110427.1289 | .84016 |
| 45 B TNGT | 8068.6345 | 1.35989 | -10922.5713 | .83257 | 62216.1787 | .89327 | -80901.4814 | .84016 |
| 45 B BEND | 7971.1526 | 1.35989 | -10894.6060 | .83004 | 62215.9668 | .89327 | -80901.3105 | .84016 |
| 45 M BEND | 7971.1529 | 1.35989 | -10894.6063 | .83004 | 51791.0127 | .83510 | -40745.0518 | .88948 |
| 45 E BEND | 7971.1526 | 1.35989 | -10894.6060 | .83004 | 93493.6396 | .83510 | -73842.7168 | .89327 |
| 45 E TNGT | 7738.6243 | 1.36115 | -10300.3488 | .82878 | 93493.6748 | .83510 | -73842.7520 | .89327 |
| | 7738.6243 | 1.36115 | -10300.3488 | .82878 | 77873.0410 | .83763 | -61906.6685 | .89454 |
| 45A TNGT | 7738.6243 | 1.36115 | -10300.3488 | .82878 | 62926.8774 | .84016 | -51811.2793 | 1.35230 |
| 45A TNGT | 7655.4297 | 1.36115 | -9970.1377 | .83510 | 62926.8696 | .84016 | -51811.2881 | 1.35230 |
| | 7655.4297 | 1.36115 | -9970.1377 | .83510 | 48330.5435 | .84305 | -40084.8936 | 1.35103 |
| 45R TNGT | 7655.4297 | 1.36115 | -9970.1377 | .83510 | 37151.8970 | .94259 | -29000.7607 | 1.35103 |
| 45R TNGT | 7808.4557 | 1.35989 | -9885.3370 | .83510 | 37151.8862 | .94259 | -29000.7510 | 1.35103 |
| | 7808.4557 | 1.35989 | -9885.3370 | .83510 | 22098.8801 | .94385 | -15210.0397 | 1.35230 |
| 100 TNGT | 7808.4557 | 1.35989 | -9885.3370 | .83510 | 11236.5159 | .88442 | -11017.4185 | 1.12215 |
| 100 TNGT | 8177.5607 | 1.35862 | -9757.7758 | .83510 | 11236.4891 | .88442 | -11017.4004 | 1.12215 |
| | 8177.5607 | 1.35862 | -9757.7758 | .83510 | 10906.8578 | 1.26378 | -12079.8964 | 1.12215 |
| A TNGT | 8177.5607 | 1.35862 | -9757.7758 | .83510 | 11960.6021 | .91224 | -13769.7756 | .82752 |
| A TNGT | 11555.4125 | 1.17021 | -12422.4464 | 1.01087 | .0347 | .99086 | -.0381 | 1.21320 |
| | 11555.4125 | 1.17021 | -12422.4464 | 1.01087 | .0337 | .89033 | -.0344 | 1.21193 |
| 99 TNGT | 11555.4125 | 1.17021 | -12422.4464 | 1.01087 | .0334 | .89633 | -.0308 | 1.21193 |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFIN= 1.5000SEC)
(DAMP= .0VS MDAMP= .000 KVAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA PT | FX-MAX | TIME | FX-MIN | TIME | MX-MAX | TIME | MX-MIN | TIME |
|------------|------------|---------|-------------|---------|------------|---------|-------------|---------|
| 99 CMPT | 11554.6417 | 1.17021 | -12421.9457 | 1.01087 | .0070 | 1.10451 | -.0065 | .88948 |
| | 11554.6417 | 1.17021 | -12421.9457 | 1.01087 | .0002 | 1.30678 | -.0002 | 1.07410 |
| 9A CMPT | 11554.6417 | 1.17021 | -12421.9457 | 1.01087 | .0063 | .88948 | -.0067 | 1.10951 |
| A INGT | 8408.7308 | 1.06105 | -12379.5936 | .84648 | 11969.6154 | .91224 | -13769.7831 | .82752 |
| | 8408.7308 | 1.06105 | -12379.5936 | .84648 | 15816.7977 | 1.16894 | -18712.7700 | .82752 |
| 95 B INGT | 8408.7308 | 1.06105 | -12379.5936 | .84648 | 21249.9348 | 1.16894 | -23055.7581 | .82752 |
| 95 B BEND | 5308.2333 | 1.05852 | -5186.8666 | 1.30298 | 21249.9436 | 1.16894 | -23055.7617 | .82752 |
| 95 M BEND | 5308.2335 | 1.05852 | -5186.8668 | 1.30298 | 28311.3210 | 1.17021 | -35453.0566 | 1.21193 |
| 95 E BEND | 5308.2333 | 1.05852 | -5186.8666 | 1.30298 | 38050.5903 | .90212 | -49438.2227 | .94259 |
| 95 E INGT | 2530.4410 | 1.26125 | -2679.4070 | .84143 | 38050.5972 | .90212 | -49438.2266 | .94259 |
| | 2530.4410 | 1.26125 | -2679.4070 | .84143 | 43656.8560 | 1.35609 | -56848.5093 | .94259 |
| 95A INGT | 2530.4410 | 1.26125 | -2679.4070 | .84143 | 49281.4390 | 1.35736 | -64306.8599 | .94385 |
| 95A INGT | 3970.8745 | 1.17147 | -5350.4514 | 1.01593 | 49281.4253 | 1.35736 | -64306.8403 | .94385 |
| | 3970.8745 | 1.17147 | -5350.4514 | 1.01593 | 55393.4141 | 1.35989 | -69696.9687 | .94259 |
| 90 INGT | 3970.8745 | 1.17147 | -5350.4514 | 1.01593 | 63322.6641 | 1.36115 | -75135.1582 | .94259 |
| 90 INGT | 22878.6213 | .84775 | -22395.9963 | 1.07536 | .0898 | .94259 | -.0782 | 1.36241 |
| | 22878.6213 | .84775 | -22395.9963 | 1.07536 | .0859 | .94259 | -.0689 | 1.36115 |
| 91 INGT | 22878.6213 | .84775 | -22395.9963 | 1.07536 | .0819 | .94259 | -.0634 | .90886 |
| 91 CMPT | 22879.2046 | .84775 | -22397.0530 | 1.07536 | .0011 | 1.35736 | -.0012 | .94259 |
| | 22879.2046 | .84775 | -22397.0530 | 1.07536 | .0000 | .90971 | -.0000 | 1.01467 |
| 92 CMPT | 22879.2046 | .84775 | -22397.0530 | 1.07536 | .0011 | .94259 | -.0010 | 1.35736 |
| 90 INGT | 19665.5505 | 1.07663 | -20283.9424 | .84395 | 63322.6328 | 1.36115 | -75135.1152 | .94259 |
| | 19665.5505 | 1.07663 | -20283.9424 | .84395 | 57900.6118 | 1.36115 | -69388.9072 | 1.01593 |
| 95 B INGT | 19665.5505 | 1.07663 | -20283.9424 | .84395 | 52478.5864 | 1.36115 | -63947.9727 | 1.01593 |
| 95 B BEND | 16888.9324 | 1.07789 | -18251.7615 | .84395 | 52478.6099 | 1.36115 | -63947.9785 | 1.01593 |
| 95 M BEND | 16888.9326 | 1.07789 | -18251.7615 | .84395 | 17258.3420 | 1.06019 | -22462.8530 | 1.01467 |
| 95 E BEND | 16888.9324 | 1.07789 | -18251.7615 | .84395 | 28542.9224 | 1.21320 | -28280.4810 | 1.17021 |
| 95 E INGT | 11719.7805 | 1.07663 | -14811.8492 | .84269 | 28342.9529 | 1.21320 | -28280.5034 | 1.17021 |
| | 11719.7805 | 1.07663 | -14811.8492 | .84269 | 38196.9453 | .94259 | -32875.0278 | 1.17021 |
| 95A INGT | 11719.7805 | 1.07663 | -14811.8492 | .84269 | 48391.0239 | .94259 | -38172.0923 | .90339 |
| 95A INGT | 10219.1536 | .89327 | -13800.9747 | .82878 | 48391.1455 | .94259 | -38772.1929 | .90339 |
| | 10219.1536 | .89327 | -13800.9747 | .82878 | 52651.1606 | .94259 | -42472.4697 | 1.35862 |
| 95B INGT | 10219.1536 | .89327 | -13800.9747 | .82878 | 57031.5620 | 1.01846 | -47517.3442 | 1.35862 |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFIN= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KUAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA PT | FORCE (LBS) | | | | MOMENT (FT-LB) | | | |
|------------|-------------|---------|-------------|---------|-----------------|---------|--------------|---------|
| | FX-MAX | TIME | FX-MIN | TIME | MX-MAX | TIME | MX-MIN | TIME |
| #5R TNGT | 9996.0024 | .89580 | -13996.9709 | .82752 | 57031.6401 | 1.01846 | -47517.4155 | 1.35862 |
| | 9996.0024 | .89580 | -13996.9709 | .82752 | 59651.6597 | 1.01720 | -48379.2495 | 1.35736 |
| #2 TNGT | 9996.0024 | .89580 | -13996.9709 | .82752 | 62479.7490 | 1.01593 | -50570.6147 | .89580 |
| #2 TNGT | 19774.4058 | .89454 | -24281.1335 | 1.01846 | 8.2397 | .89454 | -10.1357 | 1.01846 |
| | 19774.4058 | .89454 | -24281.1335 | 1.01846 | 4.1604 | .89454 | -5.1351 | 1.01846 |
| #1 TNGT | 19774.4058 | .89454 | -24281.1335 | 1.01846 | .1035 | 1.07536 | -.2116 | .79590 |
| #1 TNGT | 19774.9565 | .89454 | -24281.3381 | 1.01846 | .3599 | .89454 | -.4429 | 1.01846 |
| | 19774.9565 | .89454 | -24281.3381 | 1.01846 | .1788 | .89454 | -.2201 | 1.01846 |
| #3 TNGT | 19774.9565 | .89454 | -24281.3381 | 1.01846 | .0055 | .82625 | -.0039 | 1.35483 |
| #2 TNGT | 22662.1145 | .79717 | -7260.8791 | 1.32827 | 62489.7178 | 1.01593 | -50578.7695 | .89580 |
| | 22662.1145 | .79717 | -7260.8791 | 1.32827 | 56682.9971 | 1.01593 | -46440.5981 | .89454 |
| #0 B TNGT | 22662.1145 | .79717 | -7260.8791 | 1.32827 | 50876.2710 | 1.01593 | -42350.6479 | .89454 |
| #0 B BEND | 5428.4733 | 1.01973 | -3761.3740 | .90971 | 50976.3086 | 1.01593 | -42350.7295 | .89454 |
| #0 M BEND | 5428.4734 | 1.01973 | -3761.3741 | .90971 | 18355.9709 | .89416 | -15038.9565 | .88948 |
| 75 B BEND | 5428.4733 | 1.01973 | -3761.3740 | .90971 | 31734.8953 | 1.20088 | -40153.3965 | 1.36241 |
| 75 B BEND | 2500.6527 | 1.15377 | -2375.6532 | .98179 | 31734.9141 | 1.20688 | -40153.4155 | 1.36241 |
| 75 M BEND | 2500.6528 | 1.15377 | -2375.6531 | .98179 | 46881.1548 | 1.20814 | -58100.6924 | 1.36368 |
| 75 E BEND | 2500.6529 | 1.15377 | -2375.6530 | .98179 | 54503.0767 | 1.20688 | -68887.1387 | 1.36368 |
| 75 E TNGT | 1967.4123 | 1.02858 | -2123.4446 | 1.17021 | 54503.0674 | 1.20688 | -68887.1377 | 1.36368 |
| | 1967.4123 | 1.02858 | -2123.4446 | 1.17021 | 48991.1870 | 1.20561 | -63884.6841 | 1.36368 |
| 70 TNGT | 1967.4123 | 1.02858 | -2123.4446 | 1.17021 | 44037.4717 | 1.40035 | -58882.2285 | 1.36368 |
| 70 TNGT | 2882.0351 | 1.39529 | -2268.4572 | 1.35609 | 44037.4922 | 1.40035 | -58882.2534 | 1.36368 |
| | 2882.0351 | 1.39529 | -2268.4572 | 1.35609 | 28988.1643 | 1.20435 | -38006.8179 | 1.36368 |
| 65 B TNGT | 2882.0351 | 1.39529 | -2268.4572 | 1.35609 | 16937.6838 | 1.07663 | -28323.7163 | .78705 |
| 65 B BEND | 3453.8564 | 1.32954 | -3880.4986 | 1.15630 | 16937.6545 | 1.07663 | -28323.7302 | .78705 |
| 65 M BEND | 3453.8565 | 1.32954 | -3880.4987 | 1.15630 | 36106.8906 | 1.36115 | -33724.2563 | .83257 |
| 63 BEND | 3453.8564 | 1.32954 | -3880.4986 | 1.15630 | 106813.7256 | 1.36241 | -89228.7598 | .83384 |
| 63 TNGT | 7105.5173 | .77440 | -3884.0891 | 1.15630 | 106813.7363 | 1.36241 | -89228.7637 | .83384 |
| | 7105.5173 | .77440 | -3884.0891 | 1.15630 | 142521.5762 | 1.36241 | -122227.8643 | .94385 |
| 60 TNGT | 7105.5173 | .77440 | -3884.0891 | 1.15630 | 178229.4238 | 1.36241 | -155361.6504 | .94259 |

ELEMENT FORCES AND MOMENTS

TITLE 1 C.C. UNIT#1 MAINSTEAM PIPING IN CRTK.
 PROJECT NUMBER 1 11865
 PROBLEM NUMBER 1 31
 USER 1 AJ
 LOAD CASE 1 TIME1

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFIN= 1.5000SEC)
 (DAMP= .005 MDAMP= .000 KUAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA PT | FORCE (LBS) | | | | MOMENT (FT-LB) | | | |
|------------|-------------|---------|-------------|--------|-----------------|---------|-------------|---------|
| | FY-MAX | TIME | FY-MIN | TIME | MY-MAX | TIME | MY-MIN | TIME |
| 5 TNGT | 4994.8286 | 1.05978 | -15720.6011 | .91097 | 33584.6689 | 1.11836 | -34078.0195 | 1.16515 |
| 8 TNGT | 4994.8286 | 1.05978 | -15720.6011 | .91097 | 33584.6689 | 1.11836 | -34078.0195 | 1.16515 |
| 8 TNGT | 4994.6340 | 1.05978 | -15720.9299 | .91097 | 33584.6689 | 1.11836 | -34078.0190 | 1.16515 |
| 10 B TNGT | 4994.6340 | 1.05978 | -15720.9299 | .91097 | 33584.6689 | 1.11836 | -34078.0190 | 1.16515 |
| 10 B BEND | 2722.1941 | 1.00834 | -3861.4081 | .98432 | 33584.6655 | 1.11836 | -34078.0176 | 1.16515 |
| 10 M BEND | 2722.1942 | 1.00834 | -3861.4080 | .98432 | 24510.7766 | 1.11836 | -24639.4902 | 1.16515 |
| 10 E BEND | 2722.1941 | 1.00834 | -3861.4080 | .98432 | 6342.8333 | 1.20308 | -5554.7735 | 1.08169 |
| 10 E TNGT | 2942.7780 | 1.00708 | -4194.1342 | .92741 | 6342.9615 | 1.20308 | -5554.7158 | 1.08169 |
| 10A TNGT | 2942.7780 | 1.00708 | -4194.1342 | .92741 | 17391.9128 | 1.16601 | -16078.5754 | 1.11836 |
| 10A TNGT | 2942.7780 | 1.00708 | -4194.1342 | .92741 | 36517.1851 | 1.16515 | -34761.6675 | 1.11836 |
| 10A TNGT | 2293.6507 | 1.00582 | -3991.9362 | .92868 | 36517.2163 | 1.16515 | -34761.6997 | 1.11836 |
| 15 TNGT | 2293.6507 | 1.00582 | -3991.9362 | .92868 | 48056.6426 | 1.16515 | -46192.0596 | 1.11836 |
| 15 TNGT | 2293.6507 | 1.00582 | -3991.9362 | .92868 | 59596.0688 | 1.16515 | -57622.4248 | 1.11836 |
| 15 TNGT | 1358.3431 | 1.42817 | -3791.4731 | .89706 | 59596.1138 | 1.16515 | -57622.4692 | 1.11836 |
| 15A TNGT | 1358.3431 | 1.42817 | -3791.4731 | .89706 | 61778.7231 | 1.16515 | -60074.0991 | 1.11836 |
| 15A TNGT | 1358.3431 | 1.42817 | -3791.4731 | .89706 | 64137.5361 | 1.16388 | -62547.2646 | 1.11962 |
| 15A TNGV | 2231.9747 | .98432 | -3556.6369 | .88316 | 64137.6108 | 1.16388 | -62547.3276 | 1.11962 |
| 15B TNGT | 2231.9747 | .98432 | -3556.6369 | .88316 | 57362.8633 | 1.16388 | -56121.5225 | 1.11962 |
| 15B TNGT | 2231.9747 | .98432 | -3556.6369 | .88316 | 50886.7124 | 1.16262 | -49695.7173 | 1.11962 |
| 15B TNGT | 3896.2440 | .98685 | -4635.1168 | .88316 | 50886.7407 | 1.16262 | -49695.7471 | 1.11962 |
| 18 TNGT | 3896.2440 | .98685 | -4635.1168 | .88316 | 37479.0952 | 1.07789 | -36713.7427 | 1.12215 |
| 18 TNGT | 3896.2440 | .98685 | -4635.1168 | .88316 | 26459.0725 | 1.08042 | -26592.7390 | 1.03364 |
| 18 TNGT | 4075.0457 | .98811 | -4512.7865 | .88442 | 26459.0640 | 1.08042 | -26592.7310 | 1.03364 |
| 20 B TNGT | 4075.0457 | .98811 | -4512.7865 | .88442 | 24687.3857 | 1.08042 | -24977.3953 | 1.03364 |
| 20 B TNGT | 4075.0457 | .98811 | -4512.7865 | .88442 | 22940.0149 | 1.08169 | -23362.0588 | 1.03364 |
| 20 B BEND | 4294.4687 | .98811 | -4683.4184 | .87936 | 22940.0339 | 1.08169 | -23362.0779 | 1.03364 |
| 20 M BEND | 4294.4687 | .98811 | -4683.4185 | .87936 | 5983.3943 | 1.25366 | -5445.6961 | 1.03364 |
| 20 E BEND | 4294.4687 | .98811 | -4683.4184 | .87936 | 6006.5363 | 1.44587 | -6405.8300 | 1.00076 |
| 20 E TNGT | 4088.9348 | .98938 | -4441.5054 | .87810 | 6006.5401 | 1.44587 | -6405.8318 | 1.00076 |
| 25 TNGT | 4088.9348 | .98938 | -4441.5054 | .87810 | 6006.5401 | 1.44587 | -6405.8318 | 1.00076 |
| 25 TNGT | 4088.9348 | .98938 | -4441.5054 | .87810 | 6006.5401 | 1.44587 | -6405.8318 | 1.00076 |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFIN= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KUAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA PT | FY-MAX | TIME | FY-MIN | TIME | MY-MAX | TIME | MY-MIN | TIME |
|-----------|------------|---------|-------------|---------|------------|---------|-------------|---------|
| 25 TNGT | 3874.0385 | .98938 | -4462.6163 | .95018 | 6006.5404 | 1.44587 | -6905.8306 | 1.00076 |
| | 3874.0385 | .98938 | -4462.6163 | .95018 | 6006.5404 | 1.44587 | -6905.8306 | 1.00076 |
| 25A TNGT | 3874.0385 | .98938 | -4462.6163 | .95018 | 6006.5404 | 1.44587 | -6905.8306 | 1.00076 |
| | 3874.0385 | .98938 | -4462.6163 | .95018 | 6006.5404 | 1.44587 | -6905.8306 | 1.00076 |
| 25A TNGT | 3693.7469 | 1.12215 | -5849.6147 | .95397 | 6006.5393 | 1.44587 | -6905.8304 | 1.00076 |
| | 3693.7469 | 1.12215 | -5849.6147 | .95397 | 6006.5393 | 1.44587 | -6905.8304 | 1.00076 |
| 25B TNGT | 3693.7469 | 1.12215 | -5849.6147 | .95397 | 6006.5393 | 1.44587 | -6905.8304 | 1.00076 |
| | 3693.7469 | 1.12215 | -5849.6147 | .95397 | 6006.5393 | 1.44587 | -6905.8304 | 1.00076 |
| 25B TNGT | 4695.0377 | 1.12215 | -7575.0435 | .95397 | 6006.5421 | 1.44587 | -6905.8088 | 1.00076 |
| | 4695.0377 | 1.12215 | -7575.0435 | .95397 | 6006.5421 | 1.44587 | -6905.8088 | 1.00076 |
| 25C TNGT | 4695.0377 | 1.12215 | -7575.0435 | .95397 | 6006.5421 | 1.44587 | -6905.8088 | 1.00076 |
| | 4695.0377 | 1.12215 | -7575.0435 | .95397 | 6006.5421 | 1.44587 | -6905.8088 | 1.00076 |
| 25C TNGT | 5778.2612 | 1.36115 | -9223.2042 | .95397 | 6006.5424 | 1.44587 | -6905.8076 | 1.00076 |
| | 5778.2612 | 1.36115 | -9223.2042 | .95397 | 6006.5424 | 1.44587 | -6905.8076 | 1.00076 |
| 30 TNGT | 5778.2612 | 1.36115 | -9223.2042 | .95397 | 6006.5424 | 1.44587 | -6905.8076 | 1.00076 |
| | 5778.2612 | 1.36115 | -9223.2042 | .95397 | 6006.5424 | 1.44587 | -6905.8076 | 1.00076 |
| 30 TNGT | 40547.2158 | .86166 | -14635.1215 | 1.45726 | 6006.5350 | 1.44587 | -6905.8076 | 1.00076 |
| | 40547.2158 | .86166 | -14635.1215 | 1.45726 | 6006.5350 | 1.44587 | -6905.8076 | 1.00076 |
| 45 B TNGT | 40547.2158 | .86166 | -14635.1215 | 1.45726 | 6006.5350 | 1.44587 | -6905.8076 | 1.00076 |
| | 40547.2158 | .86166 | -14635.1215 | 1.45726 | 6006.5350 | 1.44587 | -6905.8076 | 1.00076 |
| 45 B BEND | 5718.9786 | .95776 | -5777.6005 | 1.36494 | 6006.5319 | 1.44587 | -6905.8065 | 1.00076 |
| | 5718.9786 | .95776 | -5777.6006 | 1.36494 | 8104.8295 | 1.11583 | -6806.9808 | 1.07789 |
| 45 M BEND | 5718.9786 | .95776 | -5777.6006 | 1.36494 | 22965.3108 | 1.11330 | -15295.7063 | 1.06525 |
| 45 E BEND | 5718.9786 | .95776 | -5777.6005 | 1.36494 | | | | |
| 45 E TNGT | 5465.6618 | .83510 | -5118.5703 | 1.36494 | 22965.3972 | 1.11330 | -15295.8054 | 1.06525 |
| | 5465.6618 | .83510 | -5118.5703 | 1.36494 | 31327.9185 | 1.11330 | -21950.6187 | .89454 |
| 45A TNGT | 5465.6618 | .83510 | -5118.5703 | 1.36494 | 39690.4390 | 1.11330 | -29400.9534 | .89454 |
| | 5465.6618 | .83510 | -5118.5703 | 1.36494 | | | | |
| 45A TNGT | 5869.5318 | .83257 | -4926.3145 | .89074 | 39690.6250 | 1.11330 | -29401.2318 | .89454 |
| | 5869.5318 | .83257 | -4926.3145 | .89074 | 41729.2163 | 1.11330 | -31371.6033 | .89454 |
| 45B TNGT | 5869.5318 | .83257 | -4926.3145 | .89074 | 45148.4331 | .84048 | -36703.6699 | .88316 |
| | 5869.5318 | .83257 | -4926.3145 | .89074 | | | | |
| 45B TNGT | 5838.9327 | .83257 | -5510.8735 | .89580 | 45148.7407 | .84048 | -36703.9658 | .88316 |
| | 5838.9327 | .83257 | -5510.8735 | .89580 | 45140.4126 | .84048 | -36233.2007 | .88316 |
| 100 TNGT | 5838.9327 | .83257 | -5510.8735 | .89580 | 45132.0845 | .84048 | -39762.4390 | .88316 |
| | 5838.9327 | .83257 | -5510.8735 | .89580 | | | | |
| 100 TNGT | 3661.7472 | .94259 | -3160.4103 | 1.17021 | 45132.4272 | .84048 | -39762.7432 | .88316 |
| | 3661.7472 | .94259 | -3160.4103 | 1.17021 | 44450.2187 | .84048 | -39515.8989 | .88316 |
| A TNGT | 3661.7472 | .94259 | -3160.4103 | 1.17021 | 43768.0093 | .84048 | -39269.0557 | .88316 |
| | 3661.7472 | .94259 | -3160.4103 | 1.17021 | | | | |
| A TNGT | .0565 | .97673 | -.0355 | 1.02225 | 7761.3671 | 1.01087 | -7219.3455 | 1.17021 |
| | .0565 | .97673 | -.0355 | 1.02225 | 5405.1098 | 1.01087 | -5027.7205 | 1.17021 |
| 99 TNGT | .0565 | .97673 | -.0355 | 1.02225 | 3048.9337 | 1.01087 | -2036.0958 | 1.17021 |
| | .0565 | .97673 | -.0355 | 1.02225 | | | | |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFIN= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KDAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA | | FORCE (LBS) | | | | MOMENT (FT-LB) | | | |
|------|------|-------------|---------|-------------|---------|-----------------|---------|--------------|---------|
| FT | | FY-MAX | TIME | FY-MIN | TIME | MY-MAX | TIME | MY-MIN | TIME |
| 99 | CMPT | .0558 | 1.10951 | -.0520 | .88948 | 3048.4061 | 1.01087 | -2035.5249 | 1.17021 |
| | | .0558 | 1.10951 | -.0520 | .88948 | 1524.2702 | 1.01087 | -1417.8509 | 1.17021 |
| 98 | CMPT | .0558 | 1.10951 | -.0520 | .88948 | .4742 | .84143 | -.3611 | .89074 |
| | | | | | | | | | |
| A | INGT | 3879.1427 | .94259 | -2803.3080 | 1.17021 | 46518.3823 | .84775 | -39097.9668 | 1.05978 |
| | | 3879.1427 | .94259 | -2803.3080 | 1.17021 | 36202.3457 | .84395 | -37298.0317 | .88442 |
| 95 B | INGT | 3879.1427 | .94259 | -2803.3080 | 1.17021 | 28390.2085 | .84143 | -35987.4590 | .88568 |
| | | | | | | | | | |
| 95 H | BEND | 3623.9189 | .94385 | -2495.6410 | 1.35483 | 28390.3367 | .84143 | -35987.6006 | .88568 |
| 95 M | BEND | 3623.9189 | .94385 | -2495.6410 | 1.35483 | 30257.9417 | 1.01467 | -28438.2231 | 1.35736 |
| 95 E | BEND | 3623.9189 | .94385 | -2495.6410 | 1.35483 | 33099.6616 | 1.32701 | -31991.4443 | 1.30172 |
| | | | | | | | | | |
| 95 E | INGT | 2645.9877 | 1.01467 | -2046.2840 | 1.05893 | 33099.6060 | 1.32701 | -31991.5947 | 1.30172 |
| | | 2645.9877 | 1.01467 | -2046.2840 | 1.05893 | 32992.1724 | 1.45978 | -32060.7627 | 1.30172 |
| 95A | INGT | 2645.9877 | 1.01467 | -2046.2840 | 1.05893 | 38133.1060 | 1.45852 | -33329.9287 | 1.30172 |
| | | | | | | | | | |
| 95A | INGT | 2800.4615 | 1.01720 | -2588.0110 | 1.36494 | 38133.4004 | 1.45852 | -33330.1963 | 1.30172 |
| | | 2800.4615 | 1.01720 | -2588.0110 | 1.36494 | 27442.5483 | 1.45852 | -29022.7227 | .81108 |
| 90 | INGT | 2800.4615 | 1.01720 | -2588.0110 | 1.36494 | 33657.4268 | .90592 | -53643.9434 | 1.01214 |
| | | | | | | | | | |
| 90 | INGT | .0686 | .97547 | -.0618 | 1.01720 | 11099.9877 | .84775 | -10866.1088 | 1.07536 |
| | | .0686 | .97547 | -.0618 | 1.01720 | 7731.2070 | .84775 | -7568.2823 | 1.07536 |
| 91 | INGT | .0686 | .97547 | -.0618 | 1.01720 | 4362.4263 | .84775 | -4270.4551 | 1.07536 |
| | | | | | | | | | |
| 91 | CMPT | .0124 | .94259 | -.0111 | 1.35736 | 4361.9106 | .84775 | -4269.9612 | 1.07536 |
| | | .0124 | .94259 | -.0111 | 1.35736 | 2181.1429 | .84775 | -2135.1793 | 1.07536 |
| 92 | CMPT | .0124 | .94259 | -.0111 | 1.35736 | .3967 | .84269 | -.4645 | .89074 |
| | | | | | | | | | |
| 90 | INGT | 9228.6338 | 1.17021 | -11263.6475 | .94259 | 32822.3726 | .90465 | -46987.2021 | 1.01340 |
| | | 9228.6338 | 1.17021 | -11263.6475 | .94259 | 36383.0034 | 1.26252 | -45486.8066 | 1.01720 |
| 85 B | INGT | 9228.6338 | 1.17021 | -11263.6475 | .94259 | 44117.7559 | 1.26378 | -44823.8945 | 1.01846 |
| | | | | | | | | | |
| 85 H | BEND | 7956.9904 | 1.35989 | -10085.7423 | .94259 | 44117.9282 | 1.26378 | -44824.0479 | 1.01846 |
| 85 M | BEND | 7956.9904 | 1.35989 | -10085.7423 | .94259 | 90385.9795 | 1.07410 | -83452.7393 | .84269 |
| 85 E | BEND | 7956.9904 | 1.35989 | -10085.7423 | .94259 | 121724.8525 | 1.07536 | -102394.4336 | .84522 |
| | | | | | | | | | |
| 85 E | INGT | 5013.2218 | 1.36115 | -6688.9636 | 1.01467 | 121724.9512 | 1.07536 | -102394.5156 | .84522 |
| | | 5013.2218 | 1.36115 | -6688.9636 | 1.01467 | 110875.0908 | 1.07536 | -89345.5859 | .84648 |
| 85A | INGT | 5013.2218 | 1.36115 | -6688.9636 | 1.01467 | 100204.2529 | 1.07663 | -76031.3398 | .84648 |
| | | | | | | | | | |
| 85A | INGT | 4342.2413 | .88821 | -4650.8949 | .84143 | 100204.2920 | 1.07663 | -76031.3828 | .84648 |
| | | 4342.2413 | .88821 | -4650.8949 | .84143 | 77851.8711 | 1.07663 | -56260.7407 | 1.10698 |
| 85B | INGT | 4342.2413 | .88821 | -4650.8949 | .84143 | 55499.4526 | 1.07663 | -42083.1499 | 1.10571 |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERU= .5000SEC; TFIN= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KUAMP= .000)

| DATA PT | FORCE (LBS) | | | | MOMENT (FT-LB) | | | |
|------------|-------------|---------|-------------|---------|-----------------|---------|-------------|---------|
| | FY-MAX | TIME | FY-MIN | TIME | MY-MAX | TIME | MY-MIN | TIME |
| MSR TNGT | 4128.4351 | .88695 | -4388.5757 | .84648 | 55499.4507 | 1.07663 | -42083.1260 | 1.10571 |
| | 4128.4351 | .88695 | -4388.5757 | .84648 | 34173.2402 | 1.39529 | -39035.6377 | 1.36494 |
| R2 TNGT | 4128.4351 | .88695 | -4388.5757 | .84648 | 41891.2397 | 1.39782 | -55767.7598 | 1.36368 |
| R2 TNGT | 17430.9873 | .89454 | -21403.5569 | 1.01846 | .7330 | 1.35862 | -.8917 | 1.01846 |
| | 17430.9873 | .89454 | -21403.5569 | 1.01846 | .0428 | .89327 | -.5583 | 1.01973 |
| R1 TNGT | 17430.9873 | .89454 | -21403.5569 | 1.01846 | .3075 | 1.07410 | -.2831 | .84522 |
| R1 TNGT | 17431.7151 | .89454 | -21404.1025 | 1.01846 | .2697 | .89454 | -.3347 | 1.01846 |
| | 17431.7151 | .89454 | -21404.1025 | 1.01846 | .1345 | .89454 | -.1638 | 1.01846 |
| R3 TNGT | 17431.7151 | .89454 | -21404.1025 | 1.01846 | .0076 | 1.01340 | -.0058 | .91097 |
| R2 TNGT | 21851.6914 | 1.01846 | -17911.3564 | 1.35989 | 41891.2354 | 1.39782 | -55768.1274 | 1.36368 |
| | 21851.6914 | 1.01846 | -17911.3564 | 1.35989 | 38804.2827 | 1.39909 | -52881.4849 | 1.36368 |
| R0 R TNGT | 21851.6914 | 1.01846 | -17911.3564 | 1.35989 | 35794.7231 | 1.39909 | -49994.8384 | 1.36368 |
| R0 B BEND | 24203.0940 | 1.01720 | -19626.3904 | 1.36115 | 35794.6919 | 1.39909 | -49994.7627 | 1.36368 |
| R0 M BEND | 24203.0940 | 1.01720 | -19626.3904 | 1.36115 | 25939.9021 | .83257 | -25162.5972 | 1.36241 |
| 75 B BEND | 24203.0937 | 1.01720 | -19626.3901 | 1.36115 | 21261.1697 | 1.22458 | -27718.4287 | 1.26505 |
| 75 B BEND | 23404.1267 | 1.01593 | -21050.6423 | 1.36241 | 21261.1819 | 1.22458 | -27718.4514 | 1.26505 |
| 75 M BEND | 23404.1267 | 1.01593 | -21050.6423 | 1.36241 | 22313.6064 | 1.22711 | -28790.8118 | 1.26505 |
| 75 E BEND | 23404.1265 | 1.01593 | -21050.6421 | 1.36241 | 23044.9160 | .84648 | -29167.3721 | 1.26505 |
| 75 E TNGT | 25275.1846 | 1.01593 | -22708.3315 | 1.36241 | 23044.9114 | .84648 | -29167.3718 | 1.26505 |
| | 25275.1846 | 1.01593 | -22708.3315 | 1.36241 | 23044.9114 | .84648 | -29167.3718 | 1.26505 |
| 70 TNGT | 25275.1846 | 1.01593 | -22708.3315 | 1.36241 | 23044.9114 | .84648 | -29167.3718 | 1.26505 |
| 70 TNGT | 27661.2078 | 1.01593 | -24833.6604 | 1.36241 | 23044.9084 | .84648 | -29167.3667 | 1.26505 |
| | 27661.2078 | 1.01593 | -24833.6604 | 1.36241 | 23044.9084 | .84648 | -29167.3667 | 1.26505 |
| 65 B TNGT | 27661.2078 | 1.01593 | -24833.6604 | 1.36241 | 23044.9084 | .84648 | -29167.3667 | 1.26505 |
| 65 B BEND | 24791.4807 | .94259 | -26537.3159 | 1.36368 | 23044.9121 | .84648 | -29167.3652 | 1.26505 |
| 65 M BEND | 24791.4812 | .94259 | -26537.3164 | 1.36368 | 24522.1082 | 1.23090 | -27775.8730 | 1.26505 |
| 63 BEND | 24791.4807 | .94259 | -26537.3162 | 1.36368 | 31875.7261 | 1.23343 | -26821.6594 | .89201 |
| 63 TNGT | 24878.3779 | .94259 | -26809.1843 | 1.36368 | 31875.7268 | 1.23343 | -26821.6567 | .89201 |
| | 24878.3779 | .94259 | -26809.1843 | 1.36368 | 37577.0986 | .97800 | -28267.9785 | 1.39403 |
| 60 TNGT | 24878.3779 | .94259 | -26809.1843 | 1.36368 | 44700.0552 | .97800 | -32112.2017 | 1.39529 |

ELEMENT FORCES AND MOMENTS

TITLE : C.C. UNIT#1 MAINSTEAM PIPING IN CTMT,
 PROJECT NUMBER : 11865
 PROBLEM NUMBER : 31
 USER : AJ
 LOAD CASE : TIME1

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFIN= 1.5000SEC)
 (DAMP= .005 MDAMP= .000 KUAMP= .000)

FORCE (LRS)

MOMENT (FT-LB)

| DATA PT | FORCE (LRS) | | | | MOMENT (FT-LB) | | | |
|-----------|-------------|---------|------------|---------|-----------------|---------|--------------|---------|
| | FZ-MAX | TIME | FZ-MIN | TIME | MZ-MAX | TIME | MZ-MIN | TIME |
| 5 TNGT | 7613.7372 | 1.16515 | -7317.1063 | 1.11836 | 300430.0781 | .89580 | -120300.7939 | 1.42564 |
| 8 TNGT | 7613.7372 | 1.16515 | -7317.1063 | 1.11836 | 268565.1250 | .89580 | -107581.0186 | 1.42564 |
| 8 TNGT | 7610.8177 | 1.16515 | -7314.5202 | 1.11836 | 236700.1992 | .89580 | -94061.2354 | 1.42564 |
| 10 B TNGT | 7610.8177 | 1.16515 | -7314.5202 | 1.11836 | 204841.5273 | .89580 | -82145.1289 | 1.42564 |
| 10 B TNGT | 7610.8177 | 1.16515 | -7314.5202 | 1.11836 | 172982.8555 | .89580 | -69429.0244 | 1.42564 |
| 10 B BEND | 7582.3926 | 1.16515 | -7289.4597 | 1.11836 | 172982.8555 | .89580 | -69429.0273 | 1.42564 |
| 10 M BEND | 7582.3926 | 1.16515 | -7289.4597 | 1.11836 | 8585.8661 | 1.00708 | -16276.7067 | .89706 |
| 10 E BEND | 7582.3926 | 1.16515 | -7289.4597 | 1.11836 | 35428.7329 | 1.42564 | -90422.1381 | .99580 |
| 10 E TNGT | 6139.1737 | 1.16515 | -5978.5922 | 1.11836 | 35428.7305 | 1.42564 | -90422.0449 | .89580 |
| 10A TNGT | 6139.1737 | 1.16515 | -5978.5922 | 1.11836 | 31531.3611 | 1.42691 | -81272.5508 | .89580 |
| 10A TNGT | 6139.1737 | 1.16515 | -5978.5922 | 1.11836 | 27983.1089 | 1.42617 | -72123.0547 | .89580 |
| 10A TNGT | 3726.6604 | 1.16388 | -3687.0943 | 1.11962 | 27983.1191 | 1.42617 | -72123.0762 | .89580 |
| 15 TNGT | 3726.6604 | 1.16388 | -3687.0943 | 1.11962 | 33268.1343 | .98432 | -65927.7031 | .88568 |
| 15 TNGT | 3726.6604 | 1.16388 | -3687.0943 | 1.11962 | 40704.4258 | .98085 | -66029.2490 | .88442 |
| 15 TNGT | 1666.6982 | 1.25240 | -1765.9432 | 1.20308 | 40704.4414 | .98085 | -66029.2666 | .88442 |
| 15A TNGT | 1666.6982 | 1.25240 | -1765.9432 | 1.20308 | 42069.5425 | .98085 | -61401.3877 | .88316 |
| 15A TNGT | 1666.6982 | 1.25240 | -1765.9432 | 1.20308 | 43434.6431 | .98085 | -56622.0225 | .88316 |
| 15A TNGT | 2028.0237 | 1.11836 | -2181.0728 | 1.16515 | 43434.6470 | .98085 | -56622.0229 | .88316 |
| 15B TNGT | 2028.0237 | 1.11836 | -2181.0728 | 1.16515 | 36791.8696 | .98011 | -45349.4175 | .88316 |
| 15B TNGT | 2028.0237 | 1.11836 | -2181.0728 | 1.16515 | 30497.9045 | .98011 | -34233.6943 | .88189 |
| 15B TNGT | 4099.1305 | 1.11962 | -4266.5338 | 1.16388 | 30497.9116 | .98011 | -34233.7080 | .88189 |
| 18 TNGT | 4099.1305 | 1.11962 | -4266.5338 | 1.16388 | 19011.4722 | .99064 | -19623.3342 | .88063 |
| 18 TNGT | 4099.1305 | 1.11962 | -4266.5338 | 1.16388 | 13299.2268 | .92494 | -10960.0556 | .94765 |
| 18 TNGT | 8848.1257 | 1.12215 | -5003.5318 | 1.16135 | 13299.2230 | .92494 | -10960.0687 | .94765 |
| 20 B TNGT | 8848.1257 | 1.12215 | -5003.5318 | 1.16135 | 12917.4407 | .92868 | -10010.5114 | .94765 |
| 20 B TNGT | 8848.1257 | 1.12215 | -5003.5318 | 1.16135 | 12603.1567 | .92781 | -9060.9542 | .94765 |
| 20 B BEND | 6311.2841 | 1.20435 | -6201.3460 | 1.08042 | 12603.1353 | .92741 | -9060.9742 | .94765 |
| 20 M BEND | 6311.2841 | 1.20435 | -6201.3460 | 1.08042 | 13339.4434 | .88568 | -9229.6907 | .98558 |
| 20 E BEND | 6311.2841 | 1.20435 | -6201.3460 | 1.08042 | 21475.6621 | .88442 | -11521.8859 | .99064 |
| 20 E TNGT | 7482.4574 | 1.20308 | -7170.5670 | 1.08042 | 21475.6709 | .88442 | -11521.7001 | .99064 |
| 25 TNGT | 7482.4574 | 1.20308 | -7170.5670 | 1.08042 | 22327.1555 | .89327 | -11741.5848 | .99191 |
| 25 TNGT | 7482.4574 | 1.20308 | -7170.5670 | 1.08042 | 23455.5808 | .89327 | -12108.3308 | .99191 |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERO= .5300SEC) TFIN= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KDAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA PT | FZ-MAX | TIME | FZ-MIN | TIME | MZ-MAX | TIME | MZ-MIN | TIME |
|-----------|------------|---------|-------------|---------|------------|---------|-------------|---------|
| 25 TNGT | 2968.1193 | 1.36621 | -3773.5776 | .83000 | 23455.6074 | .89327 | -12108.3429 | .99191 |
| | 2968.1193 | 1.36621 | -3773.5776 | .83000 | 24235.2034 | .89454 | -13947.1245 | .99443 |
| 25A TNGT | 2968.1193 | 1.36621 | -3773.5776 | .83000 | 26717.9900 | .88316 | -22233.0803 | .92741 |
| 25A TNGT | 3206.1808 | 1.07284 | -3807.5631 | .83890 | 26718.0054 | .88316 | -22233.0852 | .92741 |
| | 3206.1808 | 1.07284 | -3807.5631 | .83890 | 26821.9917 | .88316 | -26273.2612 | .92868 |
| 25B TNGT | 3206.1808 | 1.07284 | -3807.5631 | .83890 | 27040.0004 | .88442 | -31020.5728 | .92868 |
| 25B TNGT | 4437.3654 | 1.07157 | -4668.5769 | .83637 | 27040.4099 | .88442 | -31020.5769 | .92868 |
| | 4437.3654 | 1.07157 | -4668.5769 | .83637 | 23427.1555 | .88442 | -28755.5886 | .92994 |
| 25C TNGT | 4437.3654 | 1.07157 | -4668.5769 | .83637 | 19961.0579 | .88568 | -26266.8098 | .93121 |
| 25C TNGT | 7045.7568 | .89327 | -6609.0752 | .84648 | 19961.0576 | .88568 | -26266.8088 | .93121 |
| | 7045.7568 | .89327 | -6609.0752 | .84648 | 20354.4634 | 1.35862 | -28733.5388 | .92752 |
| 30 TNGT | 7045.7568 | .89327 | -6609.0752 | .84648 | 24043.5215 | 1.35862 | -32614.2246 | .94512 |
| 30 TNGT | 47365.0654 | .83890 | -38358.0283 | .89074 | 24043.5181 | 1.35862 | -32614.2314 | .94512 |
| | 47365.0654 | .83890 | -38358.0283 | .89074 | 19012.6125 | 1.35862 | -27146.3403 | .94512 |
| 45 B TNGT | 47365.0654 | .83890 | -38358.0283 | .89074 | 13981.7063 | 1.35862 | -21078.4467 | .94512 |
| 45 B BEND | 45917.0234 | .83763 | -35623.0273 | .89074 | 13981.7090 | 1.35862 | -21678.4460 | .94512 |
| 45 M BEND | 45917.0239 | .83763 | -35623.0273 | .89074 | 13022.3163 | .88637 | -16237.0468 | .88821 |
| 45 E BEND | 45917.0229 | .83763 | -35623.0279 | .89074 | 22850.8137 | .83131 | -20191.3208 | .88948 |
| 45 E TNGT | 43050.4775 | .83637 | -31013.4319 | 1.35989 | 22850.7976 | .83131 | -20191.3054 | .88948 |
| | 43050.4775 | .83637 | -31013.4319 | 1.35989 | 18461.4827 | .83131 | -16588.9304 | .89074 |
| 45A TNGT | 43050.4775 | .83637 | -31013.4319 | 1.35989 | 14072.1666 | .83131 | -13388.6438 | .89580 |
| 45A TNGT | 40323.1387 | .83637 | -28134.9084 | 1.35989 | 14072.1667 | .83131 | -13388.6483 | .89580 |
| | 40323.1387 | .83637 | -28134.9084 | 1.35989 | 9375.3035 | .83131 | -9552.6649 | .89580 |
| 45B TNGT | 40323.1387 | .83637 | -28134.9084 | 1.35989 | 7349.1970 | .97420 | -6124.7187 | .88063 |
| 45C TNGT | 37650.1924 | .83510 | -25179.7920 | 1.35989 | 7348.1981 | .97420 | -6124.7163 | .88063 |
| | 37650.1924 | .83510 | -25179.7920 | 1.35989 | 5945.5413 | .97507 | -4152.9133 | 1.22711 |
| 100 TNGT | 37650.1924 | .83510 | -25179.7920 | 1.35989 | 6867.3319 | 1.36621 | -6393.5534 | 1.02679 |
| 100 TNGT | 35877.6616 | .83510 | -23121.6616 | 1.35989 | 6867.3283 | 1.36621 | -6393.9483 | 1.02099 |
| | 35877.6616 | .83510 | -23121.6616 | 1.35989 | 7484.7391 | 1.36621 | -7035.9156 | 1.02099 |
| A TNGT | 35877.6616 | .83510 | -23121.6616 | 1.35989 | 8102.1501 | 1.36621 | -7077.8833 | 1.02099 |
| A TNGT | 1.1566 | .89074 | -1.1494 | .84143 | .0230 | 1.08001 | -.0335 | .97673 |
| | 1.1566 | .89074 | -1.1494 | .84143 | .0122 | 1.36241 | -.0129 | 1.31057 |
| 99 TNGT | 1.1566 | .89074 | -1.1494 | .84143 | .0436 | .97073 | -.0299 | 1.02225 |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFIN= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KDAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA PT | FORCE (LBS) | | | | MOMENT (FT-LB) | | | |
|------------|-------------|---------|-------------|---------|-----------------|---------|-------------|---------|
| | FZ-MAX | TIME | FZ-MIN | TIME | MZ-MAX | TIME | MZ-MIN | TIME |
| 99 CMPT | .7985 | .89074 | -1.0487 | .84143 | .0227 | .88948 | -.0243 | 1.10951 |
| | .7985 | .89074 | -1.0487 | .84143 | .0005 | 1.30678 | -.0004 | 1.07410 |
| 98 CMPT | .7985 | .89074 | -1.0487 | .84143 | .0250 | 1.10951 | -.0233 | .88948 |
| A INGT | 34591.2925 | .83131 | -21537.5237 | 1.35989 | 8102.1586 | 1.36621 | -7677.8881 | 1.02099 |
| | 34591.2925 | .83131 | -21537.5237 | 1.35989 | 9146.7764 | 1.36494 | -8910.7943 | 1.02352 |
| 95 B INGT | 34591.2925 | .83131 | -21537.5237 | 1.35989 | 10197.9773 | 1.36494 | -10229.7164 | .94006 |
| 95 B BEND | 16289.6986 | 1.01340 | -11326.8247 | 1.35989 | 10197.9756 | 1.36494 | -10229.7137 | .94006 |
| 95 M BEND | 16289.6991 | 1.01340 | -11326.8251 | 1.35989 | 11171.0876 | 1.36368 | -12086.4962 | .94132 |
| 95 E BEND | 16289.6986 | 1.01340 | -11326.8248 | 1.35989 | 10580.3348 | 1.36494 | -11197.9009 | .94132 |
| 95 E INGT | 14859.3351 | .79843 | -8550.7058 | .84269 | 10580.3364 | 1.36494 | -11197.9016 | .94132 |
| | 14859.3351 | .79843 | -8550.7058 | .84269 | 9255.1298 | 1.36494 | -9685.8451 | 1.02605 |
| 95A INGT | 14859.3351 | .79843 | -8550.7058 | .84269 | 7929.9233 | 1.36494 | -9357.2064 | 1.02721 |
| 95A INGT | 15944.3018 | .79843 | -12952.2961 | .84269 | 7929.9285 | 1.36494 | -9357.2076 | 1.02731 |
| | 15944.3018 | .79843 | -12952.2961 | .84269 | 6393.2773 | 1.05134 | -8407.6212 | 1.02731 |
| 90 INGT | 15944.3018 | .79843 | -12952.2961 | .84269 | 5680.5588 | 1.05134 | -7496.4539 | 1.02858 |
| 90 INGT | .2006 | 1.36621 | -.5266 | .81993 | .0561 | 1.01720 | -.0589 | .91350 |
| | .2006 | 1.36621 | -.5266 | .81993 | .0138 | 1.01340 | -.0142 | .91057 |
| 91 INGT | .2006 | 1.36621 | -.5266 | .81993 | .0416 | 1.36368 | -.0324 | 1.32448 |
| 91 CMPT | 1.0460 | .89074 | -.9046 | .84269 | .0050 | 1.35862 | -.0057 | .94259 |
| | 1.0460 | .89074 | -.9046 | .84269 | .0003 | .91350 | -.0003 | 1.01340 |
| 92 CMPT | 1.0460 | .89074 | -.9046 | .84269 | .0054 | .94259 | -.0050 | 1.35736 |
| 90 INGT | 16588.6292 | .79843 | -15581.1853 | .84269 | 5680.5541 | 1.05134 | -7496.4559 | 1.02858 |
| | 16588.6292 | .79843 | -15581.1853 | .84269 | 6487.7905 | 1.05134 | -8007.8549 | 1.02731 |
| 85 B INGT | 16588.6292 | .79843 | -15581.1853 | .84269 | 7295.0271 | 1.05134 | -9757.6737 | 1.02731 |
| 85 B BEND | 14034.8604 | 1.07157 | -21491.9514 | .83004 | 7295.0300 | 1.05134 | -9757.6687 | 1.02731 |
| 85 M BEND | 14034.8604 | 1.07157 | -21491.9512 | .83004 | 19547.1138 | 1.35862 | -25097.8005 | .94259 |
| 85 E BEND | 14034.8604 | 1.07157 | -21491.9507 | .83004 | 41529.8428 | 1.35489 | -53023.7104 | .94259 |
| 85 E INGT | 20325.8591 | .89201 | -25657.3745 | .84143 | 41529.8857 | 1.35989 | -53023.7529 | .94259 |
| | 20325.8591 | .89201 | -25657.3745 | .84143 | 49596.6826 | 1.35489 | -61058.2876 | .94259 |
| 85A INGT | 20325.8591 | .89201 | -25657.3745 | .84143 | 57663.4731 | 1.35489 | -70092.8242 | .94259 |
| 85A INGT | 24235.7925 | .89074 | -28477.3088 | .84143 | 57663.5493 | 1.35989 | -70092.8984 | .94259 |
| | 24235.7925 | .89074 | -28477.3088 | .84143 | 62077.7266 | 1.35989 | -74384.7568 | .94259 |
| 85B INGT | 24235.7925 | .89074 | -28477.3088 | .84143 | 66491.9033 | 1.35489 | -78917.6436 | 1.01593 |

ELEMENT FORCES AND MOMENTS

MAX AND MIN GLOBAL FORCES

(TZERO= .5000SEC; TFIN= 1.5000SEC)
(DAMP= .005 MDAMP= .000 KUAMP= .000)

FORCE (LBS)

MOMENT (FT-LB)

| DATA PT | FZ-MAX | TIME | FZ-MIN | TIME | MZ-MAX | TIME | MZ-MIN | TIME |
|-----------|------------|---------|-------------|---------|-------------|---------|-------------|---------|
| A5R TNGT | 27501.4673 | .89074 | -31108.3589 | .84143 | 66491.9883 | 1.35989 | -78917.7139 | 1.01593 |
| | 27501.4673 | .89074 | -31108.3589 | .84143 | 67078.9434 | 1.35989 | -81523.0723 | 1.01593 |
| A2 TNGT | 27501.4673 | .89074 | -31108.3589 | .84143 | 67665.9033 | 1.35989 | -84168.8760 | 1.01467 |
| A2 TNGT | 22814.5173 | .89454 | -28013.9958 | 1.01846 | 9.5705 | 1.01846 | -7.7366 | .89454 |
| | 22814.5173 | .89454 | -28013.9958 | 1.01846 | 4.9812 | 1.01846 | -4.0477 | .89454 |
| A1 TNGT | 22814.5173 | .89454 | -28013.9958 | 1.01846 | .3929 | 1.02099 | -.3609 | .89327 |
| A1 TNGT | 22815.1641 | .89454 | -28014.3477 | 1.01846 | -.6414 | 1.01846 | -.5198 | .89454 |
| | 22815.1641 | .89454 | -28014.3477 | 1.01846 | .3177 | 1.01845 | -.2594 | .89454 |
| A3 TNGT | 22815.1641 | .89454 | -28014.3477 | 1.01846 | .0041 | 1.36494 | -.0070 | .81740 |
| A2 TNGT | 14151.3367 | 1.01214 | -13601.1140 | 1.36368 | 67673.2656 | 1.35989 | -84177.9922 | 1.01467 |
| | 14151.3367 | 1.01214 | -13601.1140 | 1.36368 | 63495.8892 | 1.35989 | -79263.7412 | 1.01467 |
| 80 B TNGT | 14151.3367 | 1.01214 | -13601.1140 | 1.36368 | 59318.5146 | 1.35989 | -74229.4893 | 1.01467 |
| 80 B BEND | 8559.5322 | 1.39529 | -9136.5917 | 1.36494 | 59318.6230 | 1.35409 | -74229.5713 | 1.01467 |
| 80 M BEND | 8559.5323 | 1.39529 | -9136.5917 | 1.36494 | 14355.4528 | .89074 | -17326.1140 | .81108 |
| 75 B BEND | 8559.5322 | 1.39529 | -9136.5917 | 1.36494 | 39904.0269 | .94259 | -41829.9146 | 1.36115 |
| 75 B BEND | 3690.6476 | 1.39529 | -4142.0248 | .97673 | 39904.0356 | .94259 | -41829.9253 | 1.36115 |
| 75 M BEND | 3690.6477 | 1.39529 | -4142.0249 | .97673 | 54074.3926 | .94259 | -55969.4736 | 1.36115 |
| 75 E BEND | 3690.6476 | 1.39529 | -4142.0249 | .97673 | 57638.0371 | .94259 | -60517.5366 | 1.36115 |
| 75 E TNGT | 2516.1863 | .89454 | -2533.5532 | .84648 | 57638.0361 | .94259 | -60517.5308 | 1.36115 |
| | 2516.1863 | .89454 | -2533.5532 | .84648 | 54559.0757 | .94132 | -56165.1313 | 1.36115 |
| 70 TNGT | 2516.1863 | .89454 | -2533.5532 | .84648 | 51757.1396 | 1.20435 | -51817.3145 | 1.35989 |
| 70 TNGT | 6680.1428 | 1.36368 | -5096.3328 | 1.39782 | 51757.1440 | 1.20435 | -51817.3203 | 1.35989 |
| | 6680.1428 | 1.36368 | -5096.3328 | 1.39782 | 49935.4771 | 1.01467 | -45190.6147 | 1.36115 |
| 65 B TNGT | 6680.1428 | 1.36368 | -5096.3328 | 1.39782 | 48240.2544 | 1.01467 | -38758.6841 | 1.06019 |
| 65 B BEND | 9375.2874 | 1.36368 | -6968.8776 | 1.39782 | 48240.2607 | 1.01467 | -38758.6934 | 1.06019 |
| 65 M BEND | 9375.2875 | 1.36368 | -6968.8776 | 1.39782 | 32223.0679 | .80981 | -22244.3416 | 1.45726 |
| 63 BEND | 9375.2874 | 1.36368 | -6968.8776 | 1.39782 | 53698.5654 | .78958 | -44708.2646 | 1.32448 |
| 63 TNGT | 9541.2185 | 1.36368 | -9377.0891 | 1.02352 | 53698.5698 | .78958 | -44708.2725 | 1.32448 |
| | 9541.2185 | 1.36368 | -9377.0891 | 1.02352 | 81664.4062 | .78831 | -69179.1758 | 1.20308 |
| 60 TNGT | 9541.2185 | 1.36368 | -9377.0891 | 1.02352 | 110102.3379 | .78705 | -98262.7471 | 1.20308 |

**SUPPORTING INFORMATION FOR THE STRESS
ANALYSIS OF THE THIN PIPE REGION IN THE
NO. 12 STEAM GENERATOR MAIN STEAM LINE
(EB-01-1005-05)**

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